

**Before the Independent Hearing Panel appointed by
the Canterbury Regional Council**

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF Application CRC214073 to
CRC214077, Woodstock Quarries Limited application for
quarrying and landfilling at 513 Trig Road, View Hill

Supplementary Section 42A Officer's Report

**Report of Tim Johnston
19 April 2024**

Introduction

Background

1. My full name is Timothy Barrie Johnston. I am Canterbury Regional Council's s42A Planning Officer in regard to the Woodstock Quarries Limited application to establish and operate a landfill at 513 Trig Road, View Hill.
2. I have read the updated Environment Court Practice Note (2023), including the Code of Conduct for Expert Witnesses, in giving evidence to the Environment Court. I agree to comply with that code when giving evidence to the Hearing Panel in this matter. All my evidence is within my expertise, and I have considered and stated all material facts known to me which might alter or qualify the opinions I express.
3. I have prepared this evidence in response to the applicants' new information provided on 15 March 2024 and submitters comments on the new information provided by the applicant. In summary this evidence covers the following:
 - a. Evidence of Michael Greer Response to Minute 18 dated 15 March 2024
 - b. Evidence of Chad Croft in response tot Minute 18 dated 15 March 2024
 - c. Joint Witness Statement dated 15 March 2024.
 - d. Evidence of Garry Blay in response to Minute 19 dated 15 March 2024.

Mudfish and fish survey

4. Dr Michael Greer's statement of evidence dated 11th March 2024 addresses the results of the mudfish and fish surveys that were requested in paragraph 7 and paragraph 9 of the 18th Minute to parties issued by the Hearing Commissioners on the 5th of December 2023.
5. Ms Shirley Hayward has reviewed Dr Greer's new evidence, and the submitters comments. Ms Hayward has provided supplementary evidence which is attached to this report as Appendix 1.

Ecological Baseline Assessment

6. Mr Chad Croft's statement of evidence dated 15 March 2024 addresses Wildland Consulting Limited surveys of both the impact site and the proposed compensation area.

7. Dr Jean Jack has reviewed Mr Chad Crofts statement of evidence and has provided a breath supplementary evidence in Appendix 2 which addresses Mr Crofts assessment of the baseline and ecological values.

Joint Witness Statement

8. The Joint Witness Statement (JWS), which was prepared in response to paragraph 4 of the 19th Minute of 22 December 2023 from the hearing commissioners to resolve disputes regarding the landfill drawing submitted, was provided on the 15 March 2024.
9. I have reviewed the JWS, I acknowledge that the Drawing Issue 7 was agreed on by all participants to be an acceptable proof of concept to form part of the resource consent for the proposed Woodstock Landfill and Quarry development, should consent be granted.
10. However, the following wording from the JWS should be highlighted.
 - a. *The attached set of drawings, Drawings Issue 7, are agreed by all participants to be an **acceptable** proof of concept to form part of the resource consents for the proposed Woodstock Landfill and Quarry development should consent be granted.*
 - b. *We note that while the technical matter has been resolved on the drawing set and the amended consent conditions, **the underlying complexity of the landfill design and constructability remains a concern to CRC and OOCB technical experts. CRC and OOCB are not aware of a double liner base line and a steep wall line system in a rock quarry being designed and implemented in New Zealand.***
11. The design is a critical part to the proposal as mitigation to reduce the adverse effects on the environment. Therefore, it is imperative that if consent is to be granted that the design is physically feasible for this site.
12. In my opinion, the above wording in the JWS, shows that design may not be physically feasible, as detailed by CRC and OOCB technical experts, the constructability of the concept design remains an overall concern.
13. As detailed on the quality planning website¹, “a condition must not frustrate the exercise of the consent” where at this stage there remains significant uncertainty with the design being feasible. As the design is the main mitigation measure for the proposal, there is no possibility of not requiring the landfill being constructed without the landfill design and any other designs needing to go through a new consent process to ensure the mitigation measures are appropriate.
14. Therefore, the consent conditions recommended are potentially ultra vires as the conditions relating to the design may not be able to be achieved, and if granted, the consent could potentially be ineffective.
15. Overall, the drawing set is now at an acceptable level if consent was to be granted. However, significant uncertainty remains if the proposal can be constructed as detailed in the JWS, causing tension on the proposed conditions relying on the proposed design to be feasible.

Proposed Consent Conditions

16. Where required, Canterbury Regional Council's Technical Experts and I have undertaken a review of Mr Garry Blays revised consent conditions.

¹ [Drafting Consent Conditions | Quality Planning](#)

17. I note that Mr Blay has included some, but not all changes, I recommended in my Supplementary Report dated 8th November. Further, where additional conditions, and removals have been made, no justification has been provided.
18. Therefore, I have summarised my new materialistic recommendations below in Table 1 of this report and provided a full set of conditions attached as Appendix 3.

	CRC214073/CRC214075/CRC214077
General Issue	Comment and recommendations
Drawing References	Some of the draft consent conditions refer to superseded drawing versions. Where possible, I have changed several conditions to refer to the correct reference. However, I recommend that the applicant reviews the references thoroughly to ensure that they are correct.
Glossary	Comment and recommendations
Drawing/ Drawing index	Given the number of drawing iterations submitted, specific drawing set definitions could be useful at the start of the consent conditions. For instance, “all drawing Set Issue 7, dated 15 March 2024” with a drawing list consistent with Set Issue 7, dated 15 March 2024, with the specific individual drawing title, reference (e.g. B1 Rev U) versions/ rev numbers or letters and the revision date shown.
Condition number	Comment and recommendations
10b)	<p>The drainage and liner have been omitted from condition 10b) and are critical to the system performance of the landfill .</p> <p>Amend to read as per the following:</p> <p>Detailed drawings for the landfill construction and all associated facilities including site plans, building plans, earthworks plans, construction plans, <u>drainage plan (groundwater, leak detection leachate drainage), liner details and transition (base liner, steep wall liner, toe bund liner, transition are liner)</u> and elevations.</p>
13	<p>Remove e) <i>A representative from each of the Waimakariri District Council and Canterbury Regional Council form the condition.</i></p> <p>In my opinion, this is not required. As the authorising parties and managing compliance, Council being part of the group may create conflict. I believe it is more appropriate that there is separation to the group and that the OOCB covers the public interest.</p>
20	<p>Construction Environmental Management Plan timeframe needs to be defined for each phase of construction stage.</p> <p>It is recommended that The Wetland Management Plan is to be submitted two months prior to commencement of construction works. As construction works may have an impact on the wetland, baseline surveys and data from the ecological impact assessment are required</p>

33	Current drawing set is Issue 7. Amend condition to reference Issue 7.
43	<p>Amend condition to state:</p> <p>As-built drawings shall be forwarded to Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring, following completion of principal works and structures, which shall include the sedimentation ponds, toe bund, leachate collection system, landfill gas system, and landfill cells <u>completed by a licensed survey practitioner.</u> These drawings shall include:</p> <ul style="list-style-type: none"> a) 0.5 metre contours for the liner base; b) final elevations of the liner <u>layers</u> prior to placement of the leachate drainage layer; and c) spot levels to plus or minus 10 millimetres at leachate collection sump locations and <u>associated pipe work.</u>
47	<p>The Ecological Impact Assessment must identify ecological values on-site and the appropriate measures to avoid or mitigate the effects on these values. The EclA must include, but not be limited to:</p> <ul style="list-style-type: none"> • Assessment of the actual and potential adverse and/or positive effects on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity; • Identification of areas of significant indigenous vegetation and significant habitat for indigenous fauna; • Surveys of indigenous fauna including lizards, birds and bats during suitable survey conditions (September to May); • Recommendations for the development of indigenous flora and fauna management plans, where deemed appropriate, based on surveys. • <u>The identification of whether compensatory land is required. Any EclA for this purpose must disregard the consented baseline and compensation measures must be designed in accordance with the NPS-IB principles for compensation (or an equivalent document).</u>
48 (Applicants condition 47)	<p>Amend condition to state the following:</p> <p><u>If the EclA, as required in condition 47 identifies that compensatory land is required, this shall be provided and located in accordance with approved plan Drawing A8. Any compensation measure will be designed in accordance with the NPS-IB principles for compensation (or equivalent document). This must include the identification of those measures necessary to protect and maintain the compensatory area.</u></p>
Applicants condition set 52	Delete consent condition as it is the same condition 55 of the applicants set.
71 (o)	Add <u>total arsenic.</u>
77	The applicant has not provided reasoning for the condition 77 to be removed. We recommend the condition to be retained, or if required, amended to be continuous within a timeframe that is recommended by the applicant with justification.

	<p>A minimum of one month prior to landfill physical works commencing, twelve months of continuous water quality monitoring for the parameters listed in condition 71 must have been completed at the surface water take from the Eyre River at 402 Trig Road. The results of this monitoring must be submitted to Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring and be used to establish existing water quality at the water take point.</p> <p>Following deposition of landfill waste commencing:</p> <ol style="list-style-type: none"> Water quality testing at this water take point must be undertaken continuously for ph and conductivity. If any leachate is detected through any of the monitoring upstream of the site a full analysis of water samples of the intake at a monthly basis must be undertaken to determine if any risk present to the water supply. If any of the monthly monitoring falls outside the monitoring range for the parameters listed in condition 71, then the response in condition 75 must be undertaken. <p>If the results of the water quality testing confirms water quality degradation from leachate contamination such that the quality of the water does not achieve either the baseline or the quality required for the permitted or consented purpose of the water take, whichever is the lower quality, the Consent Holder must provide an alternative supply of water of an equivalent quantity and quality to the baseline until such time that the water quality in Eyre River at the point of take meets the baseline or permitted or consented purpose of the take, whichever is the lower quality.</p>
94	<p>Replace repaired with <u>remediated.</u></p> <p>The bedrock on the landfill sidewalls must be inspected by a suitably qualified and experienced geologist prior to installation of the landfill liner system to identify any area of potential weakness or instability. Any areas of weakness or instability must be remediated in accordance with the directions of the engineering geologist.</p>
101	<p>As detailed in the hearing, certain materials as a stabiliser can impact the performance of the liner. Stabilisers needs to be defined as it must not impact the Geosynthetic Clay Layer performance or any other component.</p> <p>Add new condition.</p> <p><u>All stabilizers to be used must be proven to not impact the performance of the Geosynthetic Clay Layer and any other liner components that will be in contact with the stablised material.</u></p>
105	<p>Pete Abernathy (CRC Landfill Engineer) has highlighted the following:</p> <p>The elevated leachate level may have not been defined or clarified the applicant in their evidence. This should consider a case where leachate level possibly exceeds design levels and consent limits.</p> <p>Typically consider 1m to 2m above the primary liner level. This should be clarified in the consent condition if unable to reference another document.</p> <p>No technical justification has been provided for 1.1 recommend this be separated to be 1.3 as a minimum for longer term leachate levels and 1.2m for</p>

	<p>short term for elevated leachate cases as outlined in the NZGS Slope Stability Guidance-Draft For Comment December 22, 2023.</p> <p>Therefore, based on the above advice, I recommend amending the Table in Condition 105.</p> <p>105. The analysis must adopt all the following relevant factors of safety (FOS) adopted for landfill industry practice, with justification provided for any deviations from these values.:</p> <div><div><div></div></div><table><tr><th><i>Design Scenario</i></th><th><i>Minimum FOS</i></th><th><i>Or Maximum Displacement Base Liner</i></th><th><i>Or Maximum Displacement Capping</i></th></tr><tr><td><i>Static long term</i></td><td>1.5</td><td></td><td></td></tr><tr><td><i>Static short term</i></td><td>1.2</td><td></td><td></td></tr><tr><td><i>Static – elevated short term leachate levels</i></td><td>1.2</td><td></td><td></td></tr><tr><td><i>Static- elevated long term leachate levels</i></td><td>1.3</td><td></td><td></td></tr><tr><td><i>SLS Earthquake (150 year)</i></td><td>1.0</td><td><0.3m</td><td><1.0m</td></tr><tr><td><i>ULS Earthquake (2500 year)</i></td><td>1.0</td><td><0.3m</td><td><2.0m</td></tr></table></div>	<i>Design Scenario</i>	<i>Minimum FOS</i>	<i>Or Maximum Displacement Base Liner</i>	<i>Or Maximum Displacement Capping</i>	<i>Static long term</i>	1.5			<i>Static short term</i>	1.2			<i>Static – elevated short term leachate levels</i>	1.2			<i>Static- elevated long term leachate levels</i>	1.3			<i>SLS Earthquake (150 year)</i>	1.0	<0.3m	<1.0m	<i>ULS Earthquake (2500 year)</i>	1.0	<0.3m	<2.0m
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Applicants condition set 119	Delete condition relating to civil defence. As discussed at the hearing, the condition goes above and beyond the application.																												
	CRC214076																												
Condition number	Comment and Recommendations																												
15a	Previous unamended wording is preferred as water sprays should be required on the aggregate processing plant/crushing plant when operating as a matter of industry standard good practice for minimising dust emissions, fine particulate matter emissions and respirable crystalline silica emissions.																												
29	There is only one flare station. Remove the word ‘each’ from the conditions. Unless referring to the well heads, reference to these would be recommended rather than each flare station.																												
30c	Delete Landfill gas fired generators shall comply with specifications (30)(a)(i) to (a)(v) above. Allows for landfill gas (LFG) fired generators. Canterbury Regional Council Technical Experts and I have concern with this as the application did not include provision for generators, and consequently provided no detail of LFG generators, and the potential air quality effects arising from the discharges from them have not been assessed. For this reason, we recommend that all provisions for LFG fired generators in the conditions be removed.																												

19. I have provided a full clean set of conditions in Appendix 3.

A handwritten signature in black ink, appearing to read 'Tim Johnston', is written over a long, thin diagonal line that extends from the bottom left towards the top right.

Tim Johnston

19th April 2024

APPENDIX 1- MS SHIRLEY HAYWARDS SUPPLEMENTARY REPORT

**Before the Independent Hearing Panel appointed by
the Canterbury Regional Council**

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF Application CRC214073 to
CRC214077, Woodstock Quarries Limited application for
quarrying and landfilling at 513 Trig Road, View Hill

Supplemental Section 42A Officer's Report

Report of Shirley Haward

17 April 2024^[BB1]

Introduction

Background

20. My full name is Shirley Ann Hayward and in this supplemental report, I reviewed the statement of evidence by Dr Micheal Greer, dated 11th March 2024. Details of my qualifications and experience are set out in my primary report².
21. I have read the updated Environment Court Practice Note (2023), including the Code of Conduct for Expert Witnesses in giving evidence to the Environment Court. I agree to comply with that code when giving evidence to the Hearing Panel in this matter. All my evidence is within my expertise, and I have considered and stated all material facts known to me which might alter or qualify the opinions I express.

Fish survey of Narbey and Woodstock wetland and streams by Instream Consulting and reported by Dr Michael Greer:

22. Instream Consulting undertook a fish survey of the streams and wetlands of Woodstock Quarry and the Narbey wetland on the 16th and 17th January 2024. The methods used followed current guidance for undertaking mudfish surveys as the key species of interest (e.g., using fine mesh gee-minnow traps) (Ling *et al* 2013) along with electric fishing of stream reaches suitable for surveying mudfish and other fish species.
23. The timing of the fish survey in mid-January was not within the autumn period recommended by Ling *et al* (2013). This has been raised by submitters as a concern about whether the conditions at the time of fish survey were likely to result in successful capture of mudfish if present (Andrew Shulte statement of evidence on behalf of the Oxford Ohoka Community Board, dated 15 March 2024 and evidence of Cassandre Walker, Maria Lowe and Shirley Farrell dated 7 April 2024). While I agree that ideally the fish survey would be done in autumn/winter period, this would have resulted in several months delay. However, surveys for Canterbury mudfish (*Neochanna burrowsius*), in summertime, have successfully caught mudfish, provided that a suitable habitat was present (e.g, Harding *et al* 2007). Dr Greer's evidence includes a description by Instream Consulting Ltd of the water depth (it is unclear if this is the average or maximum

² Appendix 5: Shirley Hayward – Science Team Leader Water Quality and Ecology - S42a Report, dated December 14th 2022.

depth of water) but does not describe other conditions. This data indicates that flowing and pooled water was still present, but flow conditions were certainly more likely to be lower than when I visited the site in September 2023. I consider it reasonable to assume that pools of sufficient depth were present to install gee minnow traps, and flowing water reaches were suitable for electric fishing.

24. A total of 18 traps were set in the two wetland areas, and another 6 traps in Woodstock Stream. No Canterbury mudfish were found in any of the traps set. Other fish species were successfully captured including brown trout and upland bullies in the wetland, and brown trout, Canterbury galaxias, and upland bullies in Woodstock Stream. Given the number of traps set and area covered, and other fish species caught, I consider the survey was a reasonable approach for determining if Canterbury mudfish were present at the time. A single survey, such as this, cannot determine with perfect certainty that mudfish do not occupy the wetland. However, it seems unlikely that a substantial population of Canterbury mudfish exists in the Woodstock or Narbey wetland at present. Additionally, the presence of a number of trout in the wetland means that there were Canterbury mudfish to penetrate into the wetland, and establishing a population of Canterbury mudfish would be difficult with the current predatory pressure of trout.
25. It was encouraging that other indigenous species were found in the wetland (upland bully), and in Woodstock Stream (Canterbury galaxias and upland bullies). It remains important that measures are put in place to ensure these valuable ecosystems are not adversely affected by the proposed activity.

References

26. Harding, J.S., Norton, D.A., McIntosh, A.R., 2007: Persistence of a significant population of rare Canterbury mudfish (*Neochanna burrowsius*) in a hydrologically isolated catchment. Short communication. New Zealand Journal of Marine and Freshwater Research, 2007, Vol. 41: 309-316.
27. Ling, N.; O'Brien, L.K.; Miller, R.; Lake, M. 2013: A revised methodology to survey and monitor New Zealand mudfish. Department of Conservation, Wellington (unpublished).

APPENDIX 2- DR JEAN JACK SUPPLEMENTARY REPORT

**Before the Independent Hearing Panel appointed by
the Canterbury Regional Council**

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF Application CRC214073 to
CRC214077, Woodstock Quarries Limited application for
quarrying and landfilling at 513 Trig Road, View Hill

Supplemental Section 42A Officer's Report

Report of Jean Jack

19 April 2024^[BB2]

Introduction

Background

28. My full name is Jean-Marie Louise Jack. In this supplemental report, I review the statement of evidence by Chad Croft, dated 15th March 2024. Details my qualifications and experience are set out in my primary report³.
29. I have read the updated Environment Court Practice Note (2023), including the Code of Conduct for Expert Witnesses in giving evidence to the Environment Court. I agree to comply with that code when giving evidence to the Hearing Panel in this matter. All my evidence is within my expertise, and I have considered and stated all material facts known to me which might alter or qualify the opinions I express.

Baseline assessment of the flora, fauna, and spatial extent of the intended compensation site reported by Chad Croft:

30. Wildland Consulting Ltd (Wildlands) undertook surveys of both the impact site and the proposed compensation area.
31. I agree with Mr Croft that the ecological surveys provide an adequate baseline for the ecological values present within the proposed compensation area and impact site.

Significance assessment comment

32. Paragraph 10, 11 and 14 of Mr Croft's evidence⁴ states the areas *would not trigger the significance criteria under the National Policy Statement for Indigenous Biodiversity (NPS-IB)*. I would clarify that the areas would not qualify as 'SNA' (significant natural area) under the current NPS IB 2023, rather than not triggering significance criteria. SNA are areas that have ecological significance and are then further defined by the NPS-IB 2023 with some requirements. This is different to determining 'significance' under s6c of RMA.

³ S42a Report, dated December 14th 2022.

⁴ Evidence of Chad Croft in Reply 15 March 2024

Jean Jack

A handwritten signature in black ink, appearing to read 'Jean Jack'. The signature is fluid and cursive, with the first name 'Jean' and the last name 'Jack' clearly distinguishable.

10th April 2024^[BB3]

APPENDIX 3- PROPOSED CONDITIONS

Amalgamated conditions 214073/77 and 214075

CRC214073 – Use land to excavate material and to deposit material over an aquifer

CRC214075 – Discharge stormwater and water onto land and into land

CRC214077 – Discharge contaminants onto or into land

Advice Note: The activities at the site are also subject to the following resource consents or changes to them:

CRC214073

CRC214074

CRC214075

CRC214076

RC215276

RC185244

Woodstock Quarries Limited has applied for resource consent from the Waimakariri District Council (WDC - Consent Number RC215276) and Canterbury Regional Council (CRC) to undertake earthworks and to establish and operate a landfill and associated activities at 513 Trig Road near Oxford.

The conditions of resource consent, as issued by the two organisations, have been prepared in consultation with one another and where possible consistency of wording and numbering has been incorporated into the two documents including reference to a single Landfill Management Plan for the consented activity. On this basis the conditions of the Waimakariri District Council and Canterbury Regional Council consents (including appended schedules) should be read and applied concurrently to ensure a consistency of application of requirements.

The schedules appended to, and forming part of the conditions of consent are:

1. Waste Acceptance Criteria
2. Landfill Management Plan Objectives and contents.
3. Peer review panel scope of responsibility

Glossary

Activation of consent	The date at which the consent holder advises the consenting authority that it intends to commence the activities authorised under the consent. It does not apply to the activities associated with existing consents.
Aftercare	The period of maintenance of the landfill site after the cessation of all landfill waste placing and the completion of all closure works.
Approval by Council	The process of the Council to receive plans and documentation and to provide written confirmation the plans and documentation meet and satisfy
	the requirements of the consent conditions and schedules of consent before being adopted.

Certify	The process of a professional reviewer confirming that plans, drawings and specifications have been prepared in accordance with recognised standards and the conditions of consent.
Closure	The process of completing capping and other works upon the completion of the placing of landfill waste. Closure may occur in stages prior to the cessation of the placing of all landfill waste.
Council	Unless otherwise stated means Canterbury Regional Council.
Construction stage	A defined scope of engineering works that is a discrete part of the overall programme of works. It may include earthworks (including blasting), drainage works, the construction of landfill cells, mechanical works, buildings or other structures, pavement construction, landscaping and any other associated works including alterations to existing site infrastructure. It does not apply to the quarry related activities associated with existing consents (RC185244).
Deposition of landfill waste	Placement of landfill waste within developed cells.
Deposition date	The date that landfill waste acceptance commences at the landfill. This date is to be notified to the Council in writing.
Drawing/ Drawing Index	Issue 7 dated 14 March 2024 stamped approved plans CRC214073.
Landfill footprint	That area for landfill waste deposition depicted by the broken magenta line on Drawing B2 (Rev R) Remediated Surface with toe bund included in the stamped approved plan set.
Landfill liner	The construction of the cohesive soil and geosynthetic materials that make up the liner system. It does not include the earthworks required prior to the construction of the liner system.
Landfill physical works	Works required to prepare excavated areas for deposit of landfill waste, including final contouring, construction of the toe bund and installation of the landfill liner and associated drainage, roading and other infrastructure required for operation of the landfill.
Landfill site	That area depicted on Drawing A7 Landfill Site Boundary included in the approved plan set stamped approved plan set.
Landfill waste	Material that complies as acceptable waste material listed in the Waste Acceptance Criteria (Schedule 1 of this consent).
Lower wetland	The wetland at the southern boundary of the landfill site associated with Woodstock Stream.
Upper wetland	The area of Beech tree dieback located adjacent to the energy dissipator and surface water dispersal zone, as the dissipator and zone are shown on Drawing B2.

Physical works	Includes all vegetation clearance, earthworks associated (including quarrying) with extending the existing quarry area in the landfill footprint, construction of sediment ponds, bund, clay excavations, internal road formation/upgrade, stockpiles, fill and container transfer area and associated activities.
Wetland boundary	The point in the transition from wetland to dryland where wetland plant species occur at more than four times their ungrazed height apart. Where there is uncertainty or dispute regarding the extent of the wetland, reference shall be made to the methods set out in the Wetland Delineation Protocols produced by the Ministry for the Environment'.

Conditions common to 214073, 214075 and 214077

Limits

General

1. See individual consent sections conditions 78 and 144.

Duration

2. The term of this Consent must be 35 years from the date of its commencement.

Lapse

3. The lapsing date for the purposes of section 125 of the Resource Management Act 1991 must be (date) (5 years from commencement).

Review

4. The Canterbury Regional Council may annually, on the last working day of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
 - a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent, and which is appropriate to deal with at a later stage; or
 - b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment.
 - c. Ensuring the conditions of this consent are consistent with any National Environmental Standards.
 - d. Reviewing the frequency of monitoring or reporting required under this consent.

Prior to commencement of works

5. There must be no landfill physical works beyond the working areas as detailed shown as Active Quarry Operations, Active Stockpile Operations, Quarry Expansion Area and Overburden / Stockpile Expansion Areas on Plan Drawing A6 (Operational works

area) prior to the completion of and submittal for approval to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring of:

- a. Ground and surface water baseline assessments, and
 - b. An Ecological Impact Assessment in the areas where habitat is to be removed for landfill physical works, and
 - c. A baseline ecological assessment of the lower wetland area and
 - d. Fish survey of the Lower Wetland and the Woodstock Stream. The method of fish survey must be conducted in accordance with:
 - i. The New Zealand Freshwater Fish Sampling Protocols (2013) in the Woodstock Stream; and
 - ii. The revised methodology to survey and monitoring New Zealand Mudfish (2013) in the Lower Wetland.
6. At least 30 working days prior to the commencement of works, the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring must be informed of the commencement of works.
7. At least 15 working days prior to the commencement of works, the consent holder must request a pre-construction site meeting with the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring and all relevant parties, including the primary contractor. At a minimum, the following must be covered at the meeting:
- a. Scheduling and staging of the works;
 - b. Responsibilities of all relevant parties, including confirmation that the person [or persons] implementing the ESCP on the site is [are] suitably trained and/or experienced;
 - c. Contact details for all relevant parties;
 - d. Expectations regarding communication between all relevant parties;
 - e. Procedures for implementing any amendments;
 - f. Site inspection; and
 - g. Confirmation that all relevant parties have copies of the contents of this resource consent document and all associated erosion and sediment control plans and any other discharge treatment methodologies employed.
8. Prior to commencement of the works all personnel working on the site must be made aware of, and have access to, the following:
- a. The contents of this resource consent document and all associated documents;
 - b. Resource Consents CRC214073, CRC214074 CRC214075 CRC214076 CRC214077, RC215276 (Waimakariri District Council Consent) and all associated documents, including the Erosion and Sediment Control Plan (ESCP), Landfill Management Plan, Landfill Monitoring Plan, Air Quality Management Plan and Landfill Closure Plan.
9. All works must be undertaken in accordance with the drawings included in the Drawing Index attached to this consent and the Landfill Management Plan except where amendments are required by conditions of these consents. In the event of differences or conflict between the measures described in the drawings or Landfill Management Plan, and the conditions, the conditions must prevail.

10. All investigations, design, and supervision and quality assurance of construction must be undertaken by a Chartered Engineer experienced in such works or works of a similar nature. The following must be prepared by a suitably qualified and experienced person and must be submitted to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring for approval at least one month prior to the commencement of each stage of the physical works within the landfill site boundary for the purpose of the construction of the landfill and associated activities:
- a) Details of all works to be undertaken in the stage including clearance of vegetation, earthworks, lining systems, drainage, stockpiles, fill, roading, remediation and structures;
 - b) Detailed drawings for the landfill construction and all associated facilities including site plans, building plans, earthworks plans, construction plans, drainage plan (groundwater, leak detection leachate drainage), liner details and transition (base liner, steep wall liner, toe bund liner, transition are liner) and elevations.
 - c) Supporting calculations;
 - d) Specifications for the works, including those for imported materials, and including details of material testing to be completed during the construction of the stage;
 - e) Details of any temporary works that will be removed following the completion of the construction stage;
 - f) Details of any emergency management facilities to support the site emergency management plan for the stage;
 - g) A Site Specific Erosion and Sediment Control Plan for the proposed stage;
 - h) A proposed construction programme;
 - i) Where required, the design for the stage must be certified by a Chartered Professional Engineer on a Producer Statement - Design (PS1);
 - j) Where required, the Chartered Professional Engineer must provide a detailed observation programme that is required to enable the designer to issue a Producer Statement – Construction Review (PS4);
 - k) Where required, a letter from the Peer Review Panel confirming that they have reviewed the technical details of the stage of proposed works.

Community Liaison Group

11. Prior to the deposition of landfill waste, the consent holder must establish and operate, for the life of the activity, a website, which enables the community to gain full access to the resource consent application, further information, approval decision (including conditions), all information required to be submitted to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring as part of these conditions of

consent and copies of the Councils approvals. This includes the Landfill Management Plan.

12. The consent holder's website, as required by the condition above, must include contact details for a representative of the landfill to respond to public queries including for operation related issues and emergency events. If multiple representatives are appointed, a documented chain of accountability must be provided detailing who is responsible for site management.
13. The Consent Holder must, in consultation with mana whenua, Oxford Ohoka Community Board and the owners and occupiers of the four adjoining sites establish and maintain a Community Liaison Group (CLG). The Consent Holder must invite CLG membership in accordance with a to d:
 - a. A Chair voted in from and by the CLG members
 - b. Two representatives from the Oxford Ohoka Community Board
 - c. One or more representatives from Ngai Tuahuriri Runanga
 - d. A representative from each of the four adjoining properties.
14. The role of this group will be to bring feedback from the community to the Consent Holder, disseminate information about the landfill to the local community, and to hear concerns of local residents relating to the landfill and receive, discuss and consider material.
15. The Consent Holder must take all practicable steps to ensure that the CLG comprises up to 7 representatives (including the Chair but not including the Consent Holder). The Consent Holder must host meetings of the CLG on a quarterly basis (or less frequently as determined by the CLG). Meeting minutes must be taken by the Consent Holder and distributed to the members of the CLG. The Consent Holder must cover any associated costs of hosting the meeting and cover reasonable costs of mana whenua participation.
16. The Consent Holder must present information at meetings of the CLG including:
 - a. All reports submitted to the Council and/or Peer Review Panel
 - b. Any proposed changes to management plans
 - c. Any new resource consent applications, including variations to existing consents, prior to lodgement.
 - d. Operational aspects of the landfill, and
 - e. Any issues or events that have occurred/arisen and the actions taken to address them; and
 - f. The results of monitoring required as a condition of consent.

Provision of the above information must be provided to CLG members no later than seven days prior to the meeting date. The Consent Holder must provide the opportunity for the CLG to give feedback on these matters.

Landfill Management Plan

17. A Landfill Management Plan (LMP) must be prepared by a suitably qualified and experienced person, prior to commencement of physical works and must be submitted to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring for

approval. The LMP and any revisions must include the best practicable options for achieving compliance with the conditions of CRC214073, CRC214074, CRC214075, CRC214076 and CRC214077, along with RC215276. The Consent Holder must implement the approved LMP.

Advice note:

The approval process is confined to confirming that the Landfill Management Plan adequately gives effect to the conditions of CRC214073, CRC214074, CRC214075, CRC214076 and CRC214077, and RC215276.

18. The LMP must as a minimum:

- Achieve the objectives set out in Schedule 2 to these conditions of consent; and
- Include the LMP contents as detailed in Schedule 2 to this consent; and
- Describe the methodology for giving effect to consent conditions; and
- Include details of the steps to be taken to correct any element of noncompliance.

19. The format of the LMP must be a series of sections to address the requirements of the Waimakariri District and Canterbury Regional Council resource consents (including conditions), in general accordance with the section topics set out in following LMP sections and contents table. The Landfill Management Plan and all sub-sections of the LMP must be prepared in accordance with the relevant section objectives and contents framework as set out in Schedule 2 attached to this consent and contain, as a minimum, specific management plans as set out under the section headings in the LMP sections and contents table.

LMP sections and contents table

Section	Title
1	General (Waimakariri District Council and Canterbury Regional Council)
2	Site Management (Waimakariri District Council and Canterbury Regional Council)
3	Site Development <ul style="list-style-type: none"> • Construction Environmental Management Plan (Waimakariri District Council and Canterbury Regional Council) • Landfill Liner Quality Plan (Waimakariri District Council and Canterbury Regional Council)

4	<p>Landfill Operation</p> <ul style="list-style-type: none"> • Transport Management Plan (Waimakariri District Council) • Litter Management Plan (Waimakariri District Council) • Landfill Pest Management Plan (Waimakariri District Council and Canterbury Regional Council)
5	<p>Landfill waste Acceptance (Waimakariri District Council and Canterbury Regional Council)</p>
6	<p>Air Quality</p> <ul style="list-style-type: none"> • Air Quality Management Plan (Waimakariri District Council and Canterbury Regional Council)
7	<p>Landfill Gas</p> <ul style="list-style-type: none"> • Landfill Gas Management Plan (Canterbury Regional Council)
8	<p>Ecological</p> <ul style="list-style-type: none"> • Ecological Impact Assessment (Waimakariri District Council and Canterbury Regional Council) • Indigenous Vegetation (and habitat of fauna) Restoration Plan (Waimakariri District Council and Canterbury Regional Council) • Wetland Management Plan (Waimakariri District Council and Canterbury Regional Council) • Pest Management Plan (Waimakariri District Council and Canterbury Regional Council)

9	<p>Landscape</p> <ul style="list-style-type: none"> • Ecological Impact Assessment (Waimakariri District Council and Canterbury Regional Council) • Landscape Concept Plan (Waimakariri District Council) • Landscape Management Plan (Waimakariri District Council)
10	<p>Groundwater</p> <ul style="list-style-type: none"> • Groundwater Monitoring and Response Plan (Canterbury Regional Council)
11	<p>Surface Water</p> <ul style="list-style-type: none"> • Surface Water Monitoring and Response Plan (Canterbury Regional Council)
12	<p>Leachate</p> <ul style="list-style-type: none"> • Leachate Management Plan (Canterbury Regional Council)
13	<p>Erosion and Sediment Control</p> <ul style="list-style-type: none"> • Erosion and Sediment Control Management Plan (Waimakariri District Council and Canterbury Regional Council) • Site Specific Erosion and Sediment Control Plans (Waimakariri District Council and Canterbury Regional Council) • Erosion and Sediment Control Maintenance Plan (Waimakariri District Council and Canterbury Regional Council)
14	Emergency response

	<ul style="list-style-type: none"> • Site Emergency Management Plan (Waimakariri District Council and Canterbury Regional Council) • Hazardous Substances Management Plan (Waimakariri District Council and Canterbury Regional Council)
15	<p>Closure</p> <ul style="list-style-type: none"> • Final Closure Plan (Waimakariri District Council and Canterbury Regional Council)
16	<p>Aftercare</p> <ul style="list-style-type: none"> • Aftercare Plan (Waimakariri District Council and Canterbury Regional Council)

20. The Plans that are required as part of the Landfill Management Plan must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for review and approval in accordance with the timeframes set out below:

Construction Environmental Management Plan	At least three months prior to commencement of a construction stage.
Landfill Liner Quality Plan	At least three months prior to laying of first landfill liner.
Air Quality Management Plan	At least two months prior to first deposition of landfill waste.
Landfill Gas Management Plan	At least two months prior to first deposition of waste.
Wetland Management Plan	At least two months prior to commencement of the first construction stage.
Groundwater Monitoring and Response Plan	At least one month prior to installation of groundwater monitoring system.
Surface Water Monitoring and Response Plan	At least one month prior to beginning surface water monitoring.
Leachate Management Plan	At least two months prior to first deposition of landfill waste.
Erosion and Sediment Control Management Plan (ESCMP)	At least one month prior to commencement of the first construction stage.
Site Specific Erosion and Sediment Control Plans (SSESCP)	At least one month prior to commencement of a construction stage.
Erosion and Sediment Control Maintenance Plan	At least one month prior to commencement of a construction stage.
Hazardous Substances Management Plan (HSMP)	At least one month prior to commencement of the first construction stage.
Final Closure Plan	At least three years before expected landfill closure date.

Aftercare Plan	At least one year before expected landfill closure completion date.
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21. With the agreement of the Waimakariri District Council Planning Manager and the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring the LMP may be amended by the consent holder to improve management of earthworks and land fill operation and ensure the conditions of consent are complied with. In addition to the requirement for endorsement from the Peer Review Panel, the revised LMP and the name of the person preparing or reviewing any part of the LMP and their qualification must be provided to Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring for approval. Once approved, the amendments must be deemed to be part of the LMP.
22. A copy of the LMP must be made available to all persons authorised to carry out activities on the site.
23. The LMP may be prepared, submitted and approved on a partial basis (ie on an individual management plan basis) in order to meet the requirements of other conditions of this consent.
24. Where there is a conflict between the LMP and the consent conditions, the consent conditions must prevail.

Peer Review Panel

25. The Consent Holder must establish, at its own cost, a Peer Review Panel, to review the design, construction, operation, and after-care of the Landfill and all relevant management plans and drawings required under RC215276, CRC214073, CRC214074, CRC214075, CRC214076, and CRC214077 that are required to be approved by Council to assess whether or not the design meets relevant industry and professional standards and work is undertaken by appropriately qualified personnel in accordance with good practice. The Peer Review Panel must operate in accordance with the scope of responsibilities set out in Schedule 3 attached to this consent and comprise at least two independent persons who must be:
 - a. experienced in landfill design, construction, and management;
 - b. experienced in landfill geotechnical, groundwater and surface water aspects;
 - c. recognised by their peers as having such experience, knowledge, and skill; and
 - d. approved in writing by Waimakariri District Council and Canterbury Regional Council.
26. Prior to submission of any document in relation to landfill waste containment, landfill waste management and land filling for the approval of the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring, the Consent Holder must obtain and provide written comment and endorsement from the Peer Review Panel.
27. The Peer Review Panel must prepare a six-monthly report for the Consent Holder on the adequacy of the following matters:

- PRP membership and deliberations
- matters reviewed and reported
- approvals given
- geotechnical investigations
- engineering final design
- construction activity
- construction quality assurance
- lining system performance
- landfill waste pile stability
- land movement and stability
- landfill waste containment
- leachate containment and collection
- leachate handling and disposal on site
- landfill gas capture
- landfill gas monitoring of fugitive emissions and subsurface migration
- odour
- groundwater and surface water quality monitoring
- waste acceptance.
- cover material used.
- rehabilitation
- failures and damage relating to any above topic, and response by WQL.

28. Where the Peer Review Panel does not have expertise in any of the areas it is required to report on, as detailed above, it must, with the agreement of the Consent Holder and Canterbury Regional Council, engage the services of an appropriate expert to report on the relevant matter to the Peer Review Panel. The report must form part of the review provided by the Peer Review Panel as required by this condition.

Copies of all reports must be sent to the Consent Holder, the Waimakariri District Council, and the Canterbury Regional Council by 31 August each year, unless otherwise agreed in writing with the Councils.

Access to the site

29. Prior to the deposition of landfill waste, the consent holder must construct and maintain a stock proof fence to prevent ready access of unauthorised persons or stock into the Landfill Site area. All fencing must be maintained by the consent holder for the life of the consent.
30. The landfill site must not be available to the general public for either the delivery of landfill material or the collection of quarry material. Landfill waste must be delivered to the landfill footprint only by parties who have been given prior written authorisation by the Consent Holder.

Accidental Discovery Protocol

31. During earthworks (including quarrying):
- a. Any activity which may modify, damage or destroy a pre-1900 archaeological site or material must follow the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014. An archaeological authority

is required from Heritage New Zealand to modify, damage or destroy any archaeological site, whether recorded or not in the New Zealand Heritage List/Rārangi Kōrero.

- b. In the event of accidental discovery of any archaeological material, all works must cease immediately in the part of the site known, or suspected, to be an archaeological site.
- c. The Canterbury Regional Council, Heritage New Zealand Pouhere Taonga and Papatipu Rūnanga, as the New Zealand Police in the case of discovery of kōiwi/human bones, must be informed immediately of the disturbance, and the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014 must be followed.
- d. In the event of the accidental discovery of Māori archaeological sites or material, the attached accidental discovery protocol for Māori archaeology must be followed in addition to the process under the Heritage New Zealand Pouhere Taonga Act 2014.
- e. To ensure that all statutory and cultural requirements have been met, any works in the part of the site subject to the archaeological discovery must not recommence until authorised by the Canterbury Regional Council and:
 - i. Upon completion of the archaeological authority process referred to under (c); and
 - ii. In the event of the accidental discovery of Māori archaeological sites or material, and in addition to (c) upon completion of the process referred to under (d); and
 - iii. In the event of the discovery of kōiwi/human bones, the New Zealand Police.

Site development

General conditions

- 32. General earthworks and sediment control measures must be constructed and carried out in accordance with the principles contained within the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region will be utilised. The Consent Holder must instruct a suitably qualified and experienced person to prepare an Erosion and Sediment Control Plan (ESCP) and submit it to the Canterbury Regional Council for approval prior to earthworks commencing.
- 33. All works must be undertaken in accordance with the consent application documents, including:
 - a. The Resource Consent Application as updated by the drawings included in Proposal Description dated 28 September 2023

- b. The approved application plans stamped RC215276, and referenced September 2023 Drawing Index attached Issue 7
- c. Schedules 1, 2 and 3 to this consent approval

except where amendments are required by conditions of these consents. In the event of differences or conflict between the measures described in the documents, and the conditions, the conditions must prevail.

- 34. The Consent Holder must construct and maintain appropriate stormwater management measures, including drains and sediment traps for the interception and treatment of stormwater run-off from the works. These measures must remain in place over the duration of the construction period and for a period following construction to allow suitable cover of vegetation to establish on restored areas.

Advice note:

For the purpose of this consent stormwater means Surface water runoff that has come in contact with refuse shall not be discharged as stormwater and shall be considered leachate. Surface runoff from the following areas is classified as stormwater:

a. • natural undisturbed catchment areas:

b. • Intermediate cap areas, and

c. • Permanent cap areas.

d. Stormwater from capped landfill areas may not be considered as stormwater until the following steps have been undertaken:

e. a. Final and Intermediate Capping has been completed in accordance with the accepted landfill stage design;

f. b. All bare surfaces have been re-vegetated, (minimum grass seeding has taken place).

- 35. A sediment pond designed in accordance with the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury must be constructed within or immediately adjacent to the Container Transfer Area. Stormwater run-off from the Container Transfer Area must be collected and treated in this sediment pond prior to discharge. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation, GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region will be utilized.
- 36. Stormwater and underdrainage water from the quarry and landfill must be captured in surface water drains located around the perimeter of the quarry and landfill and must be discharged to sediment ponds to be constructed downslope to the south of the quarry and landfill footprint in the location shown on the application documents. The under-drainage system must be provided with monitoring points for each landfill cell with provision for diversion to the leachate management system should contamination be detected.

37. The sedimentation ponds must be designed to manage a 10 percent AEP design flood, with provision to pass a 1 percent AEP design flood. The sedimentation ponds must be designed in accordance with the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region will be utilised.
38. All permanent diversion channels (surface water drains) must be designed to manage and be erosion protected to withstand flows from a 1 percent AEP (Annual Exceedance Probability) design flood.
39. Quarry Bench drains and other temporary drains must be designed for the 10 percent AEP event. Diversion channels must be designed such that if this capacity is exceeded the preferential (secondary) flow path is, as far as practicable, away from the Landfill.
40. Diversion channels and cut-off drains must be maintained to minimise the infiltration and run-off of stormwater onto the Landfill from areas outside the Landfill footprint.
41. Scour protection works of concrete, rock or timber construction must be placed at the outlet of the sedimentation ponds to prevent scour.
42. The Consent Holder must be responsible for the structural integrity and maintenance of all dam works, and for any erosion control and energy dissipation works that become necessary as a result of the exercise of this consent.
43. As-built drawings must be forwarded to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring following completion of principal works and structures, which must include the sedimentation ponds, toe bund, leachate collection system, landfill gas system, and landfill cells completed by a licensed survey practitioner. These drawings must include:
- a. 0.5 metre contours for the liner base;
 - b. final elevations of the liner layers prior to placement of the leachate drainage layer and
 - c. spot levels to plus or minus 10 millimetres at leachate collection sump locations and associated pipe work
- The Consent Holder must also include copies of field records showing details of the exposed ground surface prior to liner placement, including a record of any sub-liner ground improvements undertaken.
44. A certificate signed by the person or persons responsible for designing the principal works and structures of the landfill or a competent person must be submitted to the Canterbury Regional Council within one month of completion of the principal works and structures associated with each stage of the landfill construction to certify that the works were carried out in accordance with the design plans submitted.

45. There must be no earthworks (including quarrying) or vegetation clearance inside the landfill site boundary within 50m of a water body except that earthworks and vegetation clearance may take place up to 10m away from the Wetland Boundary of the Upper Wetland.

Indigenous Fauna and Flora Management

46. Prior to vegetation clearance and physical works commencing in those areas within the landfill site which have been identified for vegetation clearance and earthworks (including quarrying), an ecological impact assessment (EcIA), indigenous vegetation (and habitat of fauna) restoration plan, indigenous fauna management plan, wetland management plan and pest management plan must be prepared by a suitably qualified person, and submitted to Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring and Waimakariri District Council Manager of District Plan Implementation for approval. These plans must become a section of the LMP. The plans must include, but not be limited to the matters identified in the Ecological Enhancement and Restoration objectives and contents within schedule 2.

47. The Ecological Impact Assessment must identify ecological values on-site and the appropriate measures to avoid or mitigate the effects on these values. The EcIA must include, but not be limited to:

- Assessment of the actual and potential adverse and/or positive effects on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity;
- Identification of areas of significant indigenous vegetation and significant habitat for indigenous fauna;
- Surveys of indigenous fauna including lizards, birds and bats during suitable survey conditions (September to May);
- The identification of whether compensatory land is required. Any EcIA for this purpose must disregard the consented baseline and compensation measures must be designed in accordance with the NPS-IB principles for compensation (or an equivalent document).

Recommendations for the development of indigenous flora and fauna management plans where deemed appropriate based on surveys.

48. If the EcIA, as required in condition 47 identifies that compensatory land is required, this shall be provided and located in accordance with approved plan Drawing A8. Any compensation measure will be designed in accordance with the NPS-IB principles for compensation (or equivalent document). This must include the identification of those measures necessary to protect and maintain the compensatory area.

49. Any ecological management plan/s for indigenous flora or fauna must be prepared by a suitably qualified and experienced ecologist, and submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for approval. The management plan/s must include, but not be limited to:

- The provisions of Department of Conservation Wildlife Act Authorisations where appropriate;

- Department of Conservation's Bat Roost Protocols (BRPs);
- Address the effects management hierarchy;
- Schedules for implementation of management plans prior to commencement of physical works.

50. The EclA must be used to inform an Indigenous Vegetation (and Habitat of Fauna) Restoration Plan, prepared by a suitably qualified and experienced ecologist, which must also inform the Landscape Management Plan. The Ecological Impact Assessment, and subsequent Indigenous Vegetation (and Habitat of Fauna) Restoration Plan, Wetland Management Plan and Pest Management Plan must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for approval. The plans must become part of the LMP.

51. Any vegetation clearance or earthworks in areas subject to ecological management plans must be in accordance with those management plans and supervised and confirmed as being in accordance with the plan by a suitably qualified ecologist. The confirmation must be forwarded to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring.

Wetland management

52. A Wetland Management Plan must be prepared by a suitably qualified person and submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for approval at least two months prior to landfill physical works commencing. The Wetland Management Plan must include, but not be limited to, the matters identified in the Wetland Management Plan objectives and contents within schedule 2. Any works that may impact on the wetland must be in accordance with the Wetland Management Plan and supervised and confirmed as being in accordance with the plan by a suitably qualified ecologist.

Groundwater

53. Groundwater monitoring wells P1 to P11 and Q1 to Q4 must be installed and commissioned at or about the locations shown on Drawing E2.2, which is attached to and forms part of this resource consent. An appropriately qualified hydrogeologist must be on-site during installation of the monitoring wells.

54. These monitoring wells must be installed as follows:

- a. Monitoring wells P1 to P10 must be installed to the base of weathered strata or below and to at least 1 metre below the base of the landfill drainage blanket elevation with plain casing to 1 metre depth and screened to the base.
- b. Monitoring well P11 must be installed to a depth of 10 metres to intercept the expected thickness of weathered rock with plain casing to 1 metre depth and screened to the base.
- c. Monitoring wells Q1 to Q4 must be installed to at least 4 metres below the lowest point of the leachate pond and screened for 4 metres with the base of the screen 3 metres below the lowest point of the floor of the leachate pond.

55. Following the installation of monitoring wells in accordance with condition 54, the consent holder must monitor each well as follows:

- a. Every month for at least 12 months prior to landfill physical works for the landfill, and quarterly thereafter for the Schedule A parameters.
 - b. Every three months for at least 12 months prior to landfill physical works for the landfill, and annually thereafter for the Schedule B parameters.
 - c. In all instances monitoring must comprise measurement of groundwater levels and water quality sampling.
56. Following the installation of monitoring wells in accordance with condition 54, the Consent Holder shall monitor wells Q1 to Q4 as follows:
- a. Every 4 weeks for at least 3 months prior to the disposal of waste material to landfill for the Schedule B parameters.
 - b. Every three months for at least 24 months following the commencement of the disposal of waste material to landfill, and annually thereafter for the Schedule B parameters.
 - c. In all instances monitoring shall comprise measurement of groundwater levels and water quality sampling.
57. Groundwater sampling undertaken in accordance with condition 55 must follow the procedures defined in the Groundwater Monitoring and Response Plan (GWMRP) for the site. The Objectives and Content of the GWMRP are detailed in Section 10 of Schedule 2 LMP and must form part of the LMP. The GWMRP must be issued to the Canterbury Regional Council for review and approval at least one month prior to installation of the groundwater monitoring system.
58. Groundwater samples taken in accordance with condition 55 must be analysed for the following determinands:

Schedule A	Schedule B	
pH	pH	Copper
Electrical conductivity	Electrical conductivity	COD
Temperature (for information only)	Bicarbonate	Dissolved iron
	Boron	Lead
	Calcium	Magnesium
	Chloride	Manganese
	Total hardness	Mercury
	Total alkalinity	Nickel
	Dissolved Reactive Phosphorus	Nitrate
	Ammonia	Potassium
	Dissolved Aluminium	Sodium
	Dissolved Arsenic	Sulphate
	Dissolved Cadmium	Total Petroleum Hydrocarbons

	Dissolved Chromium	Dissolved Zinc
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59. pH and electrical conductivity must be monitored using field meters which are calibrated in accordance with the manufacturer's instructions. A full record of calibration must be maintained and submitted as part of the reporting defined in Condition 63. All other parameters must be analysed by an IANZ accredited laboratory.
60. Sample results collected in accordance with Condition 55(a) (excluding temperature) for the 12-month monitoring period must be analysed to define an initial baseline range (maximum-minimum). This range must be reviewed after two years and updated on an ongoing basis using sampling results from upgradient monitoring well P11.
61. Sample results collected in accordance with condition 55(a) (excluding temperature) after deposition of landfill waste at the landfill must be compared to the range for each parameter defined in accordance with condition 57. The following actions must be undertaken in the event that any sample falls outside of the range:
- collection of a confirmatory sample from the well(s) in which out of range value was recorded;
 - if the out-of-range value is confirmed, collect a sample for that well and analyse the sample for parameters in condition 58 Schedule B and follow the procedure in condition 62.
62. Sample results collected in accordance with condition 61(b) must be compared to the most recent version of the ANZG (Australian and New Zealand Guidelines for Fresh and Marine Water Quality) 95% species protection levels, which must be used as trigger levels. If any sample exceeds these trigger values, the actions defined in the Monitoring and Mitigation Plan to be provided for the landfill must be implemented. These actions may include:
- collection of a confirmatory sample from the well(s) in which the trigger exceedance was recorded;
 - evaluation of whether the exceedance relates to a leachate discharge;
 - investigation into the source and pathway of any such leachate discharge;
 - investigation of potential surface water effects in accordance with condition 65; and
 - implementation of appropriate remedial actions as required.

Ground water reporting

63. The consent holder must prepare an annual Groundwater Monitoring Report for the year 01 July to 30 June. The report must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring by 31 August each year. The report must include:
- groundwater level elevation at all installed monitoring wells and a graph of recorded groundwater levels;
 - the results of laboratory analyses of samples taken from each monitoring well including comparison to the ANZG 95% species protection levels and graphs of key water quality indicator parameters (eg chloride, ammonia, EC, pH) over time;

- c. the maximum, minimum and average concentrations or values for each determinand detected at a concentration exceeding the laboratory detection limit, calculated from the total database of results from all samples analysed to that date;
- d. an assessment of the data to identify whether any consent conditions have been triggered or breached, or if there is any other indication of potential effects on freshwater; and
- e. a summary of any responses to monitoring or communications with Canterbury Regional Council during the year to 30 June.

The report must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring. ~~RMA Monitoring and Compliance Manager.~~

Responses to ground water monitoring

- 64. If analysis undertaken in accordance with condition 60, 61 or 62 shows that any determinand is detected above levels specified in Schedule A or B, the consent holder must immediately:
 - a. notify the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring; and
 - b. identify the current New Zealand or other relevant standard for the compound/s detected and identify the risk or potential risk to human health or the environment from the presence of the compound at the concentration detected.
- 65. If a risk assessment undertaken under condition 64(b) concludes that the concentration or value of a determinand poses an immediate risk to human health or aquatic ecosystems the consent holder shall:
 - c. immediately notify the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring; and
 - a. prepare a Remedial Action Plan that includes all practicable measures to protect human health and the environment. These measures may include:
 - i. evaluation of the source of the contaminant(s); and
 - ii. evaluation of the appropriateness of monitored natural attenuation; and/or
 - iii. removal of material that is the source of the contamination or cap the area of the fill that contains the source material; and/or
 - iv. in situ or ex situ treatment of the groundwater plume.
 - b. The Remedial Action Plan must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for accreditation within 1 month of completion of the risk assessment from condition 64(b);
 - c. Implement all necessary measures to protect human health and the environment in accordance with the accredited Remedial Action Plan.

Surface water

Baseline monitoring

- 66. A minimum of one month prior to landfill physical works commencing, the consent holder must have completed an assessment of instream biota, surface water quality, and a quantitative habitat assessment of the Woodstock Stream, and a habitat assessment of the ephemeral stream to the east of the landfill. These assessments

must be done at the sites identified in Table 2 and Drawing E2.1 (Monitoring sites for biota study and biannual water sampling). A final report of the findings of the assessments along with a monitoring program report must be provided to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for approval within three months of the first deposition of landfill waste. The assessment must take place at the sites on the Woodstock Stream listed in Table 2, and must, as a minimum, include:

- a. A quantitative habitat assessment conducted in accordance with the *Stream Habitat Assessment Protocols for wadeable rivers and streams of New Zealand* (2009); and
- b. 12 consecutive monthly water samples. These water samples must be analyzed for all of the parameters set out in condition 71 below; and
- c. Two rounds of quantitative macroinvertebrate sampling collected between 10 months and 14 months. This sampling must be conducted in accordance with the *Protocols for sampling macroinvertebrates in wadeable streams* (2001); and
- d. Two rounds of fish sampling conducted at the same time as the macroinvertebrate samples. This sampling must be conducted in accordance with the *New Zealand Freshwater Fish Sampling Protocols* (2013).

67. A minimum of one month prior to landfill physical works commencing, twelve months of continuous monitoring for pH and conductivity must have been completed at the sites identified in Table 1. The results of this monitoring must be included in the final report required under condition 66.

68. Within three months of the first deposition of landfill waste in the landfill, the Consent Holder must monitor water quality in the Woodstock Stream at or near the locations set out in Table 1 and shown on Drawing E2.1, with final sites to be provided to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring for approval. Monitoring must comprise measurement of pH and conductivity at the surface water locations set out in Table 1 and shown on Drawing E2.1:

Table 1: Continuous surface water monitoring sites.

Site	Description	Reason for monitoring	NZTM X	NZTM Y
Woodstock Stream DS1	Located ~40 metres downstream of where any discharges from the sediment retention pond (SRP) discharge enter the Woodstock Stream	Detect direct leachate discharges to the Woodstock Stream	1517729	5209785
Woodstock Stream DS2	Located ~40 metres downstream of where the ephemeral stream to the south of the landfill enters the Woodstock Stream.	Detect direct leachate discharges to the Woodstock Stream and indirect discharges from ephemeral stream to the south of the proposed landfill	1518554	5208976

69. Site Specific trigger levels for response to monitoring of surface water quality must be set by an appropriately qualified person using the following:
- pH = the mean plus or minus three standard deviations of the 12 months of continuous pH monitoring data collected in accordance with condition 67 at each of the sites in Table 2.
 - Conductivity = the mean plus three standard deviations of the twelve months of continuous conductivity monitoring data collected in accordance with condition 67 at each of the sites in Table 2.
70. The Consent Holder must submit a report to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring with the trigger levels set as of condition 69 for approval within two months of the analysis.

Operational monitoring

71. The Consent Holder must monitor for the following parameters twice a year at the locations identified in Table 2 and Drawing E2.1, to coincide with low flows during the winter groundwater level maximum (generally September) and summer groundwater minimum (generally April):
- estimate of flow
 - pH (field and laboratory)
 - conductivity (field and laboratory)
 - BOD5
 - chloride
 - potassium
 - ammoniacal nitrogen
 - nitrate nitrogen
 - total nitrogen
 - total and dissolved reactive phosphorous
 - potassium
 - total and dissolved zinc
 - total and dissolved copper
 - total and dissolved chromium
 - total and dissolved arsenic
 - total and dissolved nickel
 - total and dissolved lead
 - hardness
 - total and dissolved boron
 - suspended solids.

Sampling must be undertaken in accordance with protocols approved in writing by Canterbury Regional Council. The results of such monitoring must be interpreted by a suitably qualified expert and reported in writing to the Canterbury Regional Council as part of the Surface Water Monitoring Report required by condition 70.

Table 2: Monitoring sites for biota study and biannual water sampling

Site	Description	Reason for monitoring	NZTM X	NZTM Y
Woodstock Stream US	Located ~ 300 metres upstream of where any discharges from the SRP discharge enter the Woodstock Stream	Provide a reference site against which water quality and ecology at Woodstock Stream DS1 and Woodstock Stream DS2 can be benchmarked	1517649	5210183
Woodstock Stream DS1	Located ~40 metres downstream of where any discharges from the SRP discharge enter the Woodstock Stream	Detect effects of direct leachate discharges and SRP discharges to the Woodstock Stream	1517729	5209785
Woodstock Stream DS2	Located ~40 metres downstream of where the ephemeral stream to the south of the landfill enters the Woodstock Stream.	Detect effects of direct leachate discharges to the Woodstock Stream and indirect discharges from ephemeral stream to the south of the proposed landfill	1518554	5208976
Eastern Ephemeral Stream	Located in the middle reaches of the ephemeral stream to the east of the landfill site	Detect effects of leachate discharges	1519046	5209749

72. Sample results collected in accordance with condition 71 must be compared to the most recent version of the ANZG 95% species protection levels, which must be used as trigger levels for response.

73. The Consent Holder must monitor for the following macroinvertebrate parameters: a. taxa richness,
b. MCI,
c. QMCI,
d. %EPT taxa and
e. %EPT individuals once a year at the following locations identified in Table 2 and

Drawing E2.1

- f. Woodstock Stream US
- g. Woodstock Stream DS1, and
- h. Woodstock Stream DS2

Sampling must be undertaken in accordance with protocols approved in writing by Canterbury Regional Council. The results of such monitoring must be interpreted by a suitably qualified expert and reported in writing to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring as part of the Surface water Monitoring Report required by condition 74.

Surface water monitoring reporting

74. The Consent Holder must prepare an annual Surface water Monitoring Report for the year 01 July to 30 June. The report must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring by 31 August each year.

The report must include:

- a. the results of laboratory analyses of samples taken from monitoring site and compared to the ANZG 95% species protection levels;
- b. an assessment of the ecological and water quality data collected in accordance with conditions 68, 71 and 73 to identify whether any consent conditions have been triggered or breached, or if there is any other indication of potential effects on freshwater; and
- c. a summary of any responses to monitoring or communications with Canterbury Regional Council during the year to 30 June.

Response to surface water monitoring

75. If the trigger levels for response in conditions 62, 69 or 72 above are exceeded the consent holder must investigate the likely cause and effects of the exceedance and implement the actions defined in the Surface Water Monitoring and Response Plan (SWMRP). The Objectives and Contents of the SWMRP are detailed in Section 11 of Schedule 2 LMP and must form part of the LMP. As a minimum these actions will include:

- a. collection of a confirmatory sample from the sites at which the trigger exceedance was recorded within 24 hours of the exceedance being detected;
- b. evaluation of whether the exceedance relates to a leachate discharge;
- c. investigation into the source and pathway of any such leachate discharge;

and if the results of (a) to (c) confirm that a leachate discharge has occurred:

- d. quantitative macroinvertebrate sampling conducted in accordance with the Protocols for sampling macroinvertebrates in wadeable streams (2001) at the locations identified in condition 73 (f) to (h).
- e. fish sampling conducted in accordance with the New Zealand Freshwater Fish Sampling Protocols (2013).
- f. evaluation of the results of ecological monitoring conducted in accordance with (d) and (e) and water quality sampling conducted in accordance with condition 71 by a suitably qualified and experienced freshwater scientist to determine whether the discharge of leachate has resulted in an adverse effect on aquatic life. As a minimum this evaluation will include:
 - i. Upstream – downstream comparisons of:
 1. Native fish species presence-absence, and
 2. The macroinvertebrate metrics listed in condition 73(a) to (e), and
 3. Toxicant concentrations and exceedance frequency of the most recent version of the ANZG 95% species protection levels; and

- ii. Comparisons with the baseline data collected in accordance with condition 66; and
 - iii. Trend analysis of macroinvertebrate data collected in accordance with condition 66(c) and condition 73, and
 - iv. If necessary, a description of the additional data required to fully understand and manage the adverse effects of the leachate discharge through the Remedial Action Plan described below in condition 76.
76. If the effects assessment undertaken in accordance with condition 75 concludes that there is evidence of a leachate discharge causing any of the following adverse effects:
- i. Toxicant concentrations at the locations identified in condition 73(f) to (g) is exceeding the greater of:
 - a. The most recent version of the ANZG 95% species protection levels,
 - b. The 80th percentile of samples collected at the locations identified in Condition 73(f) to (g) prior to leachate discharge, and
 - c. The 80th percentile of samples collected at the 'Woodstock Stream US' site in Table 2 and Drawing E2.1.
 - ii. A 20% decrease in QMCI (determined through equivalence testing) at the following sites, where such a decrease was not observed prior to the leachate discharge:
 - a. Woodstock Stream US and Woodstock Stream DS1,
 - b. Woodstock Stream US and Woodstock Stream DS2, or
 - c. Woodstock Stream DS1 and Woodstock Stream DS2.
 - iii. Any other adverse effects deemed to be more than minor by the suitably qualified and experience freshwater scientist responsible for fulfilling (f) of condition 75.

The consent holder must immediately:

- iv. notify the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring; and
- v. prepare a Remedial Action Plan that includes all practicable measures to protect the environment. These measures may include:
 - a. evaluation of the source of the contaminant(s); and
 - b. removal of material that is the source of the contamination or cap the area of the fill that contains the source material; and/or
 - c. in situ or ex situ treatment of the groundwater plume.
 - d. further technical investigation of the adverse effects of the leachate discharge on aquatic life, where this is identified as necessary under Condition 75(f)(iv).
 - e. actions to offset or compensate for any residual effects that cannot be minimized or remediated through i-iv. vi. The Remedial Action Plan must be submitted to the Canterbury Regional Council, Attention: Regional Leader –Compliance Monitoring for approval within 1 month of completion of the effects assessment from condition 75.
- vii. Implement all necessary measures to protect aquatic life in accordance with the accredited Remedial Action Plan.

77. A minimum of one month prior to landfill physical works commencing, twelve months of continuous water quality monitoring for the parameters listed in condition 71 must have been completed at the surface water take from the Eyre River at 402 Trig Road. The results of this monitoring must be submitted to the Canterbury Regional Council, Attention: Regional Leader — - Compliance Monitoring and be used to establish existing water quality at the water take point.

Following deposition of landfill waste commencing:

- a. Water quality testing at this water take point must be undertaken continuously for pH and conductivity.
- b. If any leachate is detected through any of the monitoring upstream of the site a full analysis of water samples of the intake at a monthly basis must be undertaken to determine if any risk present to the water supply.
- c. If any of the monthly monitoring falls outside the monitoring range for the parameters listed in condition 71, then the response in condition 75 must be undertaken.

If the results of the water quality testing confirms water quality degradation from leachate contamination such that the quality of the water does not achieve either the baseline or the quality required for the permitted or consented purpose of the water take, whichever is the lower quality, the Consent Holder must provide an alternative supply of water of an equivalent quantity and quality to the baseline until such time that the water quality in Eyre River at the point of take meets the baseline or permitted or consented purpose of the take, whichever is the lower quality.

Conditions for 214073/214077 only (excavation and landfill)

General conditions

78. The works authorised under this consent are limited to earthworks (including quarrying) and landfill activities being the following:

- a) Site preparation activities including vegetation, topsoil and overburden stripping, removal and storage;
- b) Construction and maintenance of bunds, stockpiles and operational infrastructure;
- c) Excavation (including blasting), loading and transportation of material;
- d) Processing of aggregate by crushing and screening;
- e) Stockpiling of excavated aggregate;
- f) Deposition of landfill waste material.

at, 513 Trig Road, Woodstock Road legally described as Lot 1 DP 481768, as shown on approved plan set stamped CRC214073.

All works must be undertaken generally in accordance with the consent application documents (where applicable), including the drawings included in the Drawing Index attached to this consent except where amendments are required by conditions of these consents. In the event of differences or conflict between the measures described in the documents, and the conditions, the conditions must prevail. The activities consented to are limited to earthworks (including quarrying), landfill construction, landfill operations, landfill capping and associated works as shown on Drawings Revision 7 and described as follows:

- g) Earthworks activities including vegetation, topsoil and overburden stripping, excavation (including by blasting), loading and transportation of material, and cut to fill of material;
- h) Processing of aggregate by crushing and screening, storage of processed material, and transport of rock and processed material;
- i) Extraction of clay resources C1 and C2 shown on Drawing F7 (Rev F) Stockpiles and Fill and remediation of the extraction area;
- j) Construction and maintenance of bunds and stockpiles;
- k) Construction and maintenance of associated erosion and sediment control facilities;
- l) The stockpiling of imported construction materials;
- m) Construction and maintenance of landfill cells including construction of underdrainage, liner, and leachate drainage systems;
- n) Deposition of landfill waste material. For the purposes of this consent, landfill means material that complies with the Waste Acceptance Criteria (Schedule 1 of this consent);
- o) Landfill capping and remediation;
- p) Construction and maintenance of the Container Transfer Area and associated erosion and sediment control facilities, shown on Container Transfer/Site Facilities Drawing F1;
- q) Upgrade of existing haul roads as required by conditions of this consent.

78. The extent of the landfill area, where landfill waste is to be deposited, must not extend beyond the broken pink line shown as the Extent of the Landfill on Drawing B2 (Rev T) Remediated Surface with toe bund included in the approved plan set stamped CRC214073.

79. The extent of combined landfill activity operations as identified on the approved plans, must not extend beyond the orange line shown as Landfill Site Boundary on Drawing A7 Remediated Surface with toe bund included in the approved plan set stamped CRC214073.

Bond

80. Prior to the first exercise of this consent, the Consent Holder must enter into an enforceable written agreement acceptable to the Waimakariri District Council and Canterbury Regional Council, that provides for a bond in favour of both Councils pursuant to sections 108(2)(b) and 108A of the Resource Management Act 1991. The purpose of the bond is for the following:

- (a) Secure compliance with all the conditions of consents RC215276, CRC214073, CRC214074, CRC214075, CRC214076 and CRC214077 and enable any adverse effects on the environment resulting from the Consent Holder's activities, and not authorised by a resource consent or rule in any relevant

District or Regional Plan, to be avoided, remedied or mitigated. This will include a provision for plausible risks or events that could potentially arise and require remedial works to prevent adverse environmental effects (Compliance) including a provision for any on-site and off-site ecological enhancement or restoration to the extent that it is required in the response to the works that have occurred as part of giving effect to the consent.

- (b) Secure the completion of closure and rehabilitation in accordance with the approved Aftercare section of the Landfill Management Plan, including any future approvals, resource consents acquired and obtained to cover aftercare, including reasonable provision for early closure events and associated costs in the event of abandonment of the site (early closure):
 - (c) Ensure the performance of any monitoring obligations of the Consent Holder under this consent post closure, as well as any site aftercare obligations such as care of the landfill cap and pollution prevention infrastructure (aftercare).
81. The amount (quantum) of the bond must be adjusted over time as determined by any review conducted in accordance with condition 87, provided that at any given time the amount must be sufficient to cover the estimated cost at that time (including any contingency) of the bond components outlined in Condition 82.
82. The quantum for the components in Condition 81 shall must be determined as follows:

(d) Part 1 – Compliance

The Part 1 component of the bond must be derived based on reasonably foreseeable contingency scenarios defined in Appendix 7 (Environmental Risk Assessment Report Issue 2) of the Resource Consent application. This component of the bond must be required for as long as the landfill activity is receiving landfill waste.

The amount must include provision for the cost of monitoring, site management and regulator inputs required by the resource consents.

(e) Part 2 – Closure

The Part 2 component of the bond must be calculated by determining the likely maximum cost (including a 10% contingency) to close and secure the site at any point within a 5 year period following the review date. The Part 2 bond quantum will be derived in current day dollars. Where a risk based approach is adopted to assess potential remedial or other costs associated with the bond quantum, then costs ~~shall~~ must be assessed to the 90% confidence limit using appropriate engineering methodology.

The amount must include reasonable provision for all works necessary to close the site, including but not limited to the following:

- (i) Allowance for repair of damage associated with plausible early closure scenarios including, if applicable, repair of damage due to earthquake or extreme weather events.
- (ii) Allowance for remediation of any adverse effect on the environment that may arise from the site relating to plausible early closure scenarios.

- (iii) Allowance for the full extent of the works needed to complete final capping, revegetation, leachate and gas collection infrastructure and removal of any redundant site infrastructure.
- (iv) Allowance for any other rehabilitation work required by the sections on closure and aftercare in the Landfill Management Plan.
- (v) Allowance for the cost of monitoring, site management and regulator inputs required by the resource consents during closure works.

(c) Part 3 – Aftercare

The Part 3 component of the bond must be calculated as the Net Present Value of all aftercare costs and must be based on the cost elements as set out in the Ministry for the Environment Landfill Full Cost Accounting Guide March 2004. Aftercare costs must be assessed as series of individual cost items, appropriately assessed over the duration of the aftercare period, with the amounts to be inclusive of contingency and a reasonable allowance for capital works or capital equipment replacement. This component will be developed using commercial financial parameters appropriate at the time of the initial assessment subject to amendment by scheduled review.

- 83. The amount of the bond required by Condition 81 must be initially set on the basis of cost estimates prepared by the Consent Holder and detailed in a bond report. The bond report must be submitted to the Councils for review and approval prior to the commencement of placement of landfill waste at the site. The amount of the bond must cover costs associated with the three components defined in Condition 82.
- 84. An experienced practitioner must conduct the assessment required to prepare the bond report. The method of conducting the bond assessment must be documented in the bond report. The bond report must include all assumptions made in completing the quantitative risk assessment.
- 85. The Consent Holder's bond must be in a form agreed between the Consent Holder and Councils and must, subject to these conditions, otherwise be on terms and conditions agreed between them. The Consent Holder's bond must name the Councils as the parties able to draw on the bond. The bond must be available to the Councils regardless of whether the qualifying event for payment of the bond is the result of any deliberate or inadvertent act of the Consent Holder or its agents.
- 86. Should the Consent Holder and the Councils be unable to reach mutual agreement on the form, terms and conditions, or amount of the bond, in either the establishment of the bond in accordance with Condition 80 or for the quantum for the components set out in Condition 82 or in subsequent review of the bond or in terminating the bond, then the matter must be referred to arbitration in accordance with the provisions of the Arbitration Act 1996. Arbitration must be commenced on advice by either party that the bond is disputed, such notice to be given within 14 days of receipt by the Councils of the bond established or proposed to be established by the Consent Holder. If the parties cannot agree upon an arbitrator within 7 days of receiving advice that the bond is in dispute, then an arbitrator must be appointed by the President of Engineering New Zealand. Such arbitrator must give an award in writing within 30 days after his/her appointment, unless both parties mutually agree that time must be extended. The

parties must bear their own costs in connection with arbitration. In all other respects, the provisions of the Arbitration Act 1996 must apply. If the decision of the arbitrator is not made available by the 30th day after appointment of the arbitrator, then the bond must be fixed by the Councils, until such time as the arbitrator does make his/her decision. The Consent Holder must establish or re- establish the bond in accordance with the arbitrator's decision within 60 days after the decision.

87. The quantum of all components of the Consent Holder's bond must be reviewed every five years from the first placement of refuse at the landfill, by means of review of the bond report. If, on review, the quantum of the bond to be provided by the Consent Holder varies by more than 10% of the sum secured by the current bond, then within 60 days of the Consent Holder being given written notice by the Councils of the new amount to be secured by the bond, the Consent Holder must execute and lodge with the Councils a variation of the existing bond or a new bond for the amount fixed on review by the Councils.
88. The Consent Holder may apply to have the bond amended, discharged or reviewed at any time, in which case the Councils must advise the Consent Holder of their decision on the application within 60 days of them receiving the application. An application by the Consent Holder to amend the amount of the bond must be supported by a bond report, giving consideration to the following:
- (a) Environmental performance, including verification that groundwater and surface water are not polluted as a result of the landfill activities;
 - (b) Extent to which the planting programme has been completed;
 - (c) Degree of landfill waste stabilisation, as reflected in the results of monitoring of settlement, landfill gas and leachate; and,
 - (d) Integrity of closure works, including the landfill cap and surface water controls.
89. The bond must continue to be maintained in favour of both Councils throughout the aftercare period and must be adjusted at the periodic reviews to align with future conditions at the site following closure. Unless otherwise defined in these conditions, the aftercare period commencement date must be no earlier than the date of completion of capping of the final landfill cell, or the date of closure following abandonment prior to the final landfill cell being completed. If the landfill has been monitored and a bond report approved by both Councils affirms that there are no existing or predicted adverse environmental effects from the landfill operation, then both Councils may at their discretion discharge any remaining component(s) of the bond. The bond period may at the Councils discretion be extended beyond 30 years following site closure, if the bond report at that time indicates that the landfill continues to pose an ongoing unacceptable risk to the environment such that there is an ongoing requirement for aftercare.
90. All costs relating to the bond including the costs of the consent authorities and their technical experts must be paid by the Consent Holder, other than in relation to arbitration (see above), in which case both parties must bear their own costs.

91. The Consent Holder must supply separate Closure and Aftercare Plans within 5 years of the first deposition of landfill waste in the landfill and update the plans every 5 years. The plans must consider the surrounding environment and any changes that may have occurred over the 5 years as well as the scope outlined in schedule 2. The Plans must be reviewed by the Peer Review Panel every 5 years prior to being sent to the Councils for approval.

Site development

General conditions

92. The existing bund along the south-eastern edge of the quarry operation must be maintained at all times, except when required to be reconstructed to create the toe bund for the landfill. The bund must be constructed only of excavated aggregate, clean fill and topsoil from the site.

Construction Quality Procedures

93. The bedrock under the landfill must be inspected by a suitably qualified and experienced geologist prior to installation of the landfill liner system to identify any area of potentially high permeability. Any areas of potentially high permeability must be treated, appropriately drained and sealed as required to remedy the area to a nonpermeable state.
94. The bedrock on the landfill sidewalls must be inspected by a suitably qualified and experienced geologist prior to installation of the landfill liner system to identify any area of potential weakness or instability. Any areas of weakness or instability must be remediated in accordance with the directions of the engineering geologist.
95. Leachate drainage and liner grades must be configured such that the design maximum head of leachate on the liner is no greater than 300 millimetres over all areas of the liner apart from a sump area where the maximum head of leachate must not exceed 1.5 metres.
96. The Consent Holder must prepare a site plan showing the final leachate collection system. This plan must include, as a minimum, the compartmentalised leachate collection system, leachate sumps, sump pumps, power supply to the sump pumps, leachate riser pipes and leachate clean-out pipe locations.
97. The Consent Holder must prepare a site plan showing the final subliner drainage system. This site plan must include as a minimum:
- i. The lateral extent of the underdrainage/subliner drainage system.
 - ii. Where the subliner drainage system terminates in an inspection manhole.
 - iii. How the inspection manholes are linked prior to discharge into the common discharge network to the sedimentation ponds.
98. The Consent Holder must prepare a site plan showing the final leachate leak detection system. The site plan must include as a minimum:
- a) The lateral extent of the leachate leak detection system.
 - b) The leachate leak detection system pipework located under the Southern Toe Bund.
 - c) The pipework terminations in a leachate inspection manhole.

- d) How the leachate inspection manholes are linked prior to discharge into the Leachate Storage Facility.
99. The drainage layer beneath the landfill liner must be a minimum thickness of 100mm and comprise gravels with an average hydraulic conductivity of 1×10^{-03} m/s or more.
100. The landfill underdrainage system must be maintained and discharges from that system monitored for the life of the landfill and the aftercare period.
101. In addition to standard soil classification testing requirements for soil liners (including those in WasteMINZ, Technical Guidelines for Disposal to Land 2023 – Appendix B, B.1 Landfill liners), the loess soil to be used for a Type 1 lining system must be assessed as part of the detailed landfill design for its suitability for use as a low permeable mineral liner within the landfill liner design by:
- a. Determining through a dispersivity test what percentage of stabiliser is required to stabilise the loess and reduce its dispersivity to a non-dispersive status. The dispersivity test must be undertaken in both de-ionised water and a leachate equivalent solution;
 - b. Assessing the change, if any, in the Atterberg limits of unstabilised loess against stabilised loess. The Atterberg limits must be determined using NZS 4402:1988 Test 2.4; and
 - c. Using a triaxial cell, assessing the change, if any, in saturated hydraulic conductivity of a re-compacted stabilised sample of loess across a range of moisture contents and strains, using first de-ionised water, then a leachate equivalent solution.

If loess soils do not meet required Type 1 lining system requirements, stabilisers may be used. All stabilisers to be used must be proven not to impact the performance of the Geosynthetic Clay Layer and any other liner components.

102. A minimum of five of each of the dispersivity, Atterberg limits and saturated hydraulic conductivity tests must be undertaken on the loess to ensure representative results are obtained. The results of this testing must inform the landfill design and assessment of the suitability of stabilised loess as a component of the liner design. Stabilised loess must be assessed as not acceptable if there is an increase in hydraulic conductivity of the material caused by suspected brittle micro-fracturing. The tests must be carried out on representative samples of loess taken from areas intended to be used as liner materials. Should additional sources be identified later, then further samples, representative of those additional borrow areas, must be taken and tested.
103. If loess is identified as unsuitable for use as a mineral component of the landfill liner, alternative materials must be considered as part of the liner design. Where an alternative and remote source for the mineral liner component is required, the material must be confirmed as being suitable in accordance with the same level and type of pre-characterisation testing as required for loess under conditions 101 and 102 of this consent.
104. The detailed design of the landfill must include slope stability analysis to verify that the landfill will be stable in the short (construction/operation) and long- term (closure/post

closure). This must include geotechnical stability analysis of the proposed sub-grade arrangement for each stage based on the proposed excavation/filling arrangement.

105. The analysis must adopt all the following relevant factors of safety (FOS) adopted for landfill industry practice, with justification provided for any deviations from these values.:

<i>Design Scenario</i>	<i>Minimum FOS</i>	<i>Or Maximum Displacement Base Liner</i>	<i>Or Maximum Displacement Capping</i>
<i>Static long term</i>	<i>1.5</i>		
<i>Static short term</i>	<i>1.2</i>		
<i>Static – elevated short term leachate levels</i>	<i>1.2</i>		
<i>Static- elevated long term leachate levels</i>	<i>1.3</i>		
<i>SLS Earthquake (150 year)</i>	<i>1.0</i>	<i><0.3m</i>	<i><1.0m</i>
<i>ULS Earthquake (2500 year)</i>	<i>1.0</i>	<i><0.3m</i>	<i><2.0m</i>

106. The detailed design of the landfill must include stability analysis to verify the placement of landfill waste achieves landfill waste stability as set out in Condition 105 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 landfill waste and liner protects against a base slide failure or a potential circular slip failure through the base liner system. This must include:
- a. Veneer slope stability analysis of the proposed liner and capping arrangements for each stage.
 - b. Landfill waste stability analysis of the proposed landfill stages
107. The analysis must utilise site specific parameters where possible for the various materials, and/or publicly available material data where site-specific information is not available. Where publicly available material data is used, a verification programme must be included as part of the detailed design documentation provided to Canterbury Regional Council for review and approval to verify that the construction materials align with any assumptions made as part of the slope stability analysis.
108. As part of the detailed design, the latest seismic design standards must be adhered to. A sensitivity assessment must also be carried out for design events with a range of PGAs above and below the specific SLS and ULS events to consider and address possible uncertainties associated with seismic parameters and related performance of the landfill.

Lining system

109. Prior to the commencement of landfill activities in an active operations area, the area subject to landfill activities must be constructed and lined in accordance with Drawings C1 to C5 and in accordance with the following requirements:

- The lining system must be installed to the relevant GRI standards with Quality Assurance (QA) overseen by a party independent from the lining installer, contractor, or landfill operator. The purpose of the QA process is to provide reliability that the lining system has been installed to landfill industry accepted standards.
- The construction specification must specify the standards to be achieved and the quality control testing required by the contractor to demonstrate compliance with the specification. The QA process comprises an oversight of the testing undertaken by the contractor, continuous observation of lining system placement and testing, and a review of all quality control documentation produced by the supplier and contractor.
- Items that are observed and reviewed as part of the QA process must include:
 - All specified manufacturing QA documentation and independent laboratory testing of the geosynthetic materials supplied by the manufacturer;
 - All compaction testing associated with installing the cohesive soil liner (strength, density, moisture content, air voids);
 - Permeability testing of the placed cohesive soil layer by an independent accredited laboratory;
 - Thickness of the compacted cohesive soil layer;
 - Approval of the cohesive soil surface for placing any geosynthetic lining components;
 - Approval of the geosynthetic liner placement methodology and panel layout;
 - Observation of placing, welding, and testing of geosynthetic lining components to include:
 - a) Shear and peel testing of test weld samples at the commencement of each day and when weather conditions change;
 - b) Shear and peel testing of destructive test samples;
 - c) Air pressure testing of all dual track fusion welds;
 - d) Vacuum box or spark testing of all extrusion welds;
 - e) Visual inspection of the completed surface;
 - Review of all construction records;
 - Fulltime or alternative by GPS limited controlled machines or equivalents.
- On completion of the construction of the liner system, a report must be prepared to include all the test results, a description of the observations undertaken and

certification that the lining system has been installed in accordance with the specifications. This report must be submitted to the Peer Review Panel (PRP) who would make recommendations to Canterbury Regional Council, prior to any landfill waste being placed in that cell.

Review and completion of works.

110. At least 3 months prior to commencing construction of the landfill lining system, the Consent Holder must prepare, for the review of the PRP and for approval by Canterbury Regional Council, a Landfill Liner Quality Plan (LLQP) for construction of the lining system. The LLQP must set out how the Consent Holder will verify that the constructed lining system meets the specified requirements. It must also set out any reporting requirements. The PRP must provide their recommendation for Canterbury Regional Council to certify the LLQP. All work must be carried out in accordance with the certified LLQP. The Objectives and Content of the LLQP are detailed in Section 3 of Schedule 2 LMP and must form part of the LMP.
111. The PRP must:
 - a) As far as practicable notify Canterbury Regional Council and Waimakariri District Council in writing 2 weeks prior to all site inspections and meetings with the Consent Holder.
 - b) Copy Canterbury Regional Council and Waimakariri District Council into all communication.
 - c) Annually prior to undertaking its functions, consult with the Consent Holder, Canterbury Regional Council and Waimakariri District Council on areas to focus on.
 - d) Provide all reports including drafts simultaneously to the Consent Holder, Canterbury Regional Council and Waimakariri District Council.

Site Elevation Survey

112. Prior to undertaking quarry activities associated with landfill activities, the consent holder must establish a surveyed datum point at natural ground level in an area that will not be excavated by a licensed survey practitioner. This point must thereafter be used to determine the depth of excavation at any point within the site.
113. Prior to the removal of overburden, the consent holder must survey the site to determine elevations of the natural ground level of the site relative to Mean Sea Level.
114. The survey must be undertaken by a registered surveyor to an accuracy of +/- 200 millimetres vertically and be provided to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring.
115. Once aggregate excavation has commenced the consent holder must undertake, at six monthly intervals or otherwise on request from the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring, a laser level survey of all depths of excavated and filled areas on the site. The survey must be provided to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring. The survey is not required if there has been no excavation or deposition of landfill in the preceding six-month period. Alternative methods for achieving this condition, such

as GPS depth technology on excavation machinery may be used subject to approval in writing from the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring.

Lining system

116. The landfill liner must be designed and installed in accordance with Drawing C5, or an equivalent design as certified by the Peer Review Panel and approved by the Canterbury Regional Council. Subject to achieving accepted industry and professional design standards, as confirmed by the Peer Review Panel, the liner must, as a minimum, include the following components:
- Separation geotextile
 - Leachate drainage layer
 - Protection geotextile
 - 1.5 mm HDPE (textured both sides)
 - Geosynthetic clay liner (GCL)
 - Sand
 - Separation geotextile
 - Leak detection layer
 - Protection geotextile
 - 1.5 mm HDPE (textured both sides)
 - Geosynthetic clay liner (GCL);
 - Compacted clay
 - Compacted fill
 - Underdrainage

Landfill Operation

General conditions

117. Accepted material must be recorded in a digital database, with the database record being provided to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring upon request, and including as a minimum the following information:
- a. The time and date of delivery at the weighbridge;
 - b. The name of the landfill waste generator;
 - c. The name of the landfill waste hauler;
 - d. The details of the landfill waste haulers vehicle;
 - e. The unique identifier of each container;
 - f. The details of the Waste Permit under which the waste has been approved for disposal;
 - g. The unique identifier of the manifest for each container;
 - h. The weight of the delivered material;
 - i. The date and time of deposition at the landfill face;
 - j. The GPS co-ordinates of the location where the material was deposited on site.

118. The consent holder must have a digital camera system that can verify the time and date of each container as the container either enters or leaves the landfill waste deposition area.
119. Each Waste Permit must include, as a minimum, the following information:
- a. The unique Waste Permit identifier
 - b. The date of issue of the Waste Permit
 - c. The name of the landfill waste generator
 - d. The name of the landfill waste generator's contact person
 - e. The telephone number and email address of the landfill waste generator's contact person
 - f. The address of the site that the landfill waste is being generated from
 - g. The name of the owner of the site where the landfill waste is being generated from
 - h. A description of the landfill waste material
 - i. Any laboratory reports pertaining to the composition of the landfill waste material
 - j. Any authorisation under which the material was removed from the source site (e.g. resource consent)
 - k. Any sampling or other auditing conditions
 - l. The name and signature of the person assessing and determining whether the material was acceptable.
120. Water used for container or landfill face access vehicle washdown, must be treated as leachate, with appropriate storage and re-use within the landfill or disposal off-site to an approved facility.
121. A wheel wash for the landfill waste mule trucks must be installed at the entry/exit point of the current operational waste cell and appropriately utilized to avoid distribution of waste containment material.
122. Landfill waste must only be discharged onto, or into, land on those areas of the site identified as the Landfill Footprint as shown on the application plans.
123. The Quarry and Landfill Manager (the site manager), or another nominated person, must be available at all times (including outside site operation hours) to respond to complaints and issues related to quarry and landfill operations at the site.
124. The maximum area of the landfill working face must not be greater than 900m² until such time that proven management capability is in place. Following written agreement from Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring that competent landfill working face management is in place, the landfill working face may be increased to a maximum of 1500m².

Landfill Annual Report

125. The Consent Holder must prepare a Landfill Annual Report for the period of 1 July to 30 June each year, and provide this to the Canterbury Regional Council, Attention:

Regional Leader - Compliance Monitoring–The Annual Report must be provided by 31 August each year and must include but not be limited to:

- a. a summary of quarry and landfill operations for the year including material amounts; and
- b. information demonstrating compliance with any other operational limits or restrictions required by current resource consents CRC214073, CRC214074, CRC214075, CRC214076, CRC214077; and
- c. information demonstrating that the WAC maximum putrescible material content has been complied with; and
- d. the results of under-drainage discharge monitoring and actions taken where an exceedance is recorded.

Hours of operation

126. The operation for the consented activity must not be undertaken on Public Holidays and must be limited to the following hours:

Transport Operations Beyond the Boundary of the Site.

- Between the hours of 7am and 6pm (Monday to Thursday)
- Between the hours of 7am and 5pm (Friday)
- Between the hours of 7am and 11am (Saturday)

Earthworks and Landfill operations

- Between the hours of 6am and 8pm (Monday to Friday)
- Between the hours of 7am and 12pm (Saturday).

Waste Placement

127. The operation of the landfill must be completed in 'cells' of a maximum 50 metres width and 350 metres length and 10 metres height. At the end of each day the working face of the deposited material must be temporarily capped with:

- clean fill; or
- soil cover to a minimum depth of 150 millimetres; or
- an alternative cover that performs to an equivalent or higher standard to a 150 millimetres soil cover, at the end of each working day.

128. The first 3 metres of landfill waste, located on top of the leachate drainage layer, must be materials of significant permeability such as fine demolition rubble. This 3 metre zone must not have long lengths of steel or timber, nor contain landfill waste that has sharp edges. Sludges, fine grained materials other than the liner protection layer, special wastes, or landfill wastes with the potential to affect the physical or chemical integrity of the liner including potentially combustible material, must not be placed within 3 metres of the liner and/or leachate drainage layer.

129. If topsoil is imported to the site, for temporary stockpiling and use in the landfill capping layer at a later date, or imported to the site for direct use in the final capping layer, it must be tested for the parameters:

- a. Heavy metals (HM): Arsenic, Cadmium, Chromium (total), Copper, Lead,

- Nickel, Zinc and Mercury
- b. Polycyclic Aromatic Hydrocarbons (PAH)
- c. Organochlorine Pesticides (OCP)
- d. Asbestos (semi-qualitative analysis)

at a rate of 1 test per 100m³ of incoming material by an IANZ certified laboratory.

130. Asbestos-contaminated material must be only accepted for deposition at the site if it is:
 - a. Composed of soil or building material fragments and does not include bulk asbestos materials; and
 - b. Double wrapped in polyethylene material to avoid, as far as practicable, the egress of any material ; and
 - c. Accompanied by a description of the form and friability of the material.
131. Rejected material must be retained in the truck/container and removed from the site for and disposal of at another site licensed to receive it within 48 hours of its arrival.
132. If the consent holder becomes aware that material which does not meet the waste acceptance criteria has been deposited, the consent holder must:
 - a. Ensure the area is marked and closed off immediately;
 - b. Engage a Suitably Qualified and Experienced Contaminated Land Practitioner to advise on the appropriate disposal location;
 - c. Remove the material from the site within 5 working days; and
 - d. Provide a report to the Canterbury Regional Council, Attention: Regional Leader- – Compliance Monitoring on how the incident occurred, where the material has been disposed of, validation sampling results and procedures to be implemented to prevent recurrence.

Cover

133. When completed, each cell must be capped. The capping must be placed with a minimum gradient of 1V:20H and a maximum gradient of 1V:3H and must be contoured to avoid flow concentration of precipitation. The minimum standard for the temporary capping must be:
 - a. 150mm growth layer
 - b. 600mm compacted soil ($k < 1 \times 10^{-7}$ m/s)
134. The Consent Holder may construct an alternative temporary capping design that is at least the equivalent of the minimum standard above, however, the temporary capping layer must not include materials with a high (more than 50%) clay content.
135. Daily Cover, Thickened Daily Cover, and Intermediate Cover must be used in accordance with the following guidelines:
 - a. Daily Cover (DC): 150 mm thick soil, placed in one single layer, use DC on site up to one month, maximum allowable area: 5,000 m².

- b. Thickened Daily Cover (TDC): 300 mm thick soil, placed in two layers, use TDC on site up to 3 months, maximum allowable area: 20,000 m².
 - c. Intermediate Cover (IC): 600 mm thick low permeability soil, placed in four layers, use IC on site up to 5 years, no maximum allowable area.

- 136. The Consent Holder must take all practicable measures to prevent leaks and avoid spills of fuel or any other hazardous substances and must prepare a Hazardous Substances Management Plan (HSMP) at least one month prior to the commencement of the first construction stage. The Objectives and Content of the HSMP are detailed in Section 14 of Schedule 2 LMP and must form part of the LMP. The HSMP must include, but not limited to, the following measures:
 - a. No refuelling or maintenance of vehicles or machinery can occur on the quarry pit floor, with the exception of the mobile plant;
 - b. No storage of fuels or lubricants for vehicles and machinery within the quarry pit;
 - c. Appropriate servicing and maintenance of vehicles and machinery such that they do not result in leaks or spills;
 - d. Keeping a spill kit capable of absorbing all fuel and oil products on site and available at all times; and
 - e. Training all staff involved in the refuelling or maintenance activities in the use of spill kits.

- 137. In the event of a spill of fuel or any other hazardous substance, the consent holder shall:
 - c. Clean up the spill as soon as practicable and take measures taken to prevent a reoccurrence;
 - d. Inform the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring within 24 hours of a spill event exceeding one hundred litres and provide the following information:
 - i. The date, time, location and estimated volume of the spill;
 - ii. The cause of the spill;
 - iii. The type of hazardous substance(s) spilled;
 - iv. Clean up actions undertaken; Details of the steps taken to control and remediate the effects of the spill on the receiving environment;
 - v. An assessment of any potential effects on the environment of the spill; and
 - vi. Measures to be undertaken to prevent a reoccurrence of the spill. The Consent Holder must maintain a record of all spills on site and provide this to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring-by 31 August of each year or on request.

Waste acceptance criteria

- 138. Waste accepted at the landfill must only be as set out in the Waste Acceptance Criteria attached as Schedule 1 to this consent.

Waste acceptance procedure

139. The procedure to issue a Special Waste Permit in accordance with the Waste Acceptance Criteria must ensure that for material containing soil:

- i. A detailed site investigation report, preliminary site investigation report or landfill waste characterisation report, as appropriate, prepared by a Suitably Qualified and Experienced Contaminated Land Practitioner (SQEP), is provided;
- ii. An SQEP has certified that the samples have been tested for relevant determinands;
- iii. Soil sample data for each source area within the site is provided at a minimum sampling rate of one sample per 100m³ of soil, with a minimum of three samples per source area.

Advice note: *Source area means an identified part of a site expected to have a particular contaminant profile, which has been characterised by a Suitably Qualified and Experienced Practitioner.*

Quarry operation

140. The maximum rates of material handling at the site must be:

- a. 375,000m³ per year of aggregate excavation;
- b. 200,000m³ per year of aggregate processing; and
- c. 250,000 tonnes per year of landfill waste.

Except that in the first 24 months following commencement of physical works of this consent up to 1,000,000m³ of earthworks can be undertaken in the first 12 month period and 500,000m³ in the second twelve month period as required to develop the landfill and associated infrastructure.

141. The total area of land in use at any time for excavation, processing, stockpiles, fill deposition, and site restoration must not exceed the area shown as a dashed orange line on Drawing B6 Landfill site boundary.

142. The maximum quantity of aggregate material stored within the site at any time must be 375,000m³, except that during the first two years following commencement of physical works a maximum of 500,000m³ of aggregate material may be stored within the site.

143. Stockpiles must:

- a. be only of aggregate excavated from the quarry, unsaleable material from the site or construction materials required for use in the landfill; and
- b. not be located on or within 50 metres of land that is being or has been filled with landfill waste.

144. There must be no quarrying within 50 metres of land that is being or has been filled with landfill waste.

Conditions for 214075 only (Discharge stormwater and water)

General conditions

145. The discharges must be only from quarry and landfill activities, including:

- a. Site preparation activities including vegetation, topsoil and overburden stripping, removal and storage;
- b. Construction and maintenance of bunds and stockpiles;
- c. Excavation (including blasting), loading and transportation of material;
- d. Processing of aggregate by crushing and screening;
- e. Stockpiling of excavated aggregate;
- f. Deposition of fill material; and
- g. Site management including the deposition of material and soil, site contouring, capping and revegetation.

at 513 Trig Road, Woodstock, legally described as Lot 1 DP 481768, as shown on drawings referred to in the Drawing Index and stamped CRC214073.

146. Prior to construction the consent holder must undertake the following:

- a. retain an appropriately qualified and experienced person to complete the final detailed stormwater design for the landfill.
- b. submit to the Peer Review Panel a stormwater design report which includes details and plans showing the various components of the stormwater management system, including but not limited to the stormwater pond and forebay shown on the concept drawings accompanying the application.

The Peer Review Panel must confirm the design is in accordance with Canterbury Regional Council Erosion & Sediment Control Toolbox to Canterbury Regional Council for approval at least one month prior to construction of the stormwater management system. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region will be utilised. Site stormwater must be managed in accordance with the certified stormwater design report.

147. The Consent Holder must construct and maintain appropriate stormwater management measures, including drains and sediment traps for the interception and treatment of stormwater run-off from the works. These measures must remain in place over the duration of the construction period and for a period following construction to allow suitable cover of vegetation to establish on restored areas.

Advice note:

For the purpose of this consent stormwater means

Surface water runoff that has come in contact with refuse ~~shall~~ not be discharged as stormwater and shall be considered leachate.

- Surface runoff from the following areas is classified as stormwater:
- natural undisturbed catchment areas;
- Intermediate cap areas, and
- permanent cap areas that are uncontaminated by leachate and refuse subject to the following:

Stormwater from capped landfill areas may not be considered as stormwater until the following steps have been undertaken:

- a. Final Capping has been completed in accordance with the accepted landfill stage design;
- b. All bare surfaces have been re-vegetated, (minimum grass seeding has taken place).

Site Development

Sediment ponds

148. Sediment ponds designed in accordance with the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury must be constructed within or immediately adjacent to the Container Transfer Area and for the quarry/landfill in the location shown as sediment control ponds on Drawing B1. Stormwater run-off must be collected and treated in these sediment ponds prior to discharge. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region must be utilised.
149. The sediment ponds must be designed to manage a 10 percent AEP design flood, with provision to pass a 1 percent AEP design flood. The sediment ponds must be designed in accordance with the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury. Where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region will be utilised.

Landfill operation

Underdrainage discharges

150. Intercepted groundwater under-drainage flows must be captured and discharged to the surface water drainage system and routed through the sediment control ponds.
151. The Consent Holder must measure and record the volume of groundwater discharged from the under-drainage system. The volume of groundwater discharged via the under drainage system per month must be reported in writing and accompanied by a time trend curve to the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring in the Landfill Annual Report.

152. The Consent Holder must install a monitoring system for the discharge from the under drainage system for each landfill cell prior to it mixing with any other under drainage discharges or water and monitor these discharges separately and continuously with a minimum 15 minute logging frequency at each monitoring point. The combined outflow from the underdrainage system must be monitored continuously via a pH and conductivity probe with a minimum 15 minute logging frequency. Monitoring must for the following parameters:
- a. pH
 - b. Conductivity
153. The consent holder must continuously monitor discharges from the sediment pond outlet. Monitoring must for the following parameters:
- c. pH
 - d. Conductivity
154. Trigger levels to indicate potential leachate contamination of the underdrainage system must be determined from baseline water chemistry parameters derived from an analysis of the test results from the groundwater monitoring bores as detailed in Conditions 54 and 55 of this consent and shown on Drawing E2.2. Trigger levels for response to monitoring of underdrainage quality must be set by an appropriately qualified person using the following:
- c. pH = the mean plus or minus three standard deviations of pH data from at least twelve months of monitoring.
 - d. Conductivity = the mean plus three standard deviations of conductivity data from at least twelve months of monitoring.
155. The Consent Holder must provide time trend plots of all the data required under condition 154 of this consent.
156. The Consent Holder must submit a report to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring with the recommended trigger levels set in accordance with condition 154 for approval before the deposition of landfill waste. The trigger levels may be reviewed after six months from the deposition date and again after 2 years from the deposition date. If a review recommends amendments to the trigger levels the Consent Holder must submit a report to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring with the proposed new trigger levels for approval.
157. The Consent Holder must take samples of the underdrainage at least 4 times per year which must be analysed for the following determinands:
- Bicarbonate
 - Dissolved iron
 - Calcium
 - Lead
 - Chloride
 - Manganese
 - Total hardness
 - Mercury
 - Total alkalinity
 - Nickel Dissolved

Reactive Phosphorus
 Nitrate
 Ammonia
 Potassium
 Aluminium
 Sodium
 Arsenic
 Sulphate
 Cadmium
 Total Petroleum Hydrocarbons
 Chromium
 Zinc
 Copper

158. The consent holder must prepare an annual Underdrainage Monitoring Report for the year 01 July to 30 June. The report must be submitted to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring by 31 August each year. The report must include:
- a. the results of laboratory analyses of samples taken from the underdrainage system
 - b. an assessment of the data to identify whether there is any indication of potential effects on underdrainage discharges:
 - c. a summary of any responses to monitoring or communications with Canterbury Regional Council during the year to 30 June.

Leachate discharges

159. The Consent Holder must undertake six monthly sampling and testing for the following within the leachate:
- Bicarbonate
 Dissolved iron
 Calcium
 Lead
 Chloride
 Manganese
 Total hardness
 Mercury
 Total alkalinity
 Nickel Dissolved
 Reactive Phosphorus
 Nitrate
 Ammonia
 Potassium
 Aluminium
 Sodium
 Arsenic
 Sulphate
 Cadmium
 Total Petroleum Hydrocarbons
 Chromium
 Zinc
 - PFAS

and provide a copy of the test results to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring within 14 days of the test results being produced.

160. The Consent Holder must provide a summary of testing undertaken within condition 159 in the Landfill Annual Report.
161. The monitoring system must be fitted with an alarm to indicate when the trigger levels for pH and conductivity have been exceeded at the outlet of the underdrainage system.
162. Leachate discharged from the leachate management system installed above the landfill upper/primary liner and from the leak detection layer must be collected and stored in tanks located adjacent to the quarry and landfill. The leachate collected may be used to dampen landfill waste deposited in the landfill. The Consent Holder must prepare and maintain a Leachate Management Plan (LMP) at least two months prior to deposition of landfill waste. The Objectives and Content of the LMP are detailed in Section 12 of Schedule 2 LMP and must form part of the LMP.
163. The quantity of leachate produced from the landfill must be measured and recorded. The results must be included in the Landfill Annual Report.
164. The following actions must be carried out if leachate is detected in the leak detection layer discharge:
 - a. At 180 litres per hectare per day (lphd) the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring must be notified.
 - b. At 500lphd investigations must be commenced to identify the location of the leak and the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring notified.
 - c. At 1000lphd landfill waste deposition must cease in the cell within which the leak has been detected in accordance with b. Landfill waste deposition in the identified cell must not begin again until repairs are completed and the leachate discharge rate from the affected cell reduces to below 180lphd.
165. Sufficient leachate storage to hold a minimum of 10 days of leachate generation must be provided at all times. The leachate pond must be constructed to the following minimum standards:
 - i. The Leachate Pond must have a minimum storage volume of 1000m³.
 - ii. The normal operating volume of the Leachate Pond must be 250m³ and the maximum volume of the stored leachate must be no more than 500m³.
 - iii. The leachate pond must have a 500m³contingency storage volume at all times.
 - iv. There must be a minimum of seven leachate sumps situated at the locations shown on Drawing B8.
 - v. Each of the seven leachate sumps must have a minimum storage volume of 225m³ and a minimum depth of 1.5 metres.
 - vi. Each of the seven leachate sumps shall have a 60m³contingency storage volume.
166. The consent holder must monitor the operating volume at the Leachate Storage Facility on a daily basis. Monitoring results must be reported to the Canterbury Regional

Council, Attention: Regional Leader - Compliance Monitoring on a monthly basis. If the leachate operating volume indicates that there is less than 10 days storage as required by condition 165, the reporting frequency must be increased to daily, until the 10-day storage volume has been met for five consecutive days.

167. The Consent Holder must monitor the level of leachate in all landfill cells daily at the leachate sump. Monitoring results must be reported to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring on a monthly basis. If the leachate level exceeds 300 mm above the liner surface for more than five days, the reporting frequency must be increased to daily, until the leachate level returns below the 300 mm above the liner surface level for five consecutive days.
168. The Consent Holder must ensure that a fully functional and appropriately sized standby leachate pump and riser is available at all times to enable removal of leachate from the landfill should there be a malfunction of the main pump and riser for each cell. The consent holder must provide evidence that the standby leachate riser and pump is available in accordance with this condition to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring at all reasonable times.
169. The Consent Holder must ensure that a fully functional and appropriately sized backup power supply is available at all times to enable removal of leachate from the landfill should there be a malfunction of the main power supply. The consent holder must provide evidence that the backup power supply is available in accordance with this condition to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring at all reasonable times.
170. The consent holder must always maintain the leachate collection pipes in a free-flowing condition. To this end, leachate pipe blockage monitoring must be undertaken every 5 years and the result of monitoring reported to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring within the annual report. If the monitoring demonstrates that the leachate collection pipes are not free flowing flushing will be undertaken and reported to the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring within the annual report.
171. If the quantity of leachate produced is likely to exceed the on-site storage capacity the consent holder must remove the excess quantity to an approved treatment facility. The Consent Holder must notify the Canterbury Regional Council, Attention: Regional Leader - Compliance Monitoring prior to removal of leachate from the site. Written evidence that any leachate removed has been disposed of to an approved facility must be provided to the Canterbury Regional Council, Attention: RMA Monitoring and Compliance Manager within 7 days of disposal.

Advice note:

The Consent Holder is advised that confirmation of the ability to accept the leachate from an approved facility for discharge should be sought as soon as possible to ensure a viable disposal option is identified.

Response to leachate discharge detection

172. If the trigger levels agreed as of condition 154 are exceeded, the Consent Holder must investigate the likely cause of the exceedance. The outcome of the investigation must be included in the Landfill Annual Report.

173. If landfill leachate is considered a likely cause of the exceedance, the Consent Holder must immediately take a grab sample of the under-drainage discharge and analyse this sample for the parameters listed below:
- a. Bicarbonate
 - b. Dissolved iron
 - c. Calcium
 - d. Lead
 - e. Chloride
 - f. Manganese
 - g. Total hardness
 - h. Mercury
 - i. Total alkalinity
 - j. Nickel Dissolved
 - k. Reactive Phosphorus
 - l. Nitrate
 - m. Ammonia
 - n. Potassium
 - o. Aluminium
 - p. Sodium
 - q. Arsenic
 - r. Sulphate
 - s. Cadmium
 - t. Total Petroleum Hydrocarbons
 - u. Chromium
 - v. Zinc
174. Sampling must be undertaken in accordance with protocols approved in writing by the Canterbury Regional Council.
175. If the results of the grab sample analysis confirms the presence of leachate contamination, then the Consent Holder must immediately report to the Canterbury Regional Council on action taken and further actions to address leachate contamination.
176. The results of the grab sample analysis must be reported to the Canterbury Regional Council within two weeks of sampling, unless otherwise agreed in writing by Canterbury Regional Council.
177. If monitoring of the discharge system indicates leachate contamination, then the Consent Holder must take immediate steps to prevent further leachate contamination. The Consent Holder must immediately report to Canterbury Regional Council on actions taken and further actions proposed to address leachate contamination.
178. The sedimentation pond must be configured such that in the case of contamination being detected at the outlet, the outflow can be stopped for situations which do not result in flow over the spillway and must include provision for pumping to enable contaminated stormwater to be recirculated to the Landfill, diverted to an approved offsite leachate facility, or diverted to the leachate system for treatment as leachate.

Erosion and sediment control

179. The concentration of total suspended solids in the discharge from the quarry/landfill sediment ponds must not exceed 100g/m³ except when the background total

suspended solids in the Woodstock Stream is greater than 100g/m³ in which case the visual clarity standards in attached Table S5A must apply.

180. The concentration of total suspended solids in the discharge from the Container Transfer sediment pond must not exceed 100g/m³.
181. There must be no discharge to surface water that results in any of the following effects:
 - a. the production of any conspicuous oil or grease film, scums or foams or floatable or suspended material;
 - b. any conspicuous change in colour or visual clarity;
 - c. the rendering of freshwater unsuitable for consumption by farm animals;
 - d. any significant adverse effect on aquatic life in Woodstock Stream downstream of the discharge point.
182. Unless otherwise agreed to in writing by the Canterbury Regional Council, monitoring for TSS must be undertaken in accordance with the steps below:
 - a. The Consent Holder must take samples at the following locations four times per year:
 - i. the monitoring site identified in Table 2 and Drawing E2.1 as Woodstock Stream US; and
 - ii. the outlets of the quarry/landfill sediment ponds (including the Container Transfer sediment pond).
 - b. Samples must be taken:
 - i. No less than two months apart; and
 - ii. Within 12 hours of a rainfall event that results in a discharge from the quarry/landfill sediment ponds.
 - c. If the TSS concentrations in conditions 179 and 180 are exceeded, the Consent Holder must notify the Canterbury Regional Council as soon as practicable but within 48 hrs that the exceedance has occurred, including the following (if relevant):
 - i. Investigations that are being and/or will be undertaken on site to identify the cause of the exceedance;
 - ii. Remedial actions that have been and/or will be undertaken on site to reduce the likelihood of a recurrence of the exceedance; and
 - iii. Time frames for undertaking any identified remedial actions (shortterm and long term).

Table S5A

Water quality class	DOC*	Temperature	pH	Visual clarity	Colour	DIN*	DRP*	<i>E. coli</i> *	Toxicants
	Change shall be less than (mg/l)	Average change shall not exceed (°C)	Shall be between (no units)	% change shall not exceed	% change shall not exceed (Munsell units)	Shall be less than (mg/l)	Shall be less than (mg/l)	95% of samples shall be less than [<i>E. coli</i> * per 100 ml]	Shall not exceed the concentration specified in Table s5B for the relevant level of protection (see note below)
Rivers and artificial watercourses									
Alpine-upland	2.0	2.0	6.5 – 8.5	20	5	0.08	0.005	260	99%
Alpine-lower						0.18	0.007	550	95%
Hill-fed – upland						0.21	0.006	260	99%
Hill-fed – lower				20	5	0.47	0.006		95%
Hill-fed – lower – urban						0.47	0.006	550	90%
Lake-fed				20	5	0.21	0.003	260	99%
Banks Peninsula				35	10	0.09	0.025	550	99%
Spring-fed - upland				20	5	0.10	0.007	260	99%
Spring-fed - lower basin				35	10	0.47	0.010	550	95%
Spring-fed - plains				35	10	1.50	0.016	550	95%
Spring-fed - plains - urban				20	5	1.50	0.016	550	90%
Lakes									TN*
Large high country lakes	2.0	2.0	6.5 - 8.5	20	5	0.073	0.004	260	99%
Small to medium high country lakes						0.16	0.009	260	99%
Coastal lakes and lagoons						0.340	0.020	550	95%
Artificial – on-river						0.016	0.009	260	99%
Artificial – other						0.340	0.020	260	95%

Key to Abbreviations

DOC = Dissolved organic carbon
DIN = Dissolved inorganic nitrogen
TN = Total nitrogen
DRP = Dissolved reactive phosphorus
TP = Total phosphorus
E. coli = *Escherichia coli*

Schedule 1: Waste Acceptance criteria

Schedule 2: Management Plan objectives and content frameworks

Schedule 3: Peer Review Panel responsibilities

Woodstock Quarry Limited: Consolidated Proposed conditions

CRC214076 Discharge contaminants from an industrial and trade premise into air

Advice Note: The activities at the site are also subject to the following resource consents or changes to them:

CRC214073

CRC214074

CRC214075

CRC214077

RC215276

RC185244

General

1. The discharges must be only from earthworks (including quarrying) and landfill activities, including:
 - a. Site preparation activities including vegetation, topsoil and overburden stripping, removal and storage;
 - b. Construction and maintenance of bunds, stockpiles and operational infrastructure;
 - c. Excavation (including blasting), loading and transportation of material;
 - d. Processing of aggregate by crushing and screening;
 - e. Stockpiling of excavated aggregate;
 - f. Deposition of landfill waste material;
 - g. Site management including the deposition of material and soil, site contouring, capping and revegetation; and
 - h. The movement of vehicles associated with the above activities.

at 513 Trig Road, Woodstock, legally described as Lot 1 DP 481768, as shown on drawings referred to in the Drawing Index and stamped CRC214073, CRC214074, CRC214075, CRC214076 and CRC214077.

Duration

2. The term of this Consent must be 35 years from the date of its commencement.

Lapse

3. The lapsing date for the purposes of section 125 of the Resource Management Act 1991 must be (date) (5 years from commencement).

Review

4. The Canterbury Regional Council may annually, on the last working day of May or November, serve notice of its intention to review the conditions of this consent for the purposes of;

- a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which is appropriate to deal with at a later stage; or
- b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

Preconstruction

- 5. Prior to commencement of physical works described in Condition (1), all personnel working on the site must be made aware of, and have access to, the following:
 - a) The contents of this resource consent document and all associated documents;
 - b) Resource Consents CRC214074 CRC214075 CRC214076, CRC214077 and RC215276 (Waimakariri District Council Consent) and all associated documents, including the Landfill Management Plan with specific regard to the Erosion and Sediment Control Plan (ESCP), Landfill Closure Plan, Air Quality Management Plan and Dust Management Plan

Limits

- 6. The discharges into air must not cause noxious, dangerous, offensive or objectionable odour or particulate matter effects beyond the boundary of the site.
- 7. There must be no discharge into air beyond the boundary of the site of any hazardous air pollutant, caused by discharges from the site, which is present at a concentration that is, or is likely to be, detrimental to human health or the environment.
- 8. The Quarry and Landfill Manager (the site manager), or another nominated person, must be available at all times (including outside site operation hours) to respond to complaints and issues related to quarry and landfill operations at the site.
- 9. The maximum rates of material handling at the site must be no greater than:
 - a. 375,000m³ per year of aggregate excavation;
 - b. 200,000m³ per year of aggregate processing; and
 - c. 250,000 tonnes per year of landfill waste.

Except that in the first 24 months following commencement of physical works up to 1,000,000m³ of earthworks can be undertaken in the first 12 month period and 500,000m³ in the second twelve month period as required to develop the landfill and associated infrastructure.

- 10. The total area of land in use at any time for excavation, processing, stockpiles, fill deposition, and site restoration prior to installation of the Landfill Cap must not exceed the area shown on Drawing F7 (Rev G).
- 11. The maximum quantity of aggregate material stored at the site at any time must be 375,000m³, except that during the first two years following commencement of physical works a maximum of 500,000m³ of aggregate material may be stored within the site.
- 12. Stockpiles must:

- a. be only of aggregate excavated from the quarry, unsaleable material from the site or construction materials required for use in the landfill;
- b. not be located on or within 50 metres of land that is being or has been filled with landfill waste;

Operations

13. At the end of each day the working face of the landfill deposited material must be temporarily capped with:

- clean fill of a minimum depth of 150 millimetres; or
- soil cover to a minimum depth of 150 millimetres; or
- an alternative cover that performs to an equivalent or higher standard to a 150 millimetres soil cover, at the end of each working day.

Alternative daily cover materials may be used in lieu of the cover(s) specified, with the approval in writing from the Canterbury Regional Council. No refuse must remain exposed overnight.

14. Asbestos-contaminated material must be only accepted for deposition at the site if it is:

- a. Composed of soil or building material fragments and does not include bulk asbestos materials; and
- b. Double wrapped in polyethylene material to avoid, as far as practicable, the egress of any material; and
- c. Accompanied by a description of the form and friability of the material.

15. The consent holder must take all practicable measures to minimise the discharge of dust from quarry and landfill activities, including but not limited to:

- a. Using water while crushing and screening at all times and where required for all other activities on site for dust suppression to ensure compliance with this resource consent
- b. Assessing weather and ground conditions (wind and dryness) at the start of each day and ensuring that adequate dust mitigation measures, including water needed for the purpose of dust suppression are available for use prior to the commencement of quarry and landfill activities;
- c. Grassing and vegetating bunds and bare areas, except for internal roads and operational areas, as soon as practicable;
- d. Imposing a speed restriction on all vehicles on the site of 15 kilometres per hour at all times and clearly signposting this limit;
- e. Minimising drop heights when loading and unloading trucks, conveyor hoppers and when moving material;
- f. Constructing and maintaining unsealed internal roads, access ways and yard areas so that the surfaces are comprised of an aggregate base, and are maintained to minimise potholes and exposed fine material;
- g. Undertaking routine site inspections of visible dust emissions throughout each day of quarry and landfill activities and logging observations and any dust suppression actions.
- h. Ensuring that deposited landfill material is covered at the end of each day.

16. When asbestos-contaminated soil is deposited, the following measures must be used:

- a. Water misting to suppress dust during deposition, cover and compaction of all asbestos-contaminated soil unless it is raining at the time;
- b. No asbestos-contaminated soil deposition must occur when the wind speed exceeds 10 m/s (10-minute average), as measured by the on-site weather station;
- c. Asbestos-contaminated soil must be deposited into the landfill area at least 1 m below the adjacent working ground surface;
- d. The tipping height above the working level of the landfill must not exceed 2 m;
- e. Asbestos-contaminated soil must be deposited directly into the final position in the landfill area. No relocation, reworking or shaping of asbestos contaminated soil must occur after it has been deposited into the landfill area;
- f. As soon as practicable following deposition, each load of asbestos contaminated soil must be covered with a minimum of 100 mm of aggregate excavated from the quarry;
- g. To reduce the chance of puncturing the plastic wrapping, the use of heavy and large pieces of aggregate as cover material must be avoided;
- h. Notwithstanding Clause (g) compaction of asbestos-contaminated soil must not occur until the soil has been completely covered with a minimum of 100mm of aggregate excavated from the quarry;
- i. Compaction must only be undertaken by vehicle wheel tracking. Vibratory compaction equipment must not be used.

17. The Consent Holder must install, operate and maintain an on-site weather station to record on site weather conditions every 30 minutes. The parameters measured must include:

- a. wind velocity and direction measured via a minimum mast height of 6 metres above ground level.
- b. barometric pressure
- c. rainfall, and
- d. temperature.

The weather station must be installed, operated and maintained in general accordance with AS/NZS 3580.14:2014: Methods for sampling and analysis of ambient air- Part 14: Meteorological monitoring for ambient air quality monitoring applications.

18 The Consent Holder must notify the Canterbury Regional Council and Waimakariri District Council of any complaints received by the Consent Holder regarding discharge to air from the site as soon as practicable, and no longer than one working day after the complaint is received.

19 When air quality related complaints are received by the Consent Holder, the Consent Holder must investigate the cause of the complaint and record the following details in a complaint log:

- a. type and time of complaint.
- b. name and address of complainant (if available).
- c. location from which the complaint arose.
- d. wind direction at the time of complaint.
- e. the likely cause of the complaint.

- f. the response made by the Consent Holder; and
- g. action taken or proposed because of the complaint.

The complaint log must be available to the Canterbury Regional Council at all times, on request.

- 20 A walkover site inspection must be undertaken no less frequently than weekly. Any evidence of actual or potential landfill gas leaks, such as odour, cracks in the Landfill surface, gas bubbles, leaks in the gas extraction system, or vegetation damage, must be investigated. Where necessary remedial action must- be undertaken as soon as practicable to minimise fugitive gas discharges.
- 21 The concentration of methane at the surface of Landfill areas with intermediate or final cover must not exceed 0.5 percent by volume. The concentration of hydrogen sulphide at the surface of Landfill areas with intermediate or final cover must not exceed 0.0005 percent by volume. Quarterly monitoring of surface emissions must be carried out to demonstrate compliance with this Condition.
- 22 The Consent Holder must submit a Landfill Gas Report to Canterbury Regional Council at the end of each year as part of the Landfill Annual Report. The Landfill Gas Report must include the following:
 - a. A summary of the monitoring results from the quarterly methane and hydrogen sulphide surface emissions monitoring;
 - b. A summary of the weekly walkover inspections;
 - c. A summary of any air quality complaints;
 - d. The logs from the weather monitoring devices;
 - e. An estimate of the amount of landfill gas being generated from the Landfill;
 - f. A recommended programme of landfill gas management to ensure that surface emissions of intermediate or final cover does not exceed 0.5 percent by volume;
 - g. A summary of the performance of any landfill gas extraction and destruction system.
- 23. If the Landfill Gas Report recommends the installation of a landfill gas extraction system the Consent Holder must engage a suitably qualified person to design the landfill gas extraction system and submit the design to the Canterbury Regional Council for review and approval.
- 24. All extraction wells that are to be connected to a gas extraction system must be installed no longer than 12 months after placing landfill wastes within the radius of influence of the wells. Gas venting from the wells prior to connection to the gas extraction system may be burnt by passive flares.
- 25. Landfill gas must be monitored at each extraction well head or, if more appropriate, at manifold points, on a three monthly basis. The following parameters ~~shall~~ must be measured and recorded:
 - a. gas flow rate
 - b. gas composition (percent methane, percent oxygen, percent carbon dioxide, percent hydrogen sulphide)
 - c. gas temperature
 - d. ambient temperature
 - e. gas pressure
 - f. barometric pressure

- g. ppm carbon monoxide if residual nitrogen exceeds 15 percent.
- 26. The residual Nitrogen content of landfill gas in all extraction wells must not exceed 20 percent by volume or exceed five percent oxygen by volume.
 - 27. There must be no visible emission, other than water vapour, light, heat haze, or steam, from any Landfill gas flare.
 - 28. The Consent Holder must provide sufficient on-site electrical generation, or other appropriate measures, to ensure the operation of landfill gas flare equipment is not interrupted for more than two hours through loss of mains power supply. The gas collection and treatment system must be restored as soon as practicable in the event of a malfunction or fault.
 - 29. Until such time as a permanent landfill gas flare (or other utilisation station) is installed, landfill gas (blended) must be monitored at the flare station on a three monthly basis. The following parameters must be measured and recorded:
 - a. gas flow rate
 - b. composition (percent methane, percent oxygen, percent carbon dioxide, percent hydrogen sulphide)
 - c. gas temperature
 - d. ambient temperature
 - e. gas pressure
 - f. barometric pressure
 - g. hydrogen sulphide
 - h. total non-methane organic compounds.
 - 30. Except as provided in Condition 29, all extracted landfill gas must be combusted in a flare (or other utilisation station) in accordance with the following:
 - a. Enclosed flares must have the following minimum specifications:
 - i. flame arrester and backflow prevention devices, or similar equivalent system; and
 - ii. continuous automatic ignition system; and
 - iii. automatic isolation systems to ensure that there is no discharge of unburnt landfill gas from the flare in the event of flame loss; and
 - iv. adequate sampling ports to enable emissions testing to be undertaken; and
 - v. provision of safe access to sampling ports while emissions tests are undertaken; and
 - vi. minimum temperature at 750°C and retention time of 0.5 seconds; and
 - vii. a permanent temperature indicator at half a diameter from the top of the flare with a visual readout at ground level.
 - b. Open flares must comply with Condition (30)(a)(i), (ii) and iii above.
 - 31. Once a permanent landfill gas flare (or other utilisation station) is installed, landfill gas (blended) must be monitored on a continuous basis and recorded electronically.
 - a. gas flow rate
 - b. composition (percent methane, percent oxygen, percent carbon dioxide, percent hydrogen sulphide)
 - c. gas temperature

- d. gas pressure
32. The Consent Holder must maintain a log of all inspections, investigations and actions taken with respect to the landfill gas system.
33. The Consent Holder must include within the Landfill Gas Management Plan provisions setting out how the Landfill Gas Collection and Treatment system will be maintained to comply with all conditions.
34. If monitoring demonstrates that the methane and hydrogen sulphide gas concentration limit specified in Condition 21 is exceeded, then remedial action must be carried out and the concentrations re-tested within 14 days. If this is not practicable, the Consent Holder must prepare a programme of remedial action, including a timetable, within 14 days of the exceedance. The proposed programme must be implemented within the proposed time period.

Air Quality Management Plan

35. At least two months prior to first deposition of landfill waste the Consent Holder must prepare an Air Quality Management Plan (AQMP) for the approval of the Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring in accordance with the purpose described below and implement the AQMP once certified. The purpose of the AQMP is to:
- To ensure effective daily cover of at least 150mm of soil or equivalent alternative material.
 - To keep the working face as small as practicable.
 - To ensure effective intermediate cover of at least 300mm thickness.
 - To avoid excavation into old areas of refuse as far as practicable.
 - To minimise water ingress to the working face.
 - To achieve early and progressive installation and extraction from the LFG system in the active landfill areas.
 - To avoid having gas wells unconnected to the extraction system.
 - To ensure provision for standby power to avoid flare outages.
 - To minimise the extent of unvegetated areas.
 - To enforce vehicle speed limits on site.
 - To ensure sealed road surfaces are regularly swept.
 - To maintain unsealed road surfaces and working areas to minimise potential for dust emissions.
36. Prior to submitting the AQMP to the Canterbury Regional Council the Consent Holder must have the AQMP reviewed by a Suitably Qualified and Experienced Practitioner (SQEP) who is a Certified Air Quality Practitioner to confirm that the measures proposed in the AQMP are appropriate to achieve compliance with conditions of this consent and enable the management of discharge of dust beyond the boundary to a level that is not offensive, objectionable, noxious or dangerous.
37. The AQMP must include, but not be limited to:
- a. A description of the sources of odour and dust on site.
 - b. A description of odour and dust management measures to be implemented

- on site;
- c. A description of the receiving environment and identification of sensitive receptors
- d. Identify the persons responsible for carrying out all actions in relation to meeting the requirements of this consent
- e. Describe the methods to control dust, including the frequency and triggers for water suppression activities.
- f. Landfill waste inspection and handling procedures with regards to highly odorous loads;
- g. Landfill gas monitoring and recording procedures, including the gas monitoring bores and surface monitoring;
- h. Landfill gas flaring, including.
- i. conditions under which flaring would take place; ii. maintenance of the flare(s).
- iii. method for flaring of hydrogen sulphide when there is low methane content.
- i. The methods to be used for controlling dust at each source during quarry activities.
- j. A system for training workers, including contractors, to make them aware of the requirements of this section of the LMP.
- k. Methods for determining the weather conditions that will trigger a restriction on potentially dusty activities.
- l. Identify responses to non-compliance with consent triggers and complaints.
- m. The receipt and handling of asbestos waste in order to avoid discharges to air from the handling of that material
- n. Measure to minimise the infiltration of water into the landfill mass through the use of suitable daily cover.
- o. Measures relating to managing fires within the landfill mass, including the avoidance of using water where possible to extinguish fires and the use of alternative measures
- p. method for recording, investigating and responding to complaints from the public.

Peer Review Panel

38. The Consent Holder must establish, at its own cost, a Peer Review Panel, to review the design, construction, operation, and after-care of the Landfill and all CRC214073, CRC214074, CRC214075, CRC214076, and CRC214077 that are required to be approved by Council to assess whether or not the work is undertaken by appropriately qualified personnel in accordance with good practice. The Peer Review Panel must operate in accordance with the scope of responsibilities set out in Schedule 3 attached to this consent and comprise at least two independent persons who must be:

- a. experienced in landfill design, construction, and management;
- b. experienced in landfill geotechnical, groundwater and surface water aspects;
- c. recognised by their peers as having such experience, knowledge, and skill; and
- d. approved in writing by Waimakariri District Council and Canterbury Regional Council.

39. Prior to submission of any document in relation to landfill waste containment, landfill waste management and land filling for the approval of Canterbury Regional Council, Attention: Regional Leader – Compliance Monitoring the consent holder must obtain and provide written comment and endorsement from the Peer Review Panel
40. The Peer Review Panel must prepare a six monthly report for the Consent Holder on the adequacy of the following matters:
- PRP membership and deliberations
 - matters reviewed and reported
 - approvals given
 - geotechnical investigations
 - engineering final design
 - construction activity
 - construction quality assurance
 - lining system performance
 - landfill waste pile stability
 - land movement and stability
 - landfill waste containment
 - leachate containment and collection
 - leachate handling and disposal on site
 - landfill gas capture
 - landfill gas monitoring of fugitive emissions and subsurface migration
 - odour
 - groundwater and surface water quality
 - failures and damage relating to any above topic, and response by WQL.
41. Where the Peer Review Panel does not have expertise in any of the areas it is required to report on, as detailed above, it must, with the agreement of the Consent Holder and Canterbury Regional Council, engage the services of an appropriate expert to report on the relevant matter to the Peer Review Panel. The report must form part of the review provided by the Peer Review Panel as required by this condition. Copies of all reports must be sent to the Consent Holder, the Waimakariri District Council, and the Canterbury Regional Council by 31 August each year, unless otherwise agreed in writing with the Councils.