Form 1 – Application for Resource Consent

This application is made under Section 88 of the Resource Management Act 1991 (RMA).

The purpose of this Form 1 and the relevant activity form(s) is to provide applications with guidance on information that is required under the Resource Management Act 1991. Please note that these forms are to act as a guide only, and Otago Regional Council reserves the right to request additional information or to reject the application as incomplete under Section 88 of the RMA if the provisions of the fourth schedule of the RMA are not provided (refer to page 6 of this form, which details these requirements).

PLEASE NOTE: You must have Adobe Acrobat Reader installed onto your computer to use this editable version, which you can download for free from the Adobe website. This form cannot be filled in on your internet browser. REMEMBER to save the form to your computer after completing then attach and send via email along with the other relevant application forms/information to consents.applications@orc.govt.nz. The form can also be printed and completed manually.

1(a). Applicant's details:

- The full names or Company name or Trust (including full names of all Trustees) of the consent holder who will be responsible for the consent and any associated costs.
- A resource consent can only be held by a legal organisation or fully named individual(s). A legal organisation includes a registered limited company, incorporated group or registered trust. If the application is for a Trust, the full names of all Trustees are required. If the application is not for a limited company, incorporated group or rust, then you must use fully named individual(s).
- All invoices will be made out to and sent to the applicant.

Full name(s): Clutha District Council

OR

Registered company: _____

OR

Trust (include all Trustees full names) _____

Postal address: PO Box 25, Rosebank Terrace, Balclutha

_____ Post code: 9240

and

Physical address: (not a PO Box number) 1 Rosebank Terrace, Baclutha

_____ Post code:

Phone number: Business: 03 419 0200 Private:

Mobile:

Email address: Gerry.Essenberg@Cluthadc.govt.nz

Please provide a valid and clear email address. Otago Regional Council has adopted a paperless consenting process – therefore any correspondence including decision documents and consent (if granted) will be sent via email, unless you request a paper copy.

Please tick if you do not prefer contact by electronic means ☐

1(b). Key contact for applicant details (if applicable):

Only complete if the applicant consists of multiple parties (e.g. multiple consent holders, Trust etc). Please outline who the key contact for the consent will be, if granted:

Full name: Gerry Essenberg

Phone number: Business: 03 419 0200 Private:

Mobile:

Email address: Gerry.Essenberg@Cluthadc.govt.nz

2. Consultant details (if applicable):

Contact person: Aileen Craw

Company: WSP Ltd

Phone number: Mobile: 022 431 2217 Business:

Email address: aileen.craw@wsp.com

3. Consents required in relation to this proposal:

Water

☐ Take surface water ☒ Take groundwater ☐ Divert

☐ Dam

Discharge onto or into:

☐ Land ☒ Water ☒ Air

Land use:

☐ Bore construction ☐ Bore alteration ☐ Disturbance of contaminated

☐ Activities in or on beds of lakes or rivers or floodbanks

Coastal

☐ Activities in the coastal marine area (i.e. below mean high water spring tide)

Where you have indicated the type of consent that is required, you must complete the appropriate application form before your application can be processed. Application forms can be found on the Council's website: www.orc.govt.nz/consents/ready-to-apply-for-a-consent

4. For what purpose is/are the consent(s) required (e.g. gravel extraction, water for irrigation etc):

Consents are required to continue to operate the Mt Cooee Landfill on Kaitangata Highway, on the outskirts of Balclutha. Existing consents expire in October 2023.

5. Location of proposed activity:

Address: Kaitangata Highway, Balclutha

Legal description(s): Various - see AEE

Map reference(s) (NZTM 2000): E 1350355 N 4873759

Please include location details on separate documentation if there are multiple sites or activities.

Note: Certificate(s) of Title less than three months old for the site to which this application relates are required.

6. Are there any current or expired Resource Consents relating to this proposal:

☐ Yes ☐ No

If yes, give consent number(s), description and expiry date(s):

Please see attached AEE for consent numbers

(a) Do you agree to your current consent automatically being surrendered should a replacement consent be issued?

☐ Yes ☐ No

(b) Has there been a previous application for this activity that was returned as incomplete?

☐ Yes ☒ No

(c) Have you lodged a pre-application with Council for this activity?

☐ Yes ☐ No

(d) Have you spoken to a Council staff member about this application prior to lodging this application?

☐ Yes ☐ No

If yes, please state name of staff member: Shay McDonald

7. What is the term of consent you are seeking and reason for this term:

35 years because this is consistent with other landfill consents granted in recent years and gives CDC assurance that the landfill is economically feasible and is consistent with the value of investment required.

8. Territorial Local Authority in which activity is situated:

☐ Dunedin City Council ☒ Clutha District Council ☐ Central Otago District Council

☐ Queenstown Lakes District Council ☐ Waitaki District Council

9. Do you require any other resource consent from any local authority for this activity:

☐ Yes ☐ No

If yes, please give the date applied for or issued: Outline Plan to be submitted soon

10. For the land on which the activity occurs, is the applicant (tick one):
If the applicant does not own the land to which this application relates, unconditional written approval from the land owner/affected party will be required.

☐ The owner ☐ The lease holder ☐ The occupier

☐ Prospective purchaser

If the applicant is not the land owner, who is the owner of the land on which the activity occurs/is to occur:

Name of land owner: _____

Phone number: Mobile: _____ Business: _____

Email address: _____

11. Site visit from the Consents Team:

Consents staff are able to meet with you, visit your site and see what you are proposing to do. We find that this is beneficial to everyone involved. The cost of the visit will be included in the total cost of processing your consent. However, we find that applications that have an on-site visit are processed with less congestion and at a similar or lesser overall cost. Please let us know below if you would like us to come and see your site.

I would like a member of the Consents Team to visit my site:

☐ Yes ☐ No

12. Processing Officer:

Due to high workloads or the complex nature of your application, it could be assigned to a consultant processing officer. Having your application assigned to an external officer should not greatly affect the processing costs. However, if you would like your application to be assigned to an internal officer then please advise. This may mean that your application enters a waiting line to be allocated and may not be processed straight away. If this is the case we will ask for a timeframe extension to cover the waiting time. There may be situations where we cannot accommodate this request but will let you know why this is.

I would like my application to only be processed by an internal staff member:

☐ Yes ☐ No

13. How to pay:

A deposit **must** accompany this application (see **page 9** for amounts and ways to pay). The applicant will be invoiced for all costs incurred in processing this application that exceed the deposit.

If the required deposit does not accompany your application, staff will contact you on the email address provided on this form to request payment, and after 3 working days your application will returned as incomplete if no payment is made for the required deposit.

When paying online, please use the word '**Consent**' followed by the name of the applicant as a reference.

Method of payment:

☐ Online bank transfer ☐ In person ☐ Credit card

Date of payment: 15/06/2023

Amount paid: $2,450

Payment reference: Mt Cooee

Please note: Your deposit may not cover the entire cost of processing your application. At the end of the application process you will be invoiced for any costs that exceed the deposit. Interim invoices may be sent out for applications, where appropriate. We will communicate processing costs to you at key stages through the process. If you would like this, then please let us know and we can see if this is an option for you.

If your application is returned to you, you will still be charged for the cost of processing the application up to the point it was returned or withdrawn. **Therefore, it is recommended that you have your application checked before it is lodged. This is a free service.**

Information regarding costs can be found via the following link:
www.orc.govt.nz/consents/ready-to-apply-for-a-consent/fees-and-charges

Checklist

Before signing the declaration below, in order to provide a complete application have you remembered to:

- ☐ Fully complete this Form 1, including signed declaration
- ☐ Completed the necessary application forms relating to the activity
  Application forms can be found on Council's website via the following link:
  www.orc.govt.nz/consents/ready-to-apply-for-a-consent
- ☐ Payment of the required deposit (see page 8 for fees schedule)
- ☐ Written approvals from all potentially affected parties
  "Written Approval of an Affected Party" forms are available from Councils website
- ☐ An assessment of effects on the environment
- ☐ An assessment against the relevant objectives, policies and rules from Regional Council Plans, Regional Policy Statement (including proposed and partially operative versions), and relevant Regulations, National Policy Statements, National Environmental Standards and iwi management plans
- ☐ Site and location plans
- ☐ Certificate(s) of Title less than three months old for the site to which this application relates
  Certificates of Title can be obtained via the Land Information New Zealand website:
  www.linz.govt.nz

Declaration

I/we hereby certify that to the best of my/our knowledge and belief, the information given in this application is true and correct.

I/we undertake to pay all actual and reasonable application processing costs incurred by the Otago Regional Council.

Name(s): Gerry Essenberg

Signature(s):* _____
(or person authorised to sign on behalf of applicant)

* **Ensure you use the "fill and sign" function of Adobe Acrobat when signing this form. Either draw your signature or add an image. Council cannot accept typed signatures.**

Designation: Clutha District Council Manager
(e.g. owner, manager, consultant)

Date: _____

Council can accept electronic lodgement of applications if sent to consents.applications@orc.govt.nz.

Alternatively, applications can be posted to:
Otago Regional Council
Private Bag 1954
70 Stafford Street
Dunedin 9054

Consultation

(consultation is not compulsory, but it can make a process easier and reduce costs)

Under Section 95E of the Resource Management Act 1991 (the Act), the Council will identify affected parties to an application and if the application is to be processed on a non-notified basis the unconditional written approval of affected parties will be required. Consultation with potentially affected parties and interested parties can be commenced prior to lodging the application.

Consultation may be required with the appropriate Tangata Whenua for the area. The address of the local Iwi office is: Aukaha, 258 Stuart Street, P O Box 446, Dunedin, Fax (03) 477-0072, Phone (03) 477-0071, Email info@aukaha.co.nz. If you are in the Clutha River area you may need to talk to Te Ao Marama Inc, Phone (03) 931 1242. If you require further advice, please contact the Otago Regional Council.

Good consultation practices include:

- Giving people sufficient information to understand your proposal and the likely effects it may have on them
- Allowing sufficient time for them to assess and respond to the information
- Considering and taking into account their responses

Written approval forms are available on Council's website.

Information Requirements

In order for any consent application to be processed efficiently in the minimum time and at minimum cost, it is critical that as much relevant information as possible is included with the application**.**

Resource Management Act 1991
FOURTH SCHEDULE – ASSESSMENT OF EFFECTS ON THE ENVIRONMENT
(Below are the provisions of the fourth schedule of the Act, which describes what must be in an application for resource consent, as amended in 2015)

1. Information must be specified in sufficient detail

Any information required by this schedule, including an assessment under clause 2(1)(f) or (g), must be specified in sufficient detail to satisfy the purpose for which it is required.

2. Information required in all applications

(1) An application for a resource consent for an activity (the **activity**) must include the following:
- (a) a description of the activity; and
- (b) a description of the site at which the activity is to occur; and
- (c) the full name and address of each owner or occupier of the site; and
- (d) a description of any other activities that are part of the proposal to which the application relates; and
- (e) a description of any other resource consents required for the proposal to which the application relates; and
- (f) an assessment of the activity against the matters set out in Part 2; and
- (g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b) *("document" includes regional and district plans, regulations*, *national policy statements, iwi plans*).

(2) The assessment under subclause (1)(g) must include an assessment of the activity against:
- (a) any relevant objectives, policies, or rules in a document; and
- (b) any relevant requirements, conditions, or permissions in any rules in a document; and
- (c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).

(3) An application must also include an assessment of the activity's effects on the environment that:
- (a) includes the information required by clause 6; and
- (b) addresses the matters specified in clause 7; and
- (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

3. Additional information required in some applications

An application must also include any of the following that apply:

(1) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1))

(2) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A))

(3) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B).

4. (relates to subdivisions – *not included here as subdivisions are not within ORC's jurisdiction)*

5. Additional information required in application for reclamation

An application for a resource consent for reclamation must also include information to show the area to be reclaimed, including the following:

(1) the location of the area; and

(2) if practicable, the position of all new boundaries; and

(3) any part of the area to be set aside as an esplanade reserve or esplanade strip.

Assessment of environmental effects

6. Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:

(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity

(b) an assessment of the actual or potential effect on the environment of the activity

(c) if the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use

(d) if the activity includes the discharge of any contaminant, a description of:

(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(ii) any possible alternative methods of discharge, including discharge into any other receiving environment.

(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect

(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted

(g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved

(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).

(2) A requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan

(3) To avoid doubt, subclause (1)(f) obliges an applicant to report as to the persons identified as being affected by the proposal, but does not:

(a) oblige the applicant to consult any person; or

(b) create any ground for expecting that the applicant will consult any person.

7. Matters that must be addressed by assessment of environmental effects

(1) An assessment of the activity's effects on the environment must address the following matters:

(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

(b) any physical effect on the locality, including any landscape and visual effects

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

(2) The requirement to address a matter in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

Set out below are details of the amounts payable for those activities to be funded by fees and charges, as authorised by s36(1) of the Resource Management Act 1991.

Resource Consent Application Fees (from 1 July 2022)

Note that the fees shown below are a **deposit** to be paid on lodgement of a consent application and applications for exemptions in respect of water metering devices. This deposit will not usually cover the full cost of processing the application, and further costs are incurred at the rate shown in the scale of charges. GST is included in all fees and charges.

If you wish to make a payment via internet banking, or online, the details are below. Please note the applicants name and 'consent application' should be used as reference when paying the deposit.

For ways to pay, visit: www.orc.govt.nz/consents/ready-to-apply-for-a-consent

Pre-Application Work
Fees payable for pre-application work carried out before a consent application is lodged with Council will be incurred at the rates shown in the scale of charges.

Publicly Notified Applications: [3]	**$**
First application	15,000.00

Non-Notified Applications and Limited Notification Applications: [3]	**$**
First application (except those below)	1,750
Multiple Applications [1]	2,300
Variation to Conditions – s127	1,750
Administrative Variation – s127	1,750
Bore - Multiple	1,500
Compliance Administrative Fee payable on all applications	150

Fixed Fees	**$**
Bore - Single	750
Exemption under regulation 7A of the Water Metering Regulations	150
Exemptions from water metering regulations	450

Hearings	Per Note 2 below
Payment for Commissioner request – s100A	Per Note 4 below

Objections	
Payment for Commissioner request – s357AB	Per Note 4 below

Transfer of Consent Holder and Certificates Deposits:	**$**
Transfer of permits and consents	200
Priority Table	200
Section 417 Certificate	500
Certificate of Compliance	1,750
All Other Costs As per Scale of Charges	

Scale of Charges:	**$**
Staff time per hour:	
• Management	205
• Team Leader/Principle	185
• Senior Technical	165
• Technical	145
• Field staff	145
• Administration	110

Disbursements	Actual
Additional site notice	Actual
Advertisements	Actual
Vehicle use per kilometre	0.70
Travel and accommodation	Actual
Testing charges	Actual

Consultants	Actual
Commissioners	Actual

Harbourmaster vessel per hour	375

Councillor Hearing fees per hour:	**$**
• Chairperson	$100
• Member	$80
• Expenses	Actual

Notes:

1. For additional permits in respect of the same site, activity, applicant, time of application, and closely related effect as the first application.

2. The deposit payable shall be 90% of the cost of a hearing as calculated by Council in accordance with information contained in the application file and using the scale of charges. The amount payable will be due at least 10 working days before the commencement of the hearing. If the amount is not paid by the due date, then the Council reserves the right under S36(7) of the Resource Management Act to stop processing the application. This may include cancellation of the hearing.

   Should a hearing be cancelled or postponed due to the non-payment of the charge, the applicant will be invoiced for any costs that arise from that cancellation or postponement.

   Following completion of the hearing process, any shortfall in the recovery of hearing costs will be invoiced, or any over recovery will be refunded to the applicant.

3. Where actual and reasonable costs are less than the deposit paid, a refund will be given.

4. Where an applicant requests under s100A (for a consent hearing) or under s357AB (for the hearing of an objection) an independent commissioner(s); the applicant will be required to pay any increase in cost of having the commissioner(s).

   Where a submitter(s) requests under s100A an independent commissioner(s) any increase in cost that is in addition to what the applicant would have paid shall be paid by the submitter. If there is more than one submitter who has made such request the costs shall be evenly shared.

Review of consent conditions

Following the granting of a consent, a subsequent review of consent conditions may be carried out at either the request of the consent holder, or as authorised under Section 128, as a requirement of Council. Costs incurred in undertaking reviews requested by the consent holder will be payable by the consent holder at the rates shown in the Scale of Charges above.

Reviews initiated by Council will not be charged to consent holders.

Compliance Monitoring Charges

Compliance charges may also be applied to any granted consent(s). These can be found via Council's website at: https://www.orc.govt.nz/media/8679/annual-plan-2020-21_digital.pdf

Checklist

Before signing the declaration below, in order to provide a complete application have you remembered to:

- ☐ Fully complete this Form 1, including signed declaration
- ☐ Completed the necessary application forms relating to the activity
  Application forms can be found on Council's website via the following link:
  www.orc.govt.nz/consents/ready-to-apply-for-a-consent
- ☐ Payment of the required deposit (see page 8 for fees schedule)
- ☐ Written approvals from all potentially affected parties
  "Written Approval of an Affected Party" forms are available from Councils website
- ☐ An assessment of effects on the environment
- ☐ An assessment against the relevant objectives, policies and rules from Regional Council Plans, Regional Policy Statement (including proposed and partially operative versions), and relevant Regulations, National Policy Statements, National Environmental Standards and iwi management plans
- ☐ Site and location plans
- ☐ Certificate(s) of Title less than three months old for the site to which this application relates
  Certificates of Title can be obtained via the Land Information New Zealand website:
  www.linz.govt.nz

Declaration

I/we hereby certify that to the best of my/our knowledge and belief, the information given in this application is true and correct.

I/we undertake to pay all actual and reasonable application processing costs incurred by the Otago Regional Council.

Name(s): Gerry Essenberg

Signature(s):* _____
(or person authorised to sign on behalf of applicant)

* **Ensure you use the "fill and sign" function of Adobe Acrobat when signing this form. Either draw your signature or add an image. Council cannot accept typed signatures.**

Designation: Clutha District Council Manager
(e.g. owner, manager, consultant)

Date: 15 June 2023

Council can accept electronic lodgement of applications if sent to consents.applications@orc.govt.nz.

Alternatively, applications can be posted to:
Otago Regional Council
Private Bag 1954
70 Stafford Street
Dunedin 9054

Application for Resource Consent and Assessment of Effects on the Environment: Mt Cooee Landfill, Balclutha

Prepared for Clutha District Council

For Submission to the Otago Regional Council

21 June 2023

Document History and Status

Revision	Date	Author	Reviewed by	Approved by	Status
Draft for internal review	17 April 2023	Aileen Craw	Luke McSoriley Rowan Latham Peter Askey	Chris Fox	Draft
Draft for client review	28 April 2023	Aileen Craw	Luke McSoriley Rowan Latham Peter Askey	Chris Fox	Draft
Draft for lodgement	12 May 2023	Aileen Craw	Luke McSoriley Rowan Latham Peter Askey	Chris Fox	Final

Mt Cooee Landfill Resource Consent Application and Assessment of Effects on the Environment

WSP
Dunedin
197 Rattray Street
Dunedin 9016
New Zealand
+64 3 471 5500
wsp.com/

REV	DATE	DETAILS
1.0	17 April 2023	Draft for Internal Review
2.0	28 April 2023	Draft for Client Review
3.0	1 May 2023	Draft for ORC Pre-Review
3.0	12 May 2023	Final for lodgement

	NAME	DATE	SIGNATURE
Prepared by:	Aileen Craw	12 May 2023	
Reviewed by:	Luke McSoriley Rowan Latham Peter Askey	12 May 2023	
Approved by:	Chris Fox	12 May 2023	

Contents

Disclaimers and Limitations

This Consent Application and Assessment of Effects on the Environment ('**Report**') has been prepared by WSP Ltd exclusively for Clutha District Council ('**Client**') in relation to the Mt Cooee Landfill expansion project in Balclutha ('**Purpose**'). The findings in this Report are based on, and are subject to the assumptions specified in the Report and the technical assessments and design plans listed in the Appendices. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

1 Introduction

Clutha District Council (CDC) operate the Mt Cooee Landfill on Kaitangata Highway, on the outskirts of Balclutha. The landfill has been operating since 1985 and is the only municipal solid waste landfill in the Clutha District. The landfill serves a population of approximately 18,400 and accepts approximately 9,000 tonnes of refuse from residential, commercial and some industrial customers, primarily via Council's kerbside collection service and the ten waste transfer stations. There is minimal waste collected from outside of the Clutha District. The landfill is operated as a "Class 1 landfill" in term of the WasteMINZ Technical Guidelines for Disposal to Land 2022.

The landfill is currently operating under several existing resource consents held from the Otago Regional Council (ORC), which expire on 1 October 2023. The existing landfill cells are nearing the end of their life with capacity expected to be reached in approximately 2025.

CDC propose to expand the landfill within the existing site by adding five new cells over a 35-year lifespan. The new cells will provide additional waste disposal capacity within the Clutha District and allow for the continued future operation of the landfill until approximately 2060. The new cells will be located to the south and east of the existing cells and have been designed in accordance with current best practice guidelines.

As part of the expansion works, CDC also propose to construct a resource recovery centre and education hub within the existing site, which will reduce the volume of waste disposed of at the landfill due to some waste materials being recycled and reused.

This consent application therefore seeks replacement of the existing resource consents and also seeks resource consents for the expansion of the existing landfill.

The proposed landfill operation requires the following resource consents from the ORC:

Type of Consent	Activity	Rule Assessment	Term Sought
Discharge Permit	To discharge the following contaminants for the purpose of constructing and operating a Class 1 landfill: • Discharge waste and leachate onto land • Discharge landfill gas, odour and dust into air	**Discretionary activity** under Rule 7.6.1 of the Regional Plan: Waste	35 years
Discharge Permit	To discharge hazardous waste onto land for the purpose of operating a Class 1 landfill	**Discretionary activity** under Rule 6.6.1 of the Regional Plan: Waste	35 years
Discharge Permit	To discharge surface water from an industrial or trade premise (being stormwater from access roads and completed landfill areas) to land (stormwater retention ponds) before discharging to the Clutha River / Mata-Au	**Discretionary activity** under Rule 12.B.4.1 of the Regional Plan: Water	35 years

Water Permit	To abstract up to 80,000 L/day of groundwater for the purposes of the leachate containment system	**Restricted discretionary activity** under Rule 12.2.3.2A of the Regional Plan: Water	35 years

An outline plan for the landfill expansion works located within the Mt Cooee Landfill designation will also be submitted to Clutha District Council under section 176A of the Resource Management Act 1991 (RMA). The Mt Cooee Landfill site is designated under the Clutha District Plan (designation number 120) for "refuse disposal" purposes.

It is noted that the following activities have been assessed as permitted activities and therefore do not require resource consent:

Type of Consent	Activity	Rule Assessment
Land Use Consent	Construction and operational activities (such as earthworks, vegetation clearance and groundwater take) located at least 100m from two wetlands and a stream on the site	**Permitted activities** under Regulation 45B of the National Environmental Standards for Freshwater 2020
Land use consent	To undertake earthworks on potentially contaminated land	**Permitted activities** under Rule 5.6.1 of the Regional Plan: Waste and the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health

The purpose of this report is to provide a description of the proposed activities requiring resource consent, together with an assessment of the effects on the environment in accordance with the requirements of the RMA.

2 Legislative Framework for Waste Management

Waste management within New Zealand is predominantly managed under the following legislative frameworks:

- Resource Management Act 1991
- Local Government Act 2002
- Waste Minimisation Act 2002

Other relevant strategies and plans include:

- New Zealand Waste Strategy (2010, 2023)
- Clutha District Council Waste Management and Minimisation Plan (2018)
- Emissions Reduction Plan (2022)

2.1 Resource Management Act 1991

The purpose of the RMA is to "*promote the sustainable management of natural and physical resources*". The RMA is New Zealand's primary environmental legislation and provides a framework for managing the effects of activities on the environment. Schedule 4 of the RMA outlines the matters that should be included in an Assessment of Environmental Effects (AEE) and requires the identification of those persons affected by the proposal and the result of any consultation undertaken (Schedule 4 (1)(h)).

2.2 Local Government Act 2002

The Local Government Act 2002 (LGA) empowers Councils to promote the well-being of communities. Solid waste collection and disposal is identified as a core service to be considered by a local authority. LGA provides for effective and democratic local government. Amongst other things, this Act identifies principles of consultation and provides guidance on consultation processes for local government in decision making. In particular, the following matters of section 82(1) are considered relevant:

- Persons who will or may be affected by, or have an interest in, the decision or matter should be provided by the local authority with reasonable access to relevant information in a manner and format that is appropriate to the preferences and needs of those persons.
- Persons who will or may be affected by, or have an interest in, the decision or matter should be encouraged by the local authority to present their views to the local authority.
- Persons who are invited or encouraged to present their views to the local authority should be given clear information by the local authority concerning the purpose of the consultation and the scope of the decisions to be taken following the consideration of views presented.
- Persons who wish to have their views on the decision or matter considered by the local authority should be provided by the local authority with a reasonable opportunity to present those views to the local authority in a manner and format that is appropriate to the preferences and needs of those persons.
- Views presented to the local authority should be received by the local authority with an open mind and should be given by the local authority, in making a decision, due consideration.

- The local authority should provide persons who present views with information concerning both the relevant decisions and the reasons for those decisions.

2.3 Waste Minimisation Act 2008

The objective of the Waste Minimisation Act 2008 (WMA) is to encourage a reduction in the amount of waste New Zealanders generate and dispose of. The WMA aims to reduce the environmental harm of waste, and also encourages better use of materials throughout the product lifecycle through a legislative framework which includes product stewardship, offences and enforcement powers, and reporting and auditing requirements.

The WMA places a levy on all waste disposal to landfills that accept municipal waste. This includes the Mt Cooee Landfill which is classified as a Class 1 landfill. The levy is collected by the landfill operator and is paid to the Secretary for the Environment, with 50% of the funds distributed to territorial authorities for spending on waste minimisation initiatives. Currently, the waste levy is $30 / tonne, increasing to $50 / tonne in July 2023 and $60 / tonne in July 2024.

The WMA also requires territorial authorities to prepare and update Waste Minimisation and Management Plans (WMMP). The WMMPs are to be reviewed every six years, with requirements set out in sections 43 and 44 of the WMA.

CDC published a WMMP in 2018, which is discussed in Section 2.5 below.

2.4 New Zealand Waste Strategy

The New Zealand Waste Strategy (2010) sets out the New Zealand Government's long-term priorities for waste management and minimisation. The two goals of the Waste Strategy are:

- Reduce the harmful effects of waste; and
- Improve the efficiency of resource use.

The Waste Strategy states that modern Class 1 landfills should be designed and managed using leachate collection systems, engineered liners, and systems to recover landfill gas.

It is noted that the New Zealand Government recently released an updated Waste Strategy: Te rautaki para (March 2023). This document provides high-level guidance, such as the establishment of minimum targets for the diversion of waste from landfills, and specific requirements to provide the collection from households of a standardised set of recycling (including Glass) by 2027 and food waste by 2030. These targets and the requirements of Aotearoa New Zealand's First Emissions Reduction Plan (May 2022) are of relevance to CDC's waste disposal services and over time, will influence the resulting composition of waste requiring disposal to land in the district.

2.5 Clutha District Waste Management and Minimisation Plan

Clutha District Council published a Waste Management and Minimisation Plan (WMMP) in 2018, which included a vision, two objectives and an overall approach for waste management within the Clutha District. The WMMP sets out a number of targets for the Clutha District, including the following:

- A reduction in general waste collected at kerbside
- Increase public satisfaction with kerbside services
- An increase in kerbside diversion

Waste minimisation is currently being looked at by CDC.

2.6 Emissions Reduction Plan

The Emissions Reduction Plan 2022 contains a policy that places a requirement on all Class 1 landfills to have landfill gas (LFG) abstraction and destruction systems in place by December 2026. The policy includes a caveat of "*where feasible*". "Where feasible" is not defined within the Emissions Reduction Plan. However, it is a reasonable assumption in the current climate that an expanded landfill at Mt Cooee would be required to collect and destroy methane emissions from 2026. This may also apply to the current fill cells.

3 Description of the Existing Environment

3.1 Overview

The Mt Cooee Landfill is located approximately 1.2km east of Balclutha along the Kaitangata Highway. The site is bounded by the Main South Railway Line to the north and north-east; the Kaitangata Highway to the south-west; and private farmland and residential property to the east. The Balclutha Golf Course is located across the railway line to the north and the Clutha River / Mata-Au is located to the south across the Kaitangata Highway.

The site is located within a rural landscape context. The closest residential dwelling (125 Kaitangata Highway) is located approximately 90m from the site's south-eastern boundary, and approximately 280m from the active areas of the site. The extension of the landfill will come within 15m of this property boundary. There are six residential dwellings located approximately 250m north-west of the site (on Arthur Terrace).

Figure 1: Excerpt from GRIP Maps showing the location of the Mt Cooee Landfill (highlighted in yellow) and the surrounding features.

The site is legally described as Lots 1 and 2 DP 12203 and has an overall area of approximately 15.77 hectares (Certificates of Title attached as **Appendix A**). The site is legally owned by CDC.

Access to the landfill is provided via an accessway located off Kaitangata Highway. The accessway is currently unsealed.

3.2 Topography and Landscape Character

The landfill occupies a natural, shallow valley sloping out to the Clutha River / Mata-Au at the site entrance and is characterised by gently rolling rural land. At the current top platform level, the site is reasonably well screened by the landform and vegetation present on neighbouring properties.

The balance of the landfill property currently not in use for waste activities is in pasture and grazed. There is a high row of pine trees located on the eastern site boundary (rooted in the neighbouring land title). Various tall exotic trees are located at the site entrance to help screen the site from Kaitangata Highway and viewpoints to the west.

There are no recognised landscape values identified in the Clutha District Plan or identified by Mr Mike Moore, Landscape Architect (Landscape and Visual Assessment attached as **Appendix D**). Mr Moore states that the nearby Clutha River / Mata-Au is a significant natural feature of the Clutha District but its natural character in the area surrounding the landfill has been highly modified, with its margins characterised by stopbanks and exotic vegetation.

3.3 Geology

The geology of the Mt Cooee Landfill is described in detail in the Geotechnical Factual and Interpretive Reports prepared by WSP (attached as **Appendices E and F**, respectively). WSP also prepared a memorandum assessing the performance of the existing sheet pile cut-off wall, attached as **Appendix G**. A summary of the geology at the site is provided below:

- Based on the investigation results and knowledge of site geology, the site is generally underlain by a thin layer of topsoil and alluvium, overlying Caples Terrane bedrock. The alluvium is thin to absent across the western section of the site but inferred to be continuous across the eastern section.
- The recent investigations and preliminary geological mapping suggest the strength and weathering of the bedrock is relatively consistent across the site and is highly jointed.
- Caples Terrane bedrock is expected at shallow depths (typically <1m bgl) across the eastern section of the site, with bedrock anticipated at greater depths across the western section of the site due to the presence of alluvial deposits.
- Due to the shallow depths to bedrock across the eastern section, liquefaction of cyclic softening is not anticipated. A quantitative liquefaction assessment indicates that liquefaction nor cyclic softening of the alluvial deposits below the groundwater table are anticipated.
- The risk of rupture of nearby faults affecting the site is considered to be low.
- Monitoring of the standpipe piezometers indicates that the long-term groundwater levels generally lie within the alluvial deposits or weathered bedrock at depths ranging between 1-4m below ground level (or 6-20m RL).
- The preliminary global stability assessment of the proposed landfill indicates that the minimum required factors of safety under static and seismic cases are achieved.
- Preliminary geological mapping indicates the risk of deep-seated instability in the rock slopes is low.
- For the purpose of preliminary assessments, a minimum 1(V): 1.5(H) cut batters in the weathered rock and 1(V): 2.5(H) batters in alluvial deposits were recommended.

3.4 Climate

The site climate is relatively dry with an average rainfall of 670 mm. The dry climate limits leachate generation and will also slow waste degradation (and gas production) compared to more humid climates.

An Assessment of Air Quality Effects was prepared by WSP and is attached as **Appendix H**. The nearest weather station to the site is the *Balclutha Telford EWS*, located 5km to the south of the landfill. Due to the close proximity of this weather station, it is expected to be generally representative of general wind patterns experienced at the site.

The Air Quality Assessment states that the prevailing wind is from the west to west-northwest, blowing generally down the Clutha River / Mata-Au valley. Strong winds are mainly from the west and south-west and are more prevalent during the day and during the Summer and Spring seasons. Winds from the south-east and north-east quarters are less frequent overall.

The local topography of the site influences the wind regime in the immediate vicinity. It is expected that during the night or early morning, low wind speed katabatic (air moving from high to low grounds) flows of cooler air will tend to occur from the elevated areas north of the site,

drifting in a south or south-easterly direction. These conditions direct airflow from the landfill across the Kaitangata Highway to the low land located along the Clutha River / Mata-Au and towards the coast, resulting in minimal dispersion of any potential odours from the site and well clear of any residences.

3.5 Groundwater

A detailed description of the underlying groundwater at the site is included in the Assessment of Effects on Groundwater and Surface Water report, prepared by WSP, and attached as **Appendix I**.

The Assessment states that both the alluvial sediments and underlying greywacke serve as water-bearing layers. The greywacke is relatively low permeability whereas the rock is massive, but higher permeability areas are found where the rock is highly fractured. The groundwater system is dominated by flow through the Caples Terrane bedrock of various permeabilities. Some flow also occurs through the overlying alluvial deposits, particularly in the valley floor that runs through the south-west side of the site where the alluvial sediments are generally thicker.

Groundwater level measurements in the historic and recent wells to date have not shown clear differences in groundwater levels within the bedrock and overlying alluvium. Therefore, the groundwater system is conceptualised as effectively one connected system.

Groundwater at the site is largely recharged from rainfall both on the site, and in the area directly to the north within the contributing catchment. The general groundwater flow direction across the site is from the north towards the Clutha River / Mata-Au, and is assumed to broadly follow topography. Groundwater level measurements at the landfill and riverbank elevations (obtained from LiDAR) indicate that groundwater is likely connected to the Clutha River / Mata-Au and the river gains groundwater from the site.

The landfill site is located within the Inch Clutha Gravel Aquifer. The nearest registered groundwater bore (H46/0218) is located approximately 1.5km south-east of the site; however, the ORC GIS database indicates that the bore does not currently have a resource consent to take groundwater. There are no current down-gradient surface water takes as shown on the ORC GIS database.

3.6 Surface Water

The landfill is located within the Clutha River / Mata-Au catchment, which has the largest catchment area and river flow volume in New Zealand.

3.6.1 Wetlands

4Sight Ltd prepared a Terrestrial, Wetland, and Waterway Assessment, attached as **Appendix J**, which identified two natural wetlands within the Mt Cooee site. The wetlands were identified by wetland delineation assessments, field observations and an estimation of rush density from aerial imagery,

The location of the wetlands are shown in Figure 2 below.

Figure 2: Excerpt from 4Sight's Terrestrial, Wetland, and Waterway Assessment showing the two natural wetlands and small waterway located on the Mt Cooee site.

4Sight's Assessment stated that the ecological values of the identified natural wetlands are likely to be low as parts of the wetlands are dominated by exotic species; fauna values appear low; and the wetlands are very small and therefore unlikely to be able to provide sufficient buffering of the waterway from the current land use (as evidenced by the heavy sediment load in the waterway and stock access to the wetland).

It is noted that there are no Regionally Significant Wetlands, as listed in the Regional Plan for Water, located in close proximity to the landfill site.

3.6.2 Small waterway

As part of the 4Sight's Terrestrial, Wetland, and Waterway Assessment, a small waterway was also identified on the site (shown in Figure 2 above). The Assessment states that the small waterway extends from the foot of the low hillslopes towards the Kaitangata Highway and that the waterway had low flow of water at the time of the survey (November 2022), with 5-10cm water depth and the wetted channel was approximately 1m wide. The soft mud substrate was approximately 5cm deep at the kicknet sample site. Little open water was visible in the upper reaches of the waterway, which is covered in dense floating sweetgrass with a few soft rushes. The waterway passes through a culvert under the Kaitangata Highway, after which it joins a drainage ditch running parallel to the Highway.

The Assessment states that only 13 macroinvertebrate taxa were recorded within the small waterway, indicating poor water quality.

Figure 3: Photos from 4Sight's site visit showing the small waterway within the site.

3.6.3 Previous unnamed tributary

There is an unnamed tributary which previously flowed from the Balclutha Golf Course and then under the railway line, under the landfill via a pipe before discharging into the Clutha River / Mata-Au. However, environmental monitoring and an ecological assessment indicated that the discharge was of poor quality and having adverse effects on the Clutha River / Mata-Au, most likely due to leachate that was entering the pipe due to cracks and holes.

Therefore, in 2021, Clutha District Council redirected the unnamed tributary around the landfill. CDC cut and filled the landscape to the north and north-east of the landfill site, creating a new swale which transports stormwater flows around the landfill to discharge into the Clutha River / Mata-Au riverbank at the previous discharge location, west of the landfill. CDC then reclaimed part of the bed and a swale channel was constructed to carry flows downstream.

CDC did not remove the existing stormwater pipe underneath the landfill. Groundwater that is entering the pipe post the completion of the works is still intercepted and treated as leachate from the landfill. This has resulted in leachate now being collected and treated, rather than flowing into the Clutha River / Mata-Au untreated.

The works were authorised under land use consent RM20.452.01, granted by the ORC on 13 April 2021.

Figure 4 below shows the works.

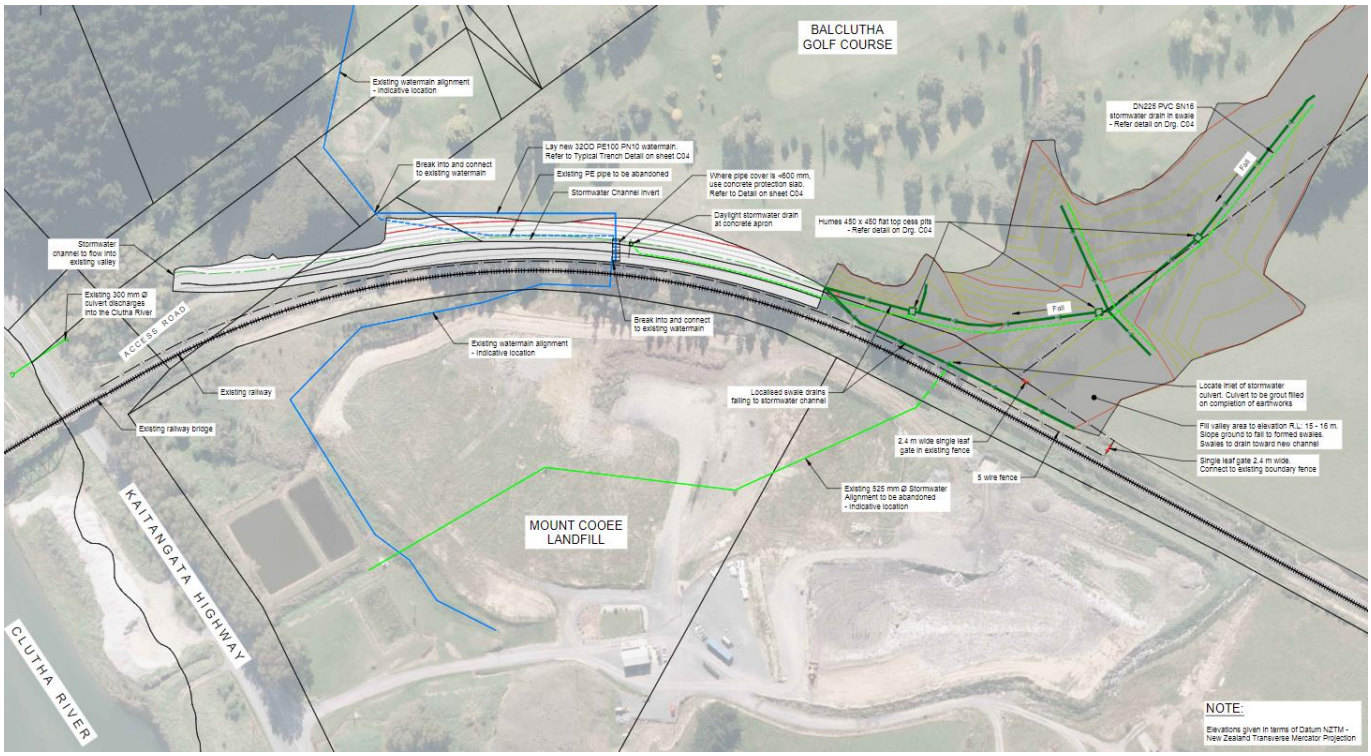

Figure 4: Site plan showing the existing stormwater drain (in green) and the location of the stormwater diversion (to the north of the landfill).

3.6.4 Clutha River / Mata-au

The Clutha River / Mata-Au is located approximately 60m to the west of the western boundary of the landfill site at its closest point.

The Regional Plan for Water (RPW) outlines the natural and human use values of various watercourses throughout the Otago Region. The small waterway and previous unnamed tributary are not identified in this schedule. However, the Clutha River / Mata-Au is identified within this Schedule.

The Clutha River / Mata-Au is identified for the following natural and ecosystem values:

- Large water body supporting high numbers of particular species, or habitat variety, which can provide for diverse life cycle requirements of a particular species, or a range of species.
- Gravel / sand / silt / rock bed composition of importance to resident biota.
- Presence of significant areas for development of juvenile trout and salmon.
- Significant presence of trout, salmon and eel.
- Presence of a significant range of indigenous waterfowl.
- Presence of significant indigenous aquatic vegetation.
- Significant habitat for lamprey (uncommon in Otago).

Schedule 1AA of the RPW identifies Otago resident native freshwater fish and their threat status. The Clutha River / Mata-Au and its tributaries are known to provide habitat for the following species:

Common Name	Scientific Name	Threat Status
Longfin eel	Anguilla dieffenbachia	Declining
Lamprey	Geotria australis	Declining
Koara	Galaxias brevipinnis	Declining

Schedule 1B of the RPW identifies rivers where the water taken is used for public water supply purposes and Schedule 1C identifies registered historic places. There are no Schedule 1B or 1C values in close proximity to the proposed activity.

Schedule 1D of the RPW identifies the spiritual and cultural beliefs, values and uses associated with water bodies of significance to Kai Tahu. Although the unnamed tributary is not identified, the Clutha River/ Mata-Au between Balclutha and the sea is identified as having the following values:·

- Kaitiakitanga: the exercise of guardianship by Kai Tahu, including the ethic of stewardship.
- Mauri: life force.
- Waahi tapu and/or Waiwhakaheke: sacred places; sites, areas and values of spiritual values of importance to Kai Tahu.
- Waahi taoka: treasured resource; values, sites and resources that are valued.
- Mahika kai: places where food is procured or produced.
- Kohanga: important nursery/spawning areas for native fisheries and/or breeding grounds for birds.
- Trails: sites and water bodies which formed part of traditional routes, including tauraka waka (landing place for canoes); and
- Cultural materials: water bodies that are sources of traditional weaving materials (such as raupo and paru) and rongoa (medicines).

3.7 Terrestrial Vegetation

4Sight's Terrestrial, Wetland, and Waterway Assessment states that most of the area proposed for expansion of the Mt Cooee Landfill comprises low hillslopes covered in pasture which are grazed by sheep. The pasture is dominated by perennial ryegrass (*Lolium perenne*) and sweet vernal (*Anthoxanthum odoratum*) with occasional browntop (*Agrostis capillaris*) and white clover (*Trifolium repens*), and patches of cocksfoot (*Dactylis glomerata*) east of the Borrow Area.

A small clump of trees, containing willow (*Salix sp.*), hawthorn (*Crataegus monogyna*), and Lombardy poplar (*Populus nigra*), is present south of the Borrow Area. The hedge just over the boundary with the railway line contains hawthorn, broom (*Cytisus scoparius*), elder (*Sambucus nigra*), and gorse (*Ulex europaeus*), with bracken (*Pteridium esculentum*) and cocksfoot on the ground. A shelter belt, just beyond the edge of the expansion area to the east, comprises tall macrocarpa (*Cupressus macrocarpa*).

Overall, all vegetation present within the proposed works area, and the majority of the vegetation across the entire Mt Cooee site, is exotic. Beyond this, there are limited areas of native vegetation associated with small planting areas and a few of the rushes located in the two wetlands.

The Borrow Area largely comprises bare earth, gravel, broken concrete and bricks, and a few small patches of pasture grasses and herbs.

Figure 5: Photos from the 4Sight Assessment showing the terrestrial vegetation present on site.

3.8 Contaminated Soils

A Baseline Contamination Assessment was undertaken by WSP (attached as Appendix K).

Ground investigations were carried out in October and November 2022, during which 10 new boreholes were installed across the proposed location for the landfill expansion. Ground conditions were geologically logged, and soil samples were taken and analysed for total heavy metal and polycyclic aromatic hydrocarbons (PAH) concentrations.

Results revealed that the site generally comprises sand, silt and clay underlain by sand and siltstone at approximately 1m bgl. Areas along the southern and eastern boundary reported sandstone at deeper levels. The site slopes downwards in a south-westerly direction, which is consistent with the depth to groundwater generally increasing in a north-easterly direction.

Soil samples were taken from the core of three boreholes, one of which reported elevated arsenic and lead concentrations above predicted local background concentrations. All samples were found to contain zinc concentrations above Eco-SGVs, but below local background. Samples taken from borehole BH01 also show arsenic above its relevant Eco-SGV. In addition, slightly elevated mercury concentrations were found at borehole BH06 compared to the other sample locations.

No exceedances were reported of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS) human health criteria for a commercial / industrial end use.

All PAHs reported concentrations below their limit or reporting and can thus be considered below background concentrations.

3.9 Archaeological Values

New Zealand Heritage Properties Ltd undertook an Archaeological Assessment for the Mt Cooee Landfill in 2022 (attached as Appendix L). The Archaeological Assessment states that the wider landscape was utilised for various lifeways activities by Māori prior to, and after, the arrival of Pākehā to the area. From 1858, the project area formed part of the Hermitage Estate, which was owned by enterprising farmer and businessman, Archibald Anderson. Following Anderson's death in 1910, the Hermitage Estate was subdivided, and the project area became the site of various small farms and residences. In 1970, the project site was purchased by the CDC and subsequently was developed as the Mount Cooee Landfill.

The Archaeological Assessment determined that there are no clear archaeological remains or features within the Mt Cooee Landfill site. A small group of introduced trees is present at the top

of a small gully at the southeast of the proposed expansion area; while there are no clear archaeological remains visible on the surface within the trees, there is the potential for subsurface remains in this area. A potential pre-1900 building and associated features are located at the south of the property, outside the current proposed expansion. An area at the centre of the property, recently cleared, was the former location of a potential pre-1900 cottage, and there is potential for subsurface archaeological remains in this area as well.

As a result, the Archaeological Assessment concluded that there is no reasonable cause to suspect that an archaeological site, as defined by the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014), is within the proposed work area. As such, the assessment recommended that planning for an archaeological authority as per the HNZPTA 2014 is not required. However, the assessment stated that works must operate under an Accidental Discovery Protocol, which will occur.

3.10 Cultural Values

Aukaha were engaged by CDC to undertake a Cultural Impact Assessment for the Mt Cooee project (attached as **Appendix M**).

Manawhenua representatives and whānau members, with support from the combined Mana Taiao and Mana Ahurea teams of Aukaha, undertook a cultural values assessment exercise, drawing from Kāi Tahu cultural values and narrative documents as valuable taoka filled with inherited cultural knowledge. This mātauraka Kāi Tahu remains under the custodianship of mana whenua at all times.

The following cultural values and concepts have been specifically identified by mana whenua to inform the expansion of the Mt Cooee Landfill, and future opportunities to strengthen intergenerational knowledge, community, and place-based identity. Manawhenua values and concepts are purposefully broad to allow design responses that retain flexibility and adaptability within a co-design process that is guided by mana whenua.

Four core values lie at the heart of a mana whenua worldview, namely whakapapa, mauri, mana, and tapu. These values overlay a broader network of associated values.

- **Whakapapa:** which references the setting down of layers, a metaphor for the layering of generations from the past to the present, and into the future. Wai is a central element in the creation traditions and is present very early in the whakapapa of the world. The Mata-au is fed by the glacial waters that flow from the inland tūpuna mauka (ancestral mountains). The rivers and streams descending the mountains are of a wai tapu nature that reflects the intact mauri of the wai, and the mana of the mountains. The water of the inland lakes was for the most part of the highest quality, and supported rich and healthy mahika kai resources that attracted seasonal visits by parties that would travel inland from the coast. In the contemporary setting, activities that occur along the awa as it travels from the mountains to the sea impact on this whakapapa, through inputs of sediment, nutrients, and discharges. Water quality in the lower reaches of the awa is recognised as degraded with high levels of bacteria, high nutrient concentrations, and poor water clarity. The outcome is declining water quality across the catchment. These changes in water quality are an expression of the way that these activities affect the whakapapa of the waterway.

- **Tapu:** an all-pervading force that has been passed down through whakapapa to the people of today. Every natural element possesses a level of tapu derived from their connection to atua and tīpuna, who themselves were imbued with significant levels of tapu. The term ‘taoka’ refers to cultural, physical, and metaphysical resources that are treasured by mana whenua, including practices, activities, and mātauraka associated with flora, fauna, and the natural world. Taoka of significant tapu that are present in the

cultural landscape surrounding the Mt Cooee Landfill site include wai māori, indigenous biodiversity, natural resources, and wāhi tīpuna. Their status as taoka places obligations on Kā Rūnaka to champion and protect them, as an expression of mana, and to ensure the sustainability of these taoka for future generations.

- Mana: refers to the authority and prestige that is passed down through whakapapa. Strongly linked to relative levels of tapu sourced through whakapapa, the natural environment is seen as holding significant levels of mana, which Rūnaka are dutybound to sustain and protect. Mana is the principle associated with people and is underpinned by the values associated with "responsibility, leadership and birthright." Today, the mana and rakatirataka of Ōtākou and Hokonui is recognised and affirmed under the provisions of the Ngāi Tahu Claims Settlement Act 1998, in which the Mata-au is identified as a statutory acknowledgement area based on Kāi Tahu's "cultural, spiritual, historic, and traditional association to the Mata-au." Wai māori is afforded great mana by manawhenua.

- Mauri: Mauri flows from our living world and down through whakapapa, linking all aspects of our world. The mauri of water represents the essence that binds all things, acting as a life-giving force, and connecting the environment, from the mountains to the sea. Mauri is an observable expression of tapu and mana, denoting the life force that connects the physical and spiritual aspects of our world and the objects and beings within it. Waterbodies with an intact and strong mauri are characterised by good quality waters that flow with energy and life, sustain healthy ecosystems and support mahika kai and other cultural values. Sustainable waste management practices are, in themselves, a means of supporting a healthy mauri for our environment. By reducing, reusing, and recycling our waste, we are able to make our environment cleaner, which can help removes many risks to indigenous biodiversity.

- Rakatirataka and Kaitiakitaka: Rakatirataka refers the exercise of mana in order to give effect to Kāi Tahu culture and traditions. In the management of the natural world, rakatirataka is underpinned by the obligations placed on mana whenua as kaitiaki; the practice of kaitiakitaka is an expression of rakatirataka. Wai māori is a taoka that is governed under the domain of rakatirataka, in accordance with Kāi Tahu tikaka and the principles of kaitiakitaka. For tīpuna, the state of the environment and the bounty of resources were significant measures of the mana of the people. Under the tenets of kaitiakitaka, manawhenua consider it their duty to advocate for te taiao and the Mata-au as an expression of their mana, and in the fulfilment of rakatirataka and kaitiakitaka roles.

- Wāhi Tīpuna and Ara Tawhito: Wāhi tīpuna are interconnected ancestral places, landscapes and taoka that reflect the history and traditions associated with the long settlement of Kāi Tahu whānui in Otago. Ara tawhito provided well-worn highways connecting the numerous wāhi tīpuna of Kāi Tahu whānui, from the coastal bays and estuaries to the wetlands and marshes of the immediate interior, and into the mountainous regions with their glacial lakes. Wāhi tīpuna in the surrounding cultural landscape are numerous, indicating that the level of activity and presence manawhenua had there in the past. These are listed in the CIA.

- Mahika Kai: Mahika kai practices refers to the places, practices, knowledge, and species associated mahika kai. Although food security was a significant element of mahika kai, it extended well beyond food gathering to encompass the harvest of primary resources for the production of textiles, tools, and implements. Mahika kai practices underpin the Kāi Tahu relationship with Otago's rivers, lakes, wetlands, moana, and the broader environment, which in turn is a bedrock for the cultural identity of manawhenua. Mahika kai is a key value associated with the Mata-au catchment. Fundamental to Kāi Tahu culture is the ability to learn and practise customary gathering of food and other

resources, to put kai on the table at the marae and at home, and to ensure that the knowledge of customary practices is passed on from generation to generation. For mahika kai to be sustained, diverse populations of species must be present across all life stages and must be plentiful enough for long term sustainable harvest. Beyond target species, tīpuna also recognised the importance of species in the wider food web as a significant identifier of ecosystem health and availability of species for harvest.

3.11 Transportation Infrastructure

An Integrated Transport Assessment has been prepared by WSP for the Mt Cooee project and is attached as **Appendix N**.

As stated previously, access to the current landfill site is located off Kaitangata Highway, approximately 1.2km south of Balclutha. The Kaitangata Highway is defined as a District Arterial Road under the Clutha District Plan for the "*purposes of providing links between centres of population or to larger roads and is a heavy traffic route*".

The Transport Assessment states that Kaitangata Highway is a key Rural Connector (One Network Framework) road linking Balclutha with Stirling. The road is formed as a sealed two-lane carriageway (7.5m width) with a speed limit of 100 km/h.

A rail overbridge is located approximately 160m to the north of the site entrance.

3.12 Flooding Overlays

A Clutha River Flood Hazard Assessment for the Mt Cooee Landfill has been prepared by GHC Consulting (attached as **Appendix O**). The report provides an overview of the flood hazard associated with the site. The report notes that the ORC assessment of natural hazards on the Clutha Delta describes a number of considerations for the area of the Mt Cooee Site (Area A1), including that the area plays a crucial role in the conveyance of floodwater, and in the mitigation of flood hazard for other parts of the delta. It is the main flow path during high river flows, and modifications to this general area (being the entire Clutha Delta) could affect the safe and effective operation of the Lower Clutha Flood Protection Scheme.

The Hazard Assessment concludes that the parts of the site likely to be affected by a major flooding event are limited to the berm area between the Kaitangata Highway and the landfill face, including the stormwater ponds and the proposed Resource Recovery Centre. The report suggests the depth of inundation will vary depending on the severity of the flood event but is unlikely to exceed 1.0m.

The report provides an approximate extent for consideration of flood risk, see Figure 6 below.

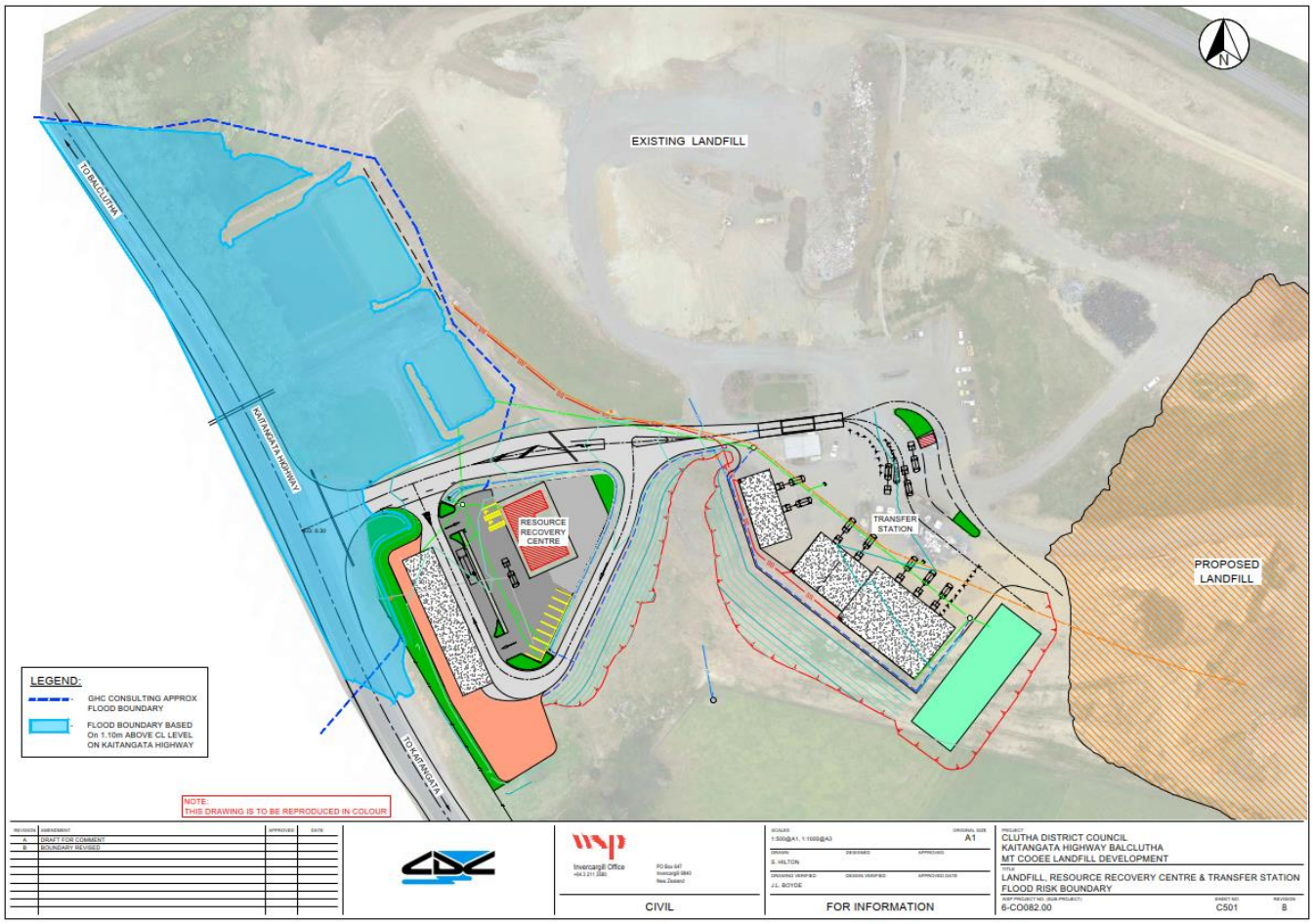

Figure 6: Mapped Flood Risk Boundary against the proposed design for the landfill.

As this flood extent affects the proposed Resource Recovery Centre located adjacent to the Kaitangata Highway, this was considered in the design of the Resource Recovery Centre (see the Design Report attached as **Appendix B**).

4 Description of the Proposal

4.1 Overview

The Mt Cooee Landfill is currently the only operational municipal solid waste landfill in the Clutha District. The landfill is located on Kaitangata Highway approximately 1.2km east of the Balclutha Township. The landfill has been operating at its present location for over 30 years and is operated under the classification of a "Class 1" landfill (*WasteMINZ Technical Guidelines for Disposal to Land 2022*).

As part of the landfill expansion, a new Resource Recovery Centre and Transfer Station will be developed at the site entrance. This will enhance landfill operations and support CDC's strategic objective to minimise waste and manage waste and recovered materials in a safe facility which prioritises diversion from the landfill.

The general layout of the proposed landfill is shown below and is shown in detail in the design plan drawings, attached as Appendix C.

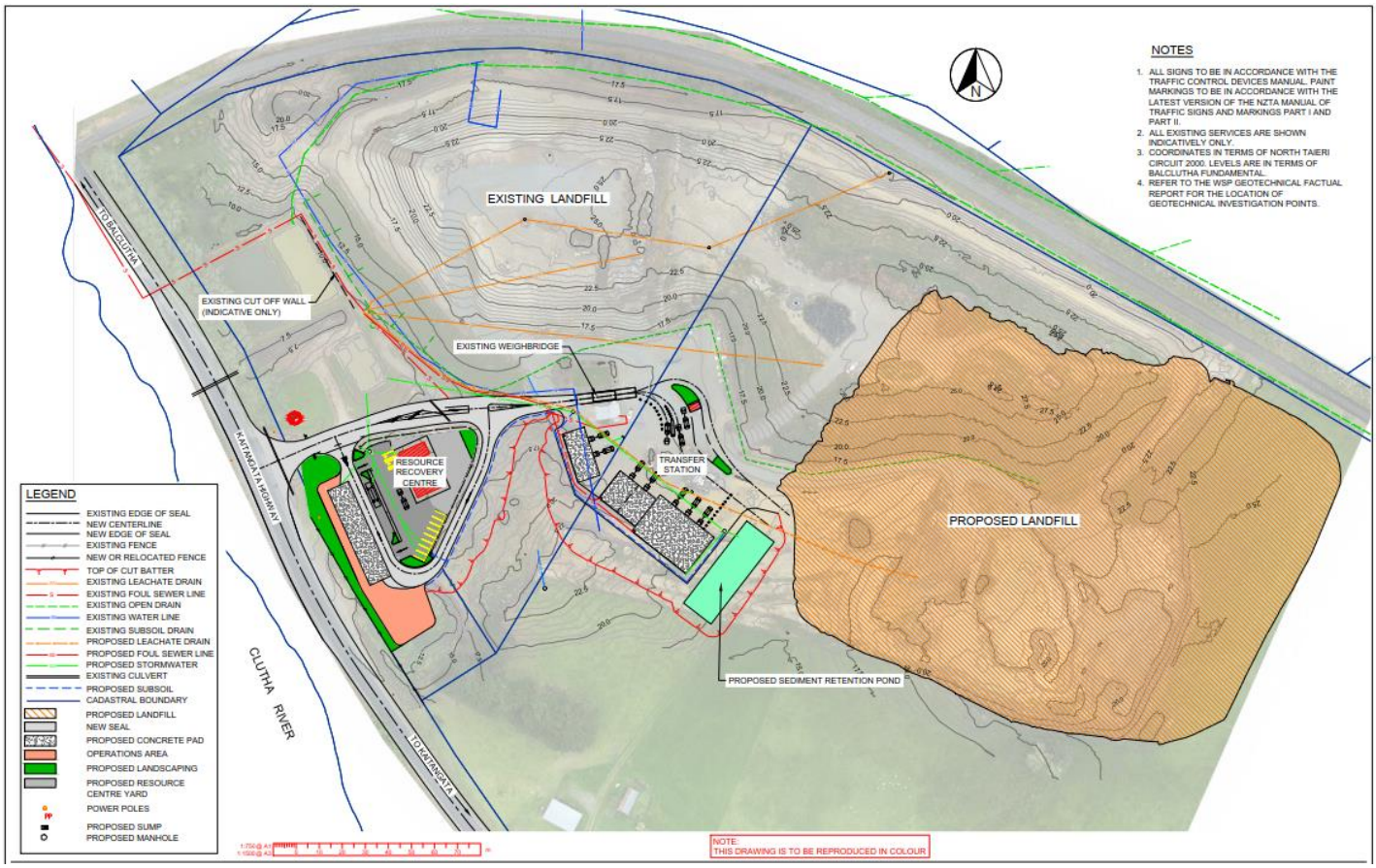

Figure 7: Design plan showing the general layout of the proposed new cells at the landfill.

4.2 Proposed Footprint and Capacity

The planned expansion will encompass a total footprint area of 3.23 hectares across five landfill cell stages. The total available airspace across the landfill expansion is 320,400m^3, which allows for an estimated 30 years of waste disposal. This meets the required volume of 320,000 m^3 needed, based on population projections and waste minimisation opportunities available.

The landfill cells will be developed sequentially, with three base cells (Stages 1-3) developed against the existing landfill footprint (in a clockwise order), with two further cells (Stages 4, 5)

then developed on top of the landfill base, up to a final height of 36.0mRL. The stages of the cells are shown in Figure 8 below.

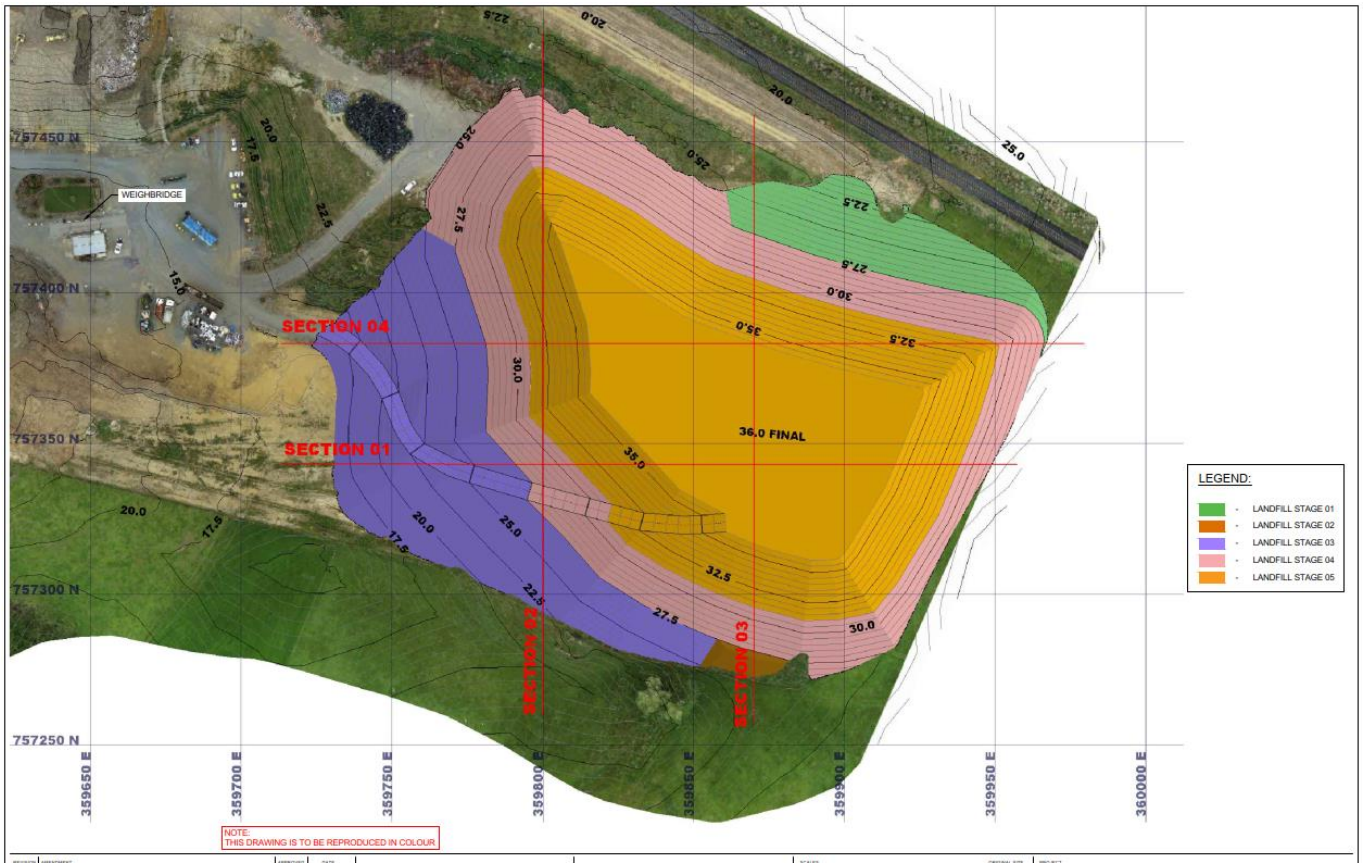

Figure 8: Layout and stages of the five landfill cells.

4.2.1 General layout

It is proposed that the new cells be built to the south and east of the existing cells, as shown on the design plan drawings attached as Appendix C. The boundaries have been set as follows:

- An area of the site located on the existing fill, adjacent to the weighbridge, will be used for a new on-site transfer station and materials recovery area. This area is over alluvial soils and unlined ground and is not considered suitable for the new landfill cells.
- The new cells will be setback 15m from the eastern property boundary.
- The new cells will be setback at least 150m from the Kaitangata Highway, and uphill from the Clutha River / Mata-Au. Locating the new cells uphill will reduce visual impacts and avoid encroachment onto the two identified wetlands and small waterway, located in the south-eastern corner of the property.
- The northern boundary of the new cells will be an effective continuation of the existing cells, located alongside the railway line.

As the new cells will sit in part on top of the existing landfill, some of the available void space is provided by filling back over the temporary batters of the existing cells. The development of the new cells will include lining these batters rather than relying on the existing sheet pile cut-off wall for leachate containment.

4.2.2 Base Grades

Excavation of the existing landform will be required to develop each of the three base cells. Cells will be graded at a 1:50 slope, with a fall to the west, which will allow leachate collected from the base of the cell to be fed by gravity to the existing landfill wastewater pump station before being

pumped to the Balclutha WWTP. Internal batters within the landfill area will be at a slope of 18 degrees (3h:1v) to support liner application and suitable drainage.

A summary of each new landfill cell, including the volume to be removed and expected airspace available is detailed in the Design Report.

4.2.3 Landfill Airspace / Volume

Landfill airspace has been calculated based on an expected 9,000 tonnes of incoming waste annually, which has been generated based on existing volumes and is therefore considered conservative, noting that dependant on the degree of diversion and waste minimisation activities this volume could reduce to as little as 4,800 tonnes annually (which would make the landfill operation economically unfeasible).

Estimated landfill airspace, per landfill cell, is described in 1 below.

Table 1: Landfill Volume by development Stage

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

4.2.4 Landfill Staging and Operations

Landfill staging is planned across the five landfill cells planned for the development, each cell will be graded to drain to the west of the site, with a landfill liner installed on all newly excavated areas and singular point of leachate discharge.

The cell arrangement has been designed to support integration with existing landfill and allow a continuation of the existing landform and screening of operational activities.

The staging is indicative only and may be amended to better suit cash flow and waste volumes in future as appropriate.

The staging sequence is clockwise, commencing with the cell at the north alongside the railway. This sequencing has two consequences:

- There is a large volume of material to be excavated as part of the development works (32,000 m^3 of weathered and fresh greywacke). This material will require storage or transport offsite in the early years of the development. With a counter-clockwise development this material could be extracted more gradually possibly allowing more use on the site or possible sale.
- Drainage of leachate from the initial cells is into the future cells. While not insurmountable, this is generally undesirable as it is a lot easier to joint new liners to the upslope edge.

4.2.5 *Stockpiling activities*

Due to the required volume of material to be removed (largely expected to be weathered greywacke), a yet to be determined volume of material will either be stockpiled on-site or transported off-site. It is anticipated that excavated materials will be utilised by Council operations or if unsatisfactory for these purposes, cut to waste, with up to 32,200m^3 generated in the initial stage of works.

4.3 Waste Types

The Mt Cooee Landfill primarily accepts municipal solid waste of a domestic / household nature and from businesses and farms. The types of municipal waste discharged is detailed in the Design Report (attached as **Appendix B**) but will include the following:

- **General Waste:** Household and commercial rubbish to be accepted via a new Refuse Transfer Station facility. Only operational vehicles will deposit waste directly to the landfill tip face (separation of public and operational vehicles).
- **Green Waste:** Examples include lawn clippings, hedge clippings, leaves, tree trimmings with branches less than 150mm diameter, and garden weeds. The incoming green waste will mature on top of the existing landfill and then be shredded for landscaping.
- **Recyclables:** Examples include rigid plastic containers, paper, flattened cardboard, aluminium tins and steel cans. An operational area immediately after the weighbridge will be provided for household recycling and scrap metal storage. Materials will then be transported off-site for processing. No recycles will be disposed of into the landfill cells.
- **Glass** bottles and jars.
- **Electronic Waste**: Examples include computer monitors and TVs.
- **Ash**: The existing operations include provision for the acceptance of ash via a dedicated fenced and signposted area, to ensure hot ash will not ignite refuse.
- **Hazardous Substances:** The site does not currently accept hazardous substances other than used paint and end of life gas bottles. The new Transfer Station design outlines a more comprehensive facility for the diversion and safe storage of hazardous materials.
- **Liquid wastes:** (Septage, grease trap and occasional other liquid organic wastes from food processing) have been accepted via excavation of a dedicated liquid waste pit. Such excavations occur into the already deposited refuse layer and are limited to an area of no more than 20m^2 by 2m deep, to be closed over within 2 months. It has been noted that this activity does not align with best practice landfill management and poses a number of issues including variable settlement within the landfill, contributing to onsite leachate generation and may be a significant source of odour unless managed appropriately.
- **Special wastes:** Are accepted under a licensing procedure. The waste generator is required to contact CDC in advance requesting disposal. An application to CDC as set out in the Solid Waste Bylaw is required. The application is assessed in terms of the Bylaw "Schedule B: Special Waste Definition and Classification" and the waste disposal approved with conditions as appropriate. A specific permit is issued for a special waste disposal and must be produced at the kiosk. A waste manifest is kept at the kiosk that records the waste type and quantity and also provides for a record of the location in the fill where the material is placed. Location of special wastes is only recorded for selected materials where future location could be relevant (e.g. asbestos waste).

Hazardous and special wastes would normally constitute less than 1.0% of the overall waste stream accepted at the landfill.

All waste is transported to the landfill in a fully enclosed vehicle / container or otherwise secured to avoid loss of material in transit to and within the site. The landfill generally only receives waste from commercial waste companies or bulk loads but it is open to the public.

- Biosolids, filtrate and septage from the Municipal Water and Wastewater Treatment Plants.

4.3.1 Waste Handling

The proposed landfill development will be complemented by a Transfer Station and Resource Recovery Centre. These facilities will be established to support the safe management of incoming waste streams and reduce the overall volume of waste to be deposited within the landfill. The receipt of all public and uncompacted waste at a dedicated Refuse Transfer Station facility, will have multiple benefits including:

- Reducing health and safety concerns associated with having public access to an active refuse tip face and interaction with operational equipment and the public.
- Increasing opportunities to recover materials from the refuse waste stream (and divert those materials from landfill).
- Maximise efficiencies for placing waste within the landfill cell, either in a compacted state or by controlling the placement of all materials.
- Minimise the required area of tip face open at any time.
- Reduce litter and related impacts such as birds associated with having a large an accessible public tipping face.

4.4 Geotechnical Design Considerations

The Mt Cooee Landfill site has the following geotechnical features which have determined the landfill design:

i. The valley under the old landfill cell is infilled with up to 8m of alluvium deposits. These thin at the valley sides to leave a 1-2m veneer of weathered greywacke overlain with thin deposits of alluvial materials and topsoil.

ii. Stage 2 does not involve construction over the alluvium. All of Stage 2 will be founded on excavated greywacke, either weathered or fresh. The greywacke is competent rock which requires ripping to excavate (once the initial 1-2m of weathered material is passed).

iii. There is no liquefaction risk to the Stage 2 fill foundation.

iv. Groundwater will be greater than 1m below the landfill liner base layer (more generally 2-3m)

v. There is little clay or silt materials on the site which can be utilised for either landfill liner materials or for landfill cover and capping soils. There is only a thin veneer of silt over the weathered greywacke. Having no clay on site is a major factor determining the liner system.

vi. While there is no clay on site, suitable deposits of liner grade clay/silt are expected to be available within a short haul distance

vii. Rock excavated to form the landfill floor will be granular material and will be permeable to water and gas if utilised for landfill cover.

viii. It is understood there is currently no economic use for the rock to be excavated and it is therefore all assumed to be either used within the site works, across Council operations, or cut to waste.

4.5 Landfill Lining System

As a Class 1 Landfill, the design of landfill liner and leachate abstraction have been developed in accordance with the WasteMINZ Disposal to Land Guidelines (2022).

4.5.1 Base liners

The landfill expansion area will be progressively developed in accordance with the landfill staging plan with a Class 1-Type 2 liner applied to each cell prior to the placement of waste (and discharge of any leachate). The minimum requirements for the Class 1 – Type 2 liner are described in the Design Report and shown in Figure 9 below, noting that dependant on soil permeability, a shallower 300mm layer of compacted cohesive soil (K<10-9 m/s) would provide equivalent performance.

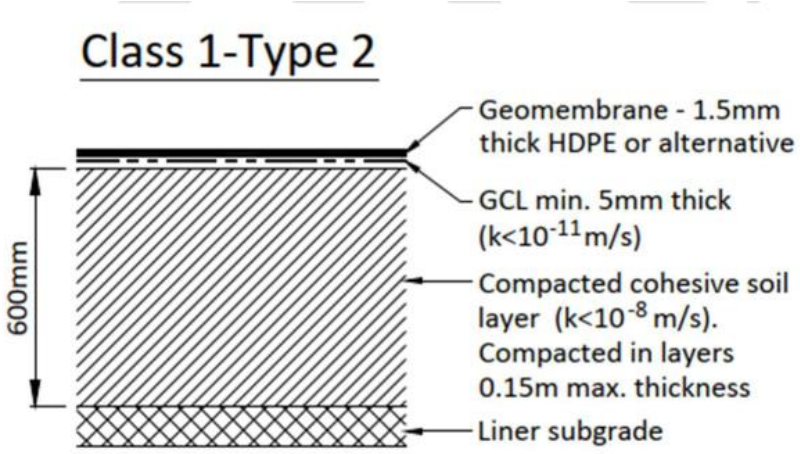

Figure 9: Class 1 – Type 2 Landfill Liner

In accordance with the performance requirements identified in the WasteMINZ Guidelines (2022), the following minimum requirements are established for the Mt Cooee Landfill new cells (from landfill layer (top) to base of landfill excavation):

- 300mm thick granular drainage layer
- geomembrane protection layer of non-woven geotextile
- 1.5mm HDPE Geomembrane
- 5.0mm Geosynthetic Clay Liner (k<10-11m/s)
- 300mm Compacted cohesive soil (K<10-9 m/s)

Note that the soil for the compacted soil layer beneath the Geosynthetic Clay Liner (GCL) is assumed to be imported to site and therefore, at final design stage when the borrow area for the Compacted cohesive soil layer is confirmed, the thickness and specification of the base soil layer will be determined. An alternative approach should highly cohesive soils be un-economic to import would be to use 600mm of soil at permeability 1 x 10^{-8} m/s. The lower permeability soil has been used as the basis for the design, noting this option is preferred as it will reduce quantities of liner soil having to be imported to site.

The liner protection layer geofabric will be specified for compatibility with the selected drainage aggregate.

4.5.1 *Liner placement*

The placement of landfill liner will be completed following excavation of the landfill footprint. Following placement of a suitable liner subgrade (e.g. crushed rock), the placement of cohesive soils will occur in 150mm lifts as required with compaction testing completed prior to installing next compacted soil layer.

Overtop of the completed soils layer, a GCL will be placed.

Overtop of the GCL an HDPE Geomembrane layer will be installed.

Prior to placement of waste a heavy weight geofabric, weight appropriate to the drainage aggregate, will be placed.

The liners on the batters (both new ground and interface with the existing landfill) are described in detail in the Design Report (attached as Appendix B).

4.5.2 *Existing cells*

The Mt Cooee landfill, to date, has been constructed and operated as an unlined landfill. The underlying greywacke rock and the geohydrology of the site provide a natural containment to maximise the capture of leachate. As part of the landfill development works in 1995 (note the site had been in use for some 10 years prior to this), a steel sheet pile cut-off wall was installed across the valley floor at the landfill toe. The sheet piles effectively extend the wall down to the bedrock across the full width of the valley. The sheet pile wall was capped with a low permeability compacted clay bund. The wall and bund have therefore formed a dam for groundwater flow, which minimises the deeper percolation of leachate but also directs groundwater flow out of the site towards the leachate collection system. Some leachate may still infiltrate into the deeper greywacke formation, but this is expected to be at very low levels.

When considered in terms of the landfill classification as set out in the "*Technical Guidelines for Disposal to Land*" (WasteMINZ 2022), the existing Mt Cooee landfill cells would classify as a "Class 1" site, meaning it is suitable for general municipal waste. While the existing waste cells at the site do not have a base lining, the cut-off wall construction and leachate collection system does provide substantial containment and limits off-site migration of contaminants.

4.6 Landfill Cover

4.6.1 *Daily Cover*

Daily cover will be applied across the working tip face at close of each day, the placement of daily cover is intended to minimise unwanted effects including; windblown litter, odour and attraction of vermin and or birds. Daily cover material will depend on availability of suitable materials onsite but due to lack of topsoil may include:

- Soil or clays imported
- Inert wastes received at the site and suitable for stockpiling and use as daily cover
- Shredded Green waste, sawdust or mulch
- Contaminated soils (compliant with site Waste Acceptance Criteria)
- Stabilised biosolids

4.6.2 *Intermediate Cover*

Intermediate cover will be applied as cells are completed and remain in place prior to development of a new overlying cell (e.g. at the completion of Cells 1-3 and 4). Intermediary cover will be designed to limit water ingress and prevent odour and therefore will need to have low permeability to water and landfill gas. In accordance with the WasteMINZ Guidelines (2022), this cover will also be grassed where it remains exposed for a period of more than three months.

4.7 Leachate Collection and Removal System

Leachate is the liquid by-product of waste degradation which typically combines with rainwater to percolate through the placed waste. As these liquids percolate downwards, they further combine and collect dissolved and / or suspended matter from the waste profile.

4.7.1 Existing cells

The landfill has been designed to both minimise the volume of leachate produced and contain and collect any leachate to prevent it from entering the underlying soils, groundwater, or the downstream environment.

The volume of leachate generated is managed through the following measures:

- Preventing clean, upslope surface water from entering the placed waste mass and leachate collection system.
- Minimising the size of the active waste tipping area where waste is exposed to rainfall.
- Covering areas with intermediate cover or final capping as soon as is practicable so that as much water as possible is diverted to the leachate collection systems and to further prevent water ingress to placed waste.

The existing leachate control system comprises of:

a) A drainage system comprising leachate collection lines of perforated pipes (primarily drilled DN 100 mm HDPE and DN 110 mm Novaflo) laid on the original valley floor and leachate collection manholes. All lines are designed to allow cleaning with sewer jet cleaning equipment.

b) A pump station at the downstream face of the landfill, which transfers leachate / contaminated groundwater to the CDC sewer for treatment. It is understood that on average 28,600 litres are transferred each day (based on the current cells).

c) A sheet pile cut-off wall driven down to the greywacke rock to contain groundwater.

d) A 770m^3 pond (lined with 600mm clay with a permeability of < 10^{-9} m/s) provides emergency storage for leachate overflow from the pump station. This will eventually be replaced with a fully contained holding tank.

e) Groundwater bores around the site perimeter are monitored for parameters indicative of leachate contamination.

4.7.2 New cells

The landfill floor will be constructed to a minimum gradient of 2% (1v:50h). As the groundwater level is considered to be well below the proposed floor level of the landfill, no underdrainage is proposed beneath the base layer of the landfill layer.

The leachate drainage for the new cells will consist of:

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

HDPE pipe specified as DN 160 SDR 13.6 PE has been specified for all the leachate pipes. This provides adequate factor of safety up to 24 m of refuse fill with quality embedment of the surrounding drainage metal. Compaction of the bedding has been specified up to 90% of standard dry density. The design refuse fill height is to RL 36.0m including capping.

Leachate drains have been positioned to provide a maximum horizontal flow path of 90 m. This is calculated to keep leachate depth on the liner between drains at less than 300 mm.

Leachate lines have been sized at 160 mm diameter as this is an optimum size for cleaning. Access is available from inlet chambers (capped) at the upstream end of laterals. The central collector is accessible from both upstream and downstream ends.

4.8 Surface Water and Stormwater Management

4.8.1 Existing cells

The stormwater management approach is:

- Separation of 'clean', 'dirty' and 'contaminated 'water sources;
- Stormwater treated at source, wherever possible;
- Stormwater is detained on site to reduce loads on downstream reticulation; and
- Stormwater management and transport designed such that site stability is maintained and erosion avoided.

Stormwater runoff from the upstream catchment has historically been captured at the site boundary with the Balclutha Golf Course and then diverted beneath the landfill in a 525mm diameter concrete pipe (accessible via two intermediate manholes). This culvert then discharged at the downstream landfill face to flow under the Kaitangata Highway into the Clutha River / Mata-Au without further treatment. The culvert passed through the sheet pile wall and was encased in concrete at the wall to prevent leakage of leachate / groundwater around the outside of the pipe.

However, monitoring of water quality downstream of the culvert showed that the discharge contained high levels of ammoniacal nitrogen (a sign that leachate was entering the pipe). CCTV inspection confirmed there were isolated faults in the culvert. Repairs were carried out in 2013, however this did not result in any substantial improvement in the quality of the discharge.

Therefore, in 2021, CDC diverted the stormwater around the northern side of the landfill. A new swale was created on the northern and north-eastern boundaries of the landfill site which now transports stormwater flows to the existing run-off route and discharges to the Clutha River / Mata-Au at the previous discharge location (west of the landfill). The old culvert is still located underneath the landfill and collects groundwater, which is intercepted and treated as leachate from the landfill via the leachate collection system. Reducing a large volume of stormwater from the gully significantly reduced the discharge and effluent volumes. This is discussed in more detail in Section 5.1 of this Consenting Strategy.

There are also two stormwater ponds that capture runoff from the general site, including access roads and completed landfill areas, but not the active landfill face. The ponds are approximately 600m^3 and 1,000 m^3 in volume, respectively.

Runoff from the active landfill face is held in the immediate tip face area for ground soakage and is then captured by the leachate collection system, which is described in detail in Section 4.8.2 below.

4.8.2 New cells

Stormwater Management for the development site is addressed in the Stormwater Design Memo (WSP, 2023), which is attached as **Appendix P**. The Memorandum describes the site as an undulating area with approximately 20m of height variation with a natural fall towards the south-west and Clutha River / Mata-Au, with a smaller area to the north of the site that falls northwards towards the railway line to an open drain.

Existing stormwater on site is managed by two stormwater retention ponds with a combined volume of 1,600m^3. Both stormwater retention ponds are designed, once capacity is exceeded, to discharge via a culvert to the Clutha River / Mata-Au. Upgradient surface water is captured at the boundary between the golf course and railway line on the north-western side of the site and also discharges to the river, upstream of the railway bridge (and site boundary).

As part of the landfill cell development, a temporary flap on the landfill liner will be used to divide sub cells and allow clean stormwater to be diverted away from the leachate system.

Stormwater from the Resource Recovery Centre will be conveyed to a centralised point and transferred to the existing stormwater retention pond. Grates will be fitted with sump cages to catch any litter prior to discharging via the stormwater network. A routine maintenance task will be established to clear grates and ensure functionality of the stormwater network.

Stormwater from the transfer station area, including water from a new proposed sediment retention pond (servicing the landfill construction area) will be piped via a new stormwater main and discharged to the existing stormwater retention ponds.

Works are planned to link the existing stormwater retention ponds to a single manhole from which the stormwater will be pumped and used for irrigating the landscaping on site.

Any liquid generated in either the organics or general waste receival areas will be captured and transferred to the leachate pump station via a new leachate line around the rear of the operational area.

Leachate for the landfill expansion area will be transferred across the centre of the operational site via a new leachate line and discharged to the existing leachate pump station where it will be conveyed to the CDC sewage system.

The ground levels and site contouring in the transfer station and RRC will allow gravity drainage of operational areas.

To support effective management of stormwater from operational areas of the landfill expansion a new sediment retention pond will be created upgradient of the transfer station area. This facility will capture all stormwater from the landfill development area (approximately 3.23 ha), allowing suspended sediment to settle out within the pond. Also aiding in the attenuation of flow and therefore limiting the effect downstream in large rainfall events. All operational landfill stages (i.e. filling of waste) will be captured separately via the site leachate management system.

4.9 Landfill Gas Collection and Management

Degradation of biodegradable waste within a landfill results in the generation of landfill gas (LFG), primarily consisting of methane, carbon dioxide, oxygen and nitrogen with trace amounts of odorous compounds such as reduced sulphur compounds and volatile organic compounds.

The main health and safety concerns with landfill gas are the potential for explosions or asphyxiation of personnel on site where gas may accumulate in confined spaces. The primary objectives of gas control are to minimise the risk for unmanaged point source discharges or accumulation of gases; protect adjacent properties from potential gas discharges; reduce odour nuisance; minimise greenhouse gas discharges and reduce damage to vegetation on the landfill cap.

There is currently no gas collection infrastructure in place at the landfill. To date, gas has diffused through the waste and intermediate capping. The site incurs Emissions Trading Scheme liabilities at present based upon the tonnage of waste disposed in a year and is charged at the full default UEF (0.91).

To date, the emphasis with landfill gas is on health and safety for the site staff and control of odour nuisance.

4.9.1 New cells

The Emissions Reduction Plan (2022) indicates that gas collection will be required at all Class 1 landfills accepting municipal waste by 2026 (Action 15.5.1). This is signalled to be implemented by way of an amendment to the NES Air Quality 2004. It is noted that Action 15.5.1 does include a caveat of "where feasible", however what this may mean in practice is not defined at this stage.

Accordingly, it is proposed that requirements for gas collection be kept under review and further advice be sought from the Ministry for the Environment prior to committing to the Stage 2 development. The prudent financial course at this stage is to assume that the Mt Cooee site will require landfill gas collection and destruction as per 15.5.1 of the ERP

If the new cells within the landfill require landfill gas abstraction as per the Emissions Reduction Plan, this would involve the following:

- A fully enclosed flare
- Gas wells constructed as the fill is placed
- Reticulation to the flare

Landfill gas abstraction adds a substantial measure of complexity to the historical operations on site and will involve considerable on-going operational expenditure.

4.10 Landscape Enhancement

Mr Mike Moore, Landscape Architect, prepared a Landscape Mitigation and Rehabilitation Concept Plan (attached as **Appendix D**).

Mr Moore recommends keeping the south-eastern corner free of the expansion works area to provide visual screening. Mr Moore has recommended some additional screen / amenity planting along the boundary with the Kaitangata Highway, and finishing the existing landfill cells to a smooth, natural looking contour once it is capped and planting it in copper tussock.

The plan is shown in Figure 10 below.

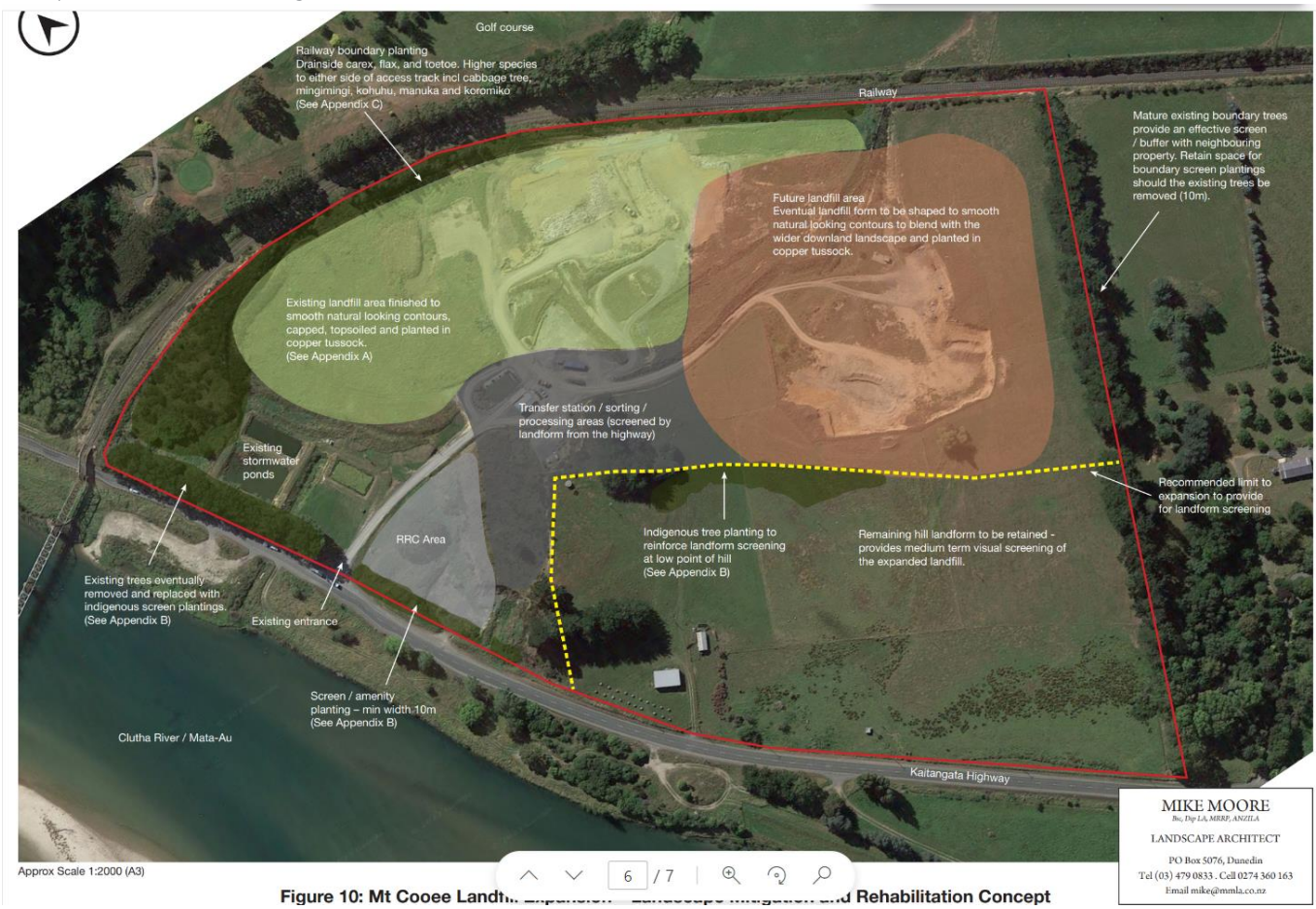

Figure 10: Mt Cooee Landfi... Expansion ... Landscape Mitigation and Rehabilitation Concept

Figure 10: Landscape Mitigation and Rehabilitation Concept Plan developed by Mr Mike Moore.

4.11 Landfill Access

Access to the landfill will continue to be provided via the existing vehicle accessway located off Kaitangata Highway. This accessway will be widened and recontoured to allow room for through vehicles and to avoid conflict with turning vehicles. The accessway will be sealed up to and around the weighbridge area. Beyond the weighbridge, the accessway is to remain unsealed. Horizontal and vertical alignment has been designed to encourage operating speeds of no more than 20 km/hr.

The new Resource Recovery Centre includes a resource recovery shop, education centre and associated car parking. The traffic design allows for separate one-way circulation for public drop-off of recycling and other free to dispose materials. These activities all occur prior to the public weighbridge. There will be a separate right-turn lane for incoming vehicles wishing to access the Resource Recovery Centre. The proposed road layout, including accessway and car parking, is detailed in the Traffic Assessment attached as Appendix N.

All access is under the control and at the discretion of the CDC. The landfill Contractor may refuse entry to any vehicle which does not comply with the waste acceptance requirements. All traffic must pass the kiosk and weighbridge before entering the resource recovery and disposal areas of the site.

Public access to the landfill disposal area of the site is currently permitted but will be restricted under the proposed expansion. An on-site transfer station for the general public is proposed as part of the future expansion of the landfill.

Public after-hours access to the landfill site is prohibited. In emergency situations the landfill Contractor is available to provide access.

4.12 Landfill Facilities

There are various site facilities located at the landfill to support its operation. The facilities include:

- Staff facilities building: Provides adequate and safe facilities for operations staff. Ablution facilities include toilets and adequate washing areas, and potable water is supplied. Safety equipment is stored in a dry, accessible area, ready for emergency use.
- Hazardous Waste Temporary Storage building: A lockable concrete shed is provided on a bunded concrete slab for temporary storage of small amounts of hazardous waste.
- Ash Pit: A separate area is provided for the disposal of ash. This is to ensure hot ash will not ignite refuse. The pit is hazardous and must be fenced and signposted.
- Septage and Liquid Waste Disposal: The site accepts septage and grease trap waste plus occasional other liquid organic wastes from food processing. This is disposed of by excavating a pit of approximately 20m^2 x 2m deep into old refuse. Each pit lasts approximately 1 to 2 months and is covered with old refuse after each disposal. Both the initial excavation and the on-going operation of the liquid waste pits are significant sources of odour from the site. This is managed by timing operations for appropriate wind directions and covering material immediately after dumping. The liquid also contributes to leachate from the fill.
- Vehicle Weighbridge.
- Workshop.
- Staff and visitor car parking.

4.13 Resource Recovery Centre and Transfer Station

The proposed expansion of the landfill's public waste receival facilities includes the development of a front-end Resource Recovery Centre (RRC) and enhanced transfer station operations.

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

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

The proposed Resource Recovery Centre and Transfer Station is detailed in the Design Plans and the Design Report, attached as Appendices B and C.

4.14 Hours of Operation

The landfill is open to the public at the following times:

- Monday to Friday: 8.00 am to 4.30 pm
- Saturday and Sunday: 10.00 am to 4.30 pm
- CLOSED: Christmas Day, New Year's Day and Good Friday. Closed until 1.30pm on ANZAC Day.

4.15 Landfill Construction

Construction of the new landfill cells will occur progressively over the life of the landfill. There will be initial development works, works associated with the development of each stage, and then the works associated with the closure of the landfill.

The initial construction works will include the following:

- Upgrades to the access road into the Mt Cooee Landfill, including the intersection with Kaitangata Highway to allow for the proposed Resource Recovery Centre and Education Centre;
- Initial site clearance where the proposed Cell 1 will be located;
- Construction of the site access to the proposed Cell 1 and access between the facilities on the site;
- Landfill facilities;
- Landfill toe embankment, sediment retention pond, and the sediment control measures and the landfill perimeter drain for Cell 1;
- Formation of the base grade, groundwater collection, low permeability liner system, and leachate collection systems;
- Perimeter planting as described in the Landscape Plan; and
- Landfill environmental systems, including groundwater / LFG wells.

Construction of the landfill across all five proposed cells will involve some vegetation clearance (although this will largely be the removal of the existing exotic pasture), followed by bulk earthworks. Bulk earthworks to construct the landfill base grade of each cells are detailed in Section 4.2 of this AEE. Excavated topsoil and the underlying bedrock will be progressively stripped, separated, and stockpiled for reuse over the life of the landfill development.

Stockpiles will be established within the landfill footprint.

4.15.1 Erosion and sediment control during construction

The proposed approach to construction stormwater, erosion and sediment control is described in detail in the Assessment of Effects on Surface Water, along with the Design Report.

Prior to any works being undertaken on site that may generate sediment, erosion and sediment control measures will be put in place. All practicable measures will be undertaken to prevent sediment from entering water including, but not limited to:

- Establishing sediment controls prior to the onset of works and maintaining them in place until disturbed areas are stabilised.
- Stabilisation of disturbed areas as soon as practicable following the works.

- No washing down of equipment where sediment may enter any waterbodies.

A site-specific Construction Erosion and Sediment Management Plan (ESMP) will be prepared for the site and developed further for the various stages of the project. The purpose of the ESMP will be to provide a framework of controls for the construction earthworks to avoid, remedy and / or mitigate the potential adverse effects on the receiving environment, including measures to ensure sediment generation is minimised and the works are conducted in accordance with best practice. The ESMP will be prepared to document the earthworks and sediment control procedures that will be required during the initial construction phases of the project.

The key approaches for managing erosion and sediment risks will be:

- Minimise disturbance: Only work in areas required for the construction to take place.
- Stage construction: Plan works to minimise area of disturbance at any one time.
- Protect steep slopes: Use cut-off drains, bund armouring and use of flumes as appropriate.
- Protect watercourses: Plan works to prevent sediment-laden flows from entering watercourses without treatment.
- Develop methodologies and sequences for works in close proximity to the Clutha River / Mata-Au and any other waterways nearby.
- Stabilise exposed areas rapidly: Stabilise areas using a mixture of gravel, mulch and hydro seeding as appropriate.
- Install perimeter controls: Divert clean water away from areas of disturbance and divert sediment-laden flows to control devices.
- Employ detention devices: Treat runoff by methods that allow the sediment to settle out.
- Cover, stabilise and bund / silt fence stockpiles.
- Update Site-Specific ESCPs: As construction proceeds, the plan needs to be modified to reflect the changing conditions of the site.
- Assess and adjust: Inspect, monitor and maintain control measures.

Monitoring of the discharges and the receiving environment (such as the Clutha River / Mata-Au) will be undertaken throughout the construction earthworks period in order to confirm the effectiveness of the measures and to ensure measures adapt to minimise the generation and discharge of sediment are being implemented. The results of the monitoring programme will be used as a feedback loop to trigger the need to review and investigate both the effectiveness of measures, and whether additional controls, inspections or monitoring is needed to better control erosion and sedimentation.

4.16 Landfill Operation

A detailed Landfill Operations Plan will be developed in accordance with the proposed consent conditions, with an approved plan to be circulated within six months of new landfill operations commencing.

The operations plan will address Operations and environmental monitoring regime, noting that in terms of business continuity, due to the prevalence of alternative sites (AB Lime and possibly Smooth Hill in the future), the Clutha District is well placed should disposal at Mt Cooee be interrupted for any unexpected reason.

4.17 Landfill Closure and Aftercare

Once the landfill reaches capacity (in around 35 years), the landfill will be closed and the final cap will be installed. The proposed final fill contours for the landfill are discussed in the Design Report (attached as Appendix B), and represent the expected final contours after settlement.

The life of the landfill to be consented is 35 years, with the potential for further extensions after this time period to the east of the site. How fast the landfill is developed will depend on waste volumes (i.e. if waste generation decreases over time, the landfill life would be extended, and vice versa for increasing waste volumes).

4.17.1 Final Cover – Landfill Cap

The final cap of the landfill will be constructed progressively as areas of the landfill reach final design levels. Final cover (landfill capping) will be developed in accordance with the WasteMINZ Guidelines (2022) and consist of an engineered cap, with the following profile (from top to waste layer):

- Maintained grass cover/plantings
- 150mm Topsoil
- 300mm subsoil (Growth) Layer
- 200mm Drainage Layer
- 300mm of Compacted Soil (K<10-7m/s)
- GCL
- 500mm combination of intermediate soil cover and gas dispersion layers
- waste layer and daily cover layer

Should it be required an alternative cap design which provides equivalent performance may be substituted for the above.

The extent and type of planting will be determined closer to the time of closure, but needs to ensure that plants that are established on the cap are shallow rooting species, so they do not pierce the landfill cap.

Additional closure works will include grading stockpile areas to integrate them into the surrounding topography; removal of the proposed sediment pond; and re-vegetation of any exposed earthworks areas.

4.17.2 Maximum elevation

The final elevation proposed for the Stage 2 fill is RL 36m. This is some 14m above the general ridge line.

Fill to this level is necessary to achieve the target void space.

4.17.3 Aftercare Plan

At least six months prior to the landfill ceasing to accept waste for placement, a detailed Landfill Aftercare Plan will be developed. The Aftercare Plan will describe the measures to be taken to stabilise the site and maintain environmental controls including stormwater, leachate and landfill gas collection and treatment. The plan will set out the key objectives of the closure, restoration and aftercare plan, which will include:

- Ensuring the final landfill surface remains in a stable, vegetated condition, in accordance with the planting plan;
- Minimising long-term infiltration into the landfill and hence minimise leachate generation; and

- Minimising LFG migration through provision of a low permeability compacted earth cap and continued LFG extraction and disposal, if required.

Following final closure, CDC will be responsible for full care and environmental maintenance of the facility for the post-closure period, including implementation of Landfill Aftercare Plan. Leachate treatment, LFG extraction and monitoring across the Mt Cooee site will continue through this period in routine operating mode.

There is a strong preference to make the site progressively available for public recreation land use, post landfill closure and rehabilitation.

5 Description of Alternatives Considered

The Fourth Schedule of the RMA requires an assessment of any possible alternative locations or methods for undertaking the landfill activity, where it is likely that an activity will result in any significant adverse effects on the environment. Although it is considered that the Mt Cooee Landfill proposal will result in effects that are minor, or less than minor, particularly due to the mitigation methods proposed, an assessment of alternative options has still been undertaken as part of the design stage of the project.

5.1 Alternative Landfill Site Options

As stated earlier, the Mt Cooee Landfill is the only municipal solid waste landfill located within the Clutha District. Creating a new municipal solid waste landfill within the Clutha District at another location was considered by CDC, but this option was discounted early in the business case process due to the following reasons:

- The existing landfill at Mt Cooee contains enough land capacity to extend the landfill within the same site for the next 35 years;
- The existing landfill is well situated as it is in close proximity to Clutha District's biggest township (Balclutha); and
- The existing landfill is considered a good site for waste disposal due to the underlying bedrock and already contains the necessary infrastructure (such as stormwater ponds and leachate containment system.

Expansion and on-going use of the existing landfill site at Mt Cooee is an efficient and effective means of providing on-going waste disposal services for the Clutha District. On-going use of an existing landfill site avoids the need for development of a new landfill elsewhere in the District. The existing landfill forms part of the existing physical environment and has been present at the site for several decades.

An evaluation of the opportunities to dispose of waste away from the Clutha District (i.e. at another landfill within the Otago / Southland regions) was developed for CDC as part of the business case. The analysis found that two sites located within 130km of Mt Cooee (AB Lime Landfill near Winton and Smooth Hill Landfill near Dunedin) could be considered viable alternatives. Both sites are Class 1 facilities, albeit at a much larger scale than the planned Mt Cooee development.

These two options were considered as part of an economic analysis, which has not been appended to this AEE due to sensitive commercial information, but has been summarised below.

5.1.1 AB Lime Landfill – Winton, Southland

AB Lime operate a Class 1 Landfill just outside the township of Winton, approximately 120km from the Mt Cooee Landfill. AB Lime confirmed that they have the capacity, and would be prepared, to accept Clutha District's waste. It is noted that the resource consents associated with the AB Lime Landfill expire in 2046. The AB Lime site has an extensive and efficient landfill gas collection system in place and operates at a relatively low Unique Emissions Factor (UEF).

5.1.1 Smooth Hill Landfill, south of Dunedin

Dunedin City Council recently obtained the necessary resource consents from the ORC for a new landfill located approximately 55km north along State Highway 1 from Balclutha, in an area known as Smooth Hill (accessed from McLaren Gully Road). However, at the time of writing this AEE, the resource consents were subject to Environment Court appeals. It is not yet known when construction will begin, or when the landfill is expected to open.

The status of Smooth Hill's resource consent applications and the owners' willingness to accept CDC's waste is currently unclear. Initial discussions with DCC staff indicate that the current Green Island Landfill site would not be available for CDC. Currently, the proposal is that all incoming waste to the proposed Smooth Hill Landfill site would have to go via the transfer station located at Green Island, so the proximity of the Smooth Hill Landfill to Balclutha may not be as advantageous if waste first needs to be transported to Green Island.

For the purpose of economic comparison, there is greater certainty around the AB Lime Landfill site as the site is already operational and has confirmed capacity to accept CDC waste; whereas the access and ability of the DCC facilities to accept CDC waste is less certain.

The AB Lime site is therefore considered as the most likely viable alternative.

5.2 Alternative Discharge Methods

It is noted that whilst alternative methods for waste disposal are used in other countries around the world, these alternative waste disposal methods have not been adopted on a large scale in New Zealand due to New Zealand's different legislative and policy setting, and relatively small waste volumes and costs.

Although alternative methods of discharge and other receiving environments for the discharges at Mt Cooee have been considered, the proposed discharges are considered practicable for the following reasons:

- Class 1 landfills by their nature result in the discharge of contaminants to land.
- The majority of leachate will be captured and then pumped to the Balclutha Wastewater Treatment Plant, which is considered a much better option than discharging the leachate to a surface water receiving environment (i.e. discharging it to the Clutha River / Mata-Au or one of the natural wetlands located within the site).
- The methods of stormwater discharge have been selected to align with best engineering practice, and the guidance contained within the WasteMINZ guidelines. Stormwater generated during both construction and operational areas of the landfill was be discharged to the stormwater retention ponds for treatment before discharging to the downstream Clutha River / Mata-Au. However, the proposed irrigation of dry areas and vegetation within the site will re-use much of the stormwater generated and therefore decrease the volume discharged to the Clutha River / Mata-Au.
- The proposed Resource Recovery Centre will reduce the volume of waste discharged to land, which is a vast improvement from the existing site. The new cells will also be lined, which will decrease the volume of contaminants entering groundwater.

5.3 Alternative Technologies

The limited availability of alternative approaches to landfill in New Zealand have led to a focus on waste minimisation and diversion rather than investment in alternative technologies. The recent release of an updated NZ Waste Strategy: Te rautaki para (2023), further defines the shift towards a more circular economy with disposal as the last step in an annotated waste hierarchy, see Figure 11 below.

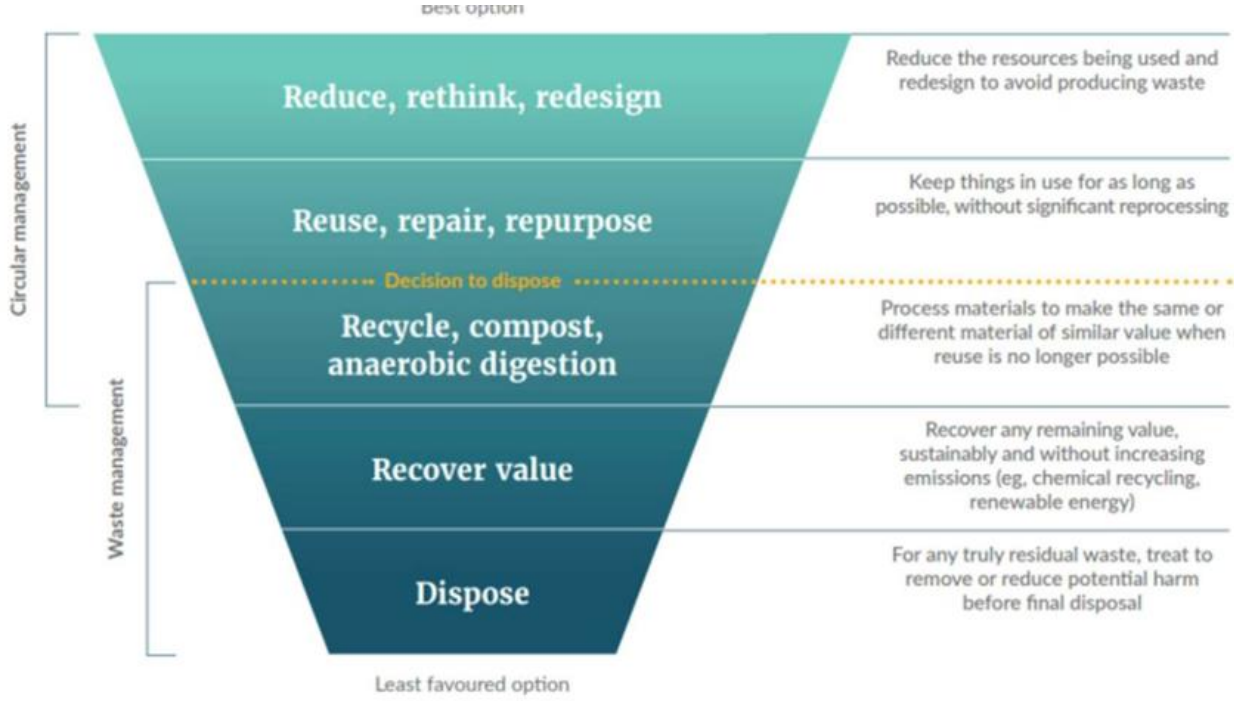

Figure 11: NZ Waste Hierarchy (MfE, 2023)

Notably, te rautaki para (2023), describes the waste management phases of the waste hierarchy in order of preference which establishes a preference for recycling and processing waste where re-use is not possible, prior to recovering any remaining value (without increasing emissions) and finally by disposing of waste (to landfill). This means that rather than seek alternative technologies for processing of the current waste stream, better separation, re-use and recovery of value within the waste stream should be prioritised over investment in alternative technologies.

5.4 Alternative Access Locations

The access to the site will remain in the current location. As part of the design process, a new site access was proposed and considered. The new site access was located approximately 70m south of the existing accessway. The new site access was not considered to be suitable as it would not meet the required traffic safety standards (such as a minimum 250m of sight distance due to Kaitangata Highway being classified as a District Arterial Road within the Clutha District Plan.

The existing site access, which will be upgraded as part of the proposal, is considered the best access location for the site.

6 Reasons for the Application

6.1 Resource Management Act 1991

Part 3 of the RMA outlines the duties and restrictions imposed on those exercising functions under the Act.

Section 14(2) of the RMA states that:

> *"No person may take, use, dam, or divert any of the following unless the taking, using, damming, or diverting is allowed by subsection (3):*
>
> *a) Water other than open coastal water; or*
>
> *b) Heat or energy from water other than open coastal water; or*
>
> *c) Heat or energy from the material surrounding geothermal water."*

Subsection 14(3) of the RMA states that:

> *"A person is not prohibited by subsection (2) from taking, using, damming, or diverting any water, heat or energy if –*
>
> *a) the taking, using, damming, or diverting is expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent; or*
>
> *b) in the case of fresh water, the water, heat, or energy is required to be taken or used for –*
>
> *i. an individual's reasonable domestic needs; or*
>
> *ii. the reasonable needs of a person's animals for drinking water, -*
>
> *and the taking or use does not, or is not likely to, have an adverse effect on the environment; or*
>
> *…. "*

Section 15(1) of the RMA states that:

> *"No person may discharge any –*
>
> *(a) contaminant or water into water; or*
>
> *(b) contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or*
>
> *unless the discharge is expressly allowed by a national environmental standard or other regulations, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.*

Section 15(2) of the RMA states that:

> *"No person may discharge a contaminant into the air, or into or onto land, from a place or any other source, whether moveable or not, in a manner that contravenes a national environmental standard unless the discharge -*
>
> *(a) is expressly allowed by other regulations; or*
>
> *(b) is expressly allowed by a resource consent; or*

(c)is an activity allowed by section 20A

unless the discharge is expressly allowed by a national environmental standard or other regulations, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent

Proposed discharges associated with the landfill (stormwater to land where it may enter water; odour, dust and LFG to air; waste to land) and the taking of groundwater for the purposes of the leachate containment system, are restricted by sections 14(2), 14(3), 15(1) and 15(2) of the RMA. If it is not expressly allowed by a national environmental standard or a rule in a regional plan (or a rule in a proposed plan), the discharges and groundwater take will require resource consents.

6.2 National Environmental Standards for Freshwater 2020

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NESF) came into effect on 3 September 2020 and as such, should be considered as part of this application. The NESF sets requirements for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. Anyone carrying out these activities needs to comply with the standards.

The NESF sets regulations according to the activity and location of the activity. The majority of the standards relate to farming activities, wetlands, fish passage or reclamation of rivers.

There are no works or activities proposed within, or within a 10m setback of the Clutha River / Mata-Au; and no works are proposed within or within a 10m setback of the two wetlands and stream located on the site.

Regulation 45B of the NESF sets out specific regulations associated with Landfills and Cleanfills. The proposed activities can comply with Regulation 45B of the NESF, specifically because there will be no construction or operational activities (such as vegetation removal, earthworks, or taking of groundwater) located within 100m of the two natural wetlands located on the Mt Cooee site. The 100m buffer is shown in the map below in Figure 12 and compliance with Regulation 45B of the NESF is shown in Table 2 below.

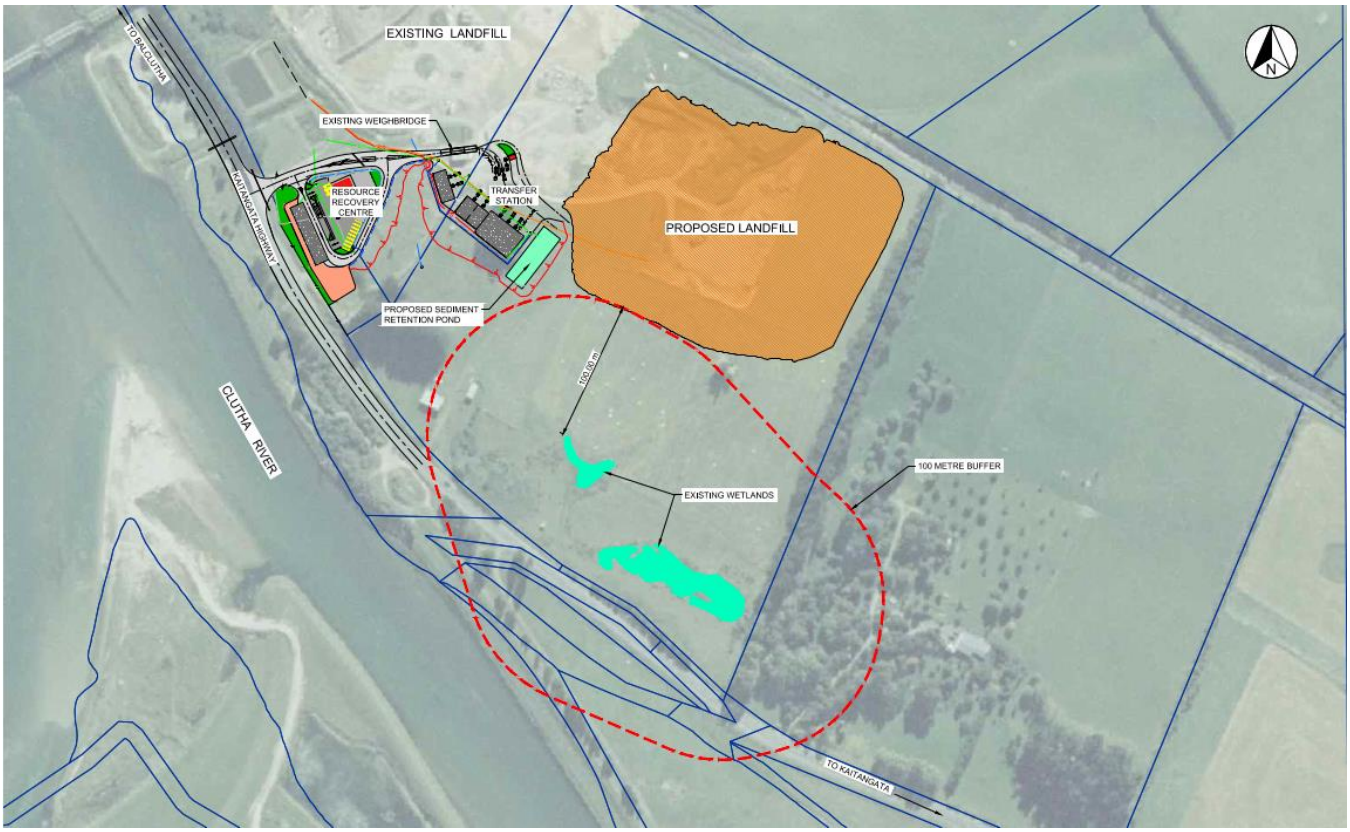

Figure 12: Map showing the landfill footprint, the two wetlands located on site, and the 100m distance between the landfill and those two wetlands.

Table 2: Assessment of the proposal against Regulation 45B of the NESF

	Regulation (45B)	Compliance
(1)	Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of constructing or operating a landfill or a cleanfill area	**Complies** There will be no vegetation clearance within 100m of the two natural wetlands located on the Mt Cooee landfill site, as shown in Figure 12 above.
(2)	Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of constructing or operating a landfill or a cleanfill area.	**Complies** There will be no earthworks or land disturbance activities located within 100m of the two natural wetlands.
(3)	Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it - (a) is for the purpose of constructing or operating a landfill or a cleanfill area; and (b) results, or is likely to result, in the complete or partial drainage of all or part of the wetland.	**Complies** There will be no earthworks or land disturbance activities located within 100m of the two natural wetlands.

(4)	The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if - (a) the activity is for the purpose of constructing or operating a landfill or a cleanfill area; and (b) there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and (c) the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.	Complies The taking of groundwater for the purposes of the leachate containment system will be located over 100m away from the two natural wetlands.
(5)	The discharge of water into water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if— (a) the discharge is for the purpose of constructing or operating a landfill or a cleanfill area; and (b) there is a hydrological connection between the discharge and the wetland; and (c) the discharge will enter the wetland; and (d) the discharge will change, or is likely to change, the water level range or hydrological function of the wetland.	Complies The discharge of stormwater generated during the construction and operational phases of the Mt Cooee project, will be at least 100m away from the two natural wetlands. The stormwater will be discharged to the stormwater ponds before going to the Clutha River / Mata-Au.

As shown in the table above, because all the activities (construction and operational) are located at least 100m away from the two natural wetlands located on the site, no resource consent is required under the NESF.

6.3 National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011

The National Environment Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NESCS) came into effect in January 2012. The NESCS seeks to control activities on contaminated land so as to protect human health. The regulations apply to land which is described as having, has had or is more likely than not to have had an activity or industry described in the HAIL undertaken on it.

Landfill sites (G.3.) are listed as are agricultural activities (such as agrichemicals, fertiliser bulk storage and livestock dips). Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment is also listed (H).

The land where the additional landfill cells and resource recovery centre will be constructed has not historically, and is not currently being used, as a landfill site. However, this land may still be considered a HAIL site if there has been migration of contaminants from the landfill that have occurred in sufficient quantities that it could be a risk to human health or the environment.

As stated earlier in Section 3.9 of this AEE, a Baseline Contamination Assessment was undertaken by WSP (attached as **Appendix K**). The Assessment concluded that no exceedances were reported of NESCS human health criteria for a commercial / industrial end use. All PAHs reported

concentrations below their limit or reporting and can thus be considered below background concentrations.

Due to the low levels of contaminants on the site, CDC has requested that the ORC amend the HAIL site to exclude the land where additional cells will be located. Due to the site being removed from the HAIL list, there are no requirements for resource consents under the NESCS. However, as this is a District Council matter, this will be discussed with CDC Consents Team when the Outline Plan for the landfill is applied for.

6.4 Regional Plan: Waste for Otago

The Regional Plan: Waste for Otago (RPWaste) became operative on 11 April 1997.

6.4.1 Landfill Rules

Rule 7.6.1 of the RPWaste states that the following activities associated with new or operating landfills are discretionary activities, provided that no burning of waste is undertaken:

- The discharge of any contaminant into or onto land; or
- The discharge of any contaminant or water into water; or
- The discharge of any contaminant into air

The proposed construction and operation of the Mt Cooee Landfill, including the existing cells and the proposed expansion, will include discharges of contaminants to air, land and water, which will therefore require a resource consent as a discretionary activity under Rule 7.6.1 of the RPWaste. It is noted that no burning is permitted on the site.

The RPWaste states that the ORC will have regard to, but not be restricted by, the following matters:

(a) Odour control;

(b) Potential contamination of soil or water;

(c) Means to monitor the above;

(d) The extent to which the landfill proposal reflects the industry standard for landfills, as represented in the Ministry for the Environment Landfill Guidelines 1994, or their update or other industry standards which are current at the time of application for a resource consent;

(e) The location of the landfill relative to any water body, areas prone to erosion, inundation or subsidence, and areas of cultural, conservation or historic significance;

(f) The characteristics, composition and volume of substances being discharged and of any likely by-products occurring from the degradation of these substances;

(g) The characteristics of the receiving environment including the current and likely future uses of that environment;

(h) The mitigation measures, safeguards, and contingency plans to be undertaken to prevent or reduce the actual and potential adverse environmental effects;

(i) Provisions for the handling of any noxious waste, including medical waste, and the degree of pre treatment that will be required prior to accepting such wastes; and

(j) The landfill development and management plan or landfill closure plan prepared for the site.

These matters have been considered in both the design of the landfill as well as in this AEE.

Rule 6.6.1 of the RPWaste states that the following activities associated with the operation of facilities for the treatment or disposal of hazardous wastes is a **discretionary activity**:

- The discharge of any contaminant into or on to land; or
- The discharge of any contaminant into water;
- The discharge of any contaminant into air; or
- The discharge of water into water.

As described in Section 4.1 of this AEE, the Mt Cooee Landfill will accept hazardous wastes such as used paint and end of life gas bottles (although very small amounts). General municipal waste by its nature contains small amounts of hazardous materials which cannot practically be identified and removed. The Guidelines for lining and site containment of waste reflect this reality. Therefore, resource consent is sought as a **discretionary activity** under Rule 6.6.1 of the RPWaste for the acceptance of hazardous wastes. It is noted that there is a requirement for a Hazardous Waste Facility Management Plan – all this information is covered within the Landfill Management Plan (attached as **Appendix V**), as prescribed in Appendix 1 of the RPWaste.

6.4.2 Contaminated site

Rule 5.6.1 of the RPWaste states that the disturbance of land at a contaminated site is a **discretionary activity**.

The Waste Plan defines a contaminated site as "*a site at which hazardous substances occur at concentrations above background levels and where assessment indicates it poses, or is likely to pose an immediate or long term hazard to human health or the environment.*"

As stated earlier in Section 3.9 of this AEE, a Baseline Contamination Assessment was undertaken by WSP (attached as **Appendix K**). The Assessment concluded that no exceedances were reported of NESCS human health criteria for a commercial / industrial end use. All PAHs reported concentrations below their limit or reporting and can thus be considered below background concentrations. It was therefore concluded that the Mt Cooee Landfill site does not contain hazardous substances at concentrations above background levels, and additionally, there is no immediate or long-term hazard to human health or the environment.

The Mt Cooee Landfill site is therefore not considered to fall under the ambit of a "contaminated site" for the purposes of the RPWaste, and therefore no resource consent is required under Rule 5.6.1 for the disturbance of land at a contaminated site.

6.5 Regional Plan: Water for Otago

The Regional Plan: Water for Otago (RPW) became operative on 1 January 2004 and contains several plan changes.

6.5.1 Groundwater take

The operation of the landfill involves a leachate collection system (perforated pipes on the valley floor and leachate collection manholes) which is directed towards a pump station. The pump station then transfers the leachate to the CDC's Wastewater Treatment Plant for treatment and disposal. This therefore involves the abstraction of groundwater.

Rule 12.2.2.2 of the RPWater states that the taking and use of groundwater is a **permitted activity**, provided the following conditions can be complied with. It is noted that the leachate pump station (where groundwater is abstracted and pumped to the Balclutha WWTP) is located approximately 110m from the Clutha River / Mata-Au.

Condition	Compliance
(a) No lawful take of water is adversely affected as a result of the taking; and	Complies
(b) The water is not taken from any aquifer identified in Schedule 2C; and	Complies The landfill is located within the Inch Clutha Gravel Aquifer, which is not listed within Schedule 2C.
(c) The water is not taken from within 100 metres of any wetland, lake or river; and	Complies The take is not within 100m of any wetland, lake or the Clutha River / Mata-Au.
(d) [Repealed – 1 March 2012]	N/A
(e) [Repealed – 1 March 2012]	N/A
(f) The take is for a volume no greater than 50,000 litres per day, at any landholding, from the following aquifers: (i) Lower Waitaki Plains Groundwater Protection Zone A (as identified on Maps C15 and C16); and (ii) Inch Clutha Gravel (as identified on Maps C26 and C27); and	Does not comply The take is located within the Inch Clutha Gravel aquifer but the maximum abstraction of groundwater is understood to be 80,000L/day.
(g) Except as provided by Condition (f) above, the take is for a volume no greater than 25,000 litres per day, at any landholding, elsewhere in Otago; and	N/A
(h) No back-flow of any contaminated water occurs to the aquifer; and	Complies
(i) The taking of groundwater is not suspended.	Complies

As the proposed groundwater take cannot comply with condition (f)(ii) of Rule 12.2.2.2 of the RPWater, Rule 12.2.3.2A if considered relevant.

Rule 12.2.3.2A states that the taking and use of groundwater is a restricted discretionary activity if the following can be complied with:

Condition	Compliance
(a) The volume sought is within: i. The maximum allocation limit identified in Schedule 4A; or	Complies The Inch Clutha Gravel Aquifer is not identified in Schedule 4A. The volume

ii. 50% of the mean annual recharge calculated under Schedule 4D, for any aquifer not identified in Schedule 4A; or iii. That volume specified in an existing resource consent where the assessed maximum annual take of the aquifer exceeds its maximum allocation limit; and	requested (80,000 L/day) exceeds the maximum allocation limit specified on the existing water permit 95953.V1.
(b) It is subject to any aquifer restriction identified in Schedule 4B; and	Complies The landfill is located within the Inch Clutha Gravel Aquifer, which is not listed within Schedule 4B.
(c) Where the rate of surface water depletion is greater than 5 l/s, as calculated using Schedule 5A: i. Primary surface water allocation is available; and ii. For the Waitaki catchment, allocation to activities set out in Table 12.1.4.2 is available.	Complies The Groundwater and Surface Water Assessment states that there will be no significant or noticeable surface water depletion from the take (it will be less than 5 L/s).

As the proposed groundwater take can comply with the conditions of Rule 12.2.3.2A of the RPWater, the take is considered a restricted discretionary activity. Council's discretion is restricted to the following matters (as set out in Rule 12.2.3.4):

i. The maximum allocation limit for the aquifer; and

i. The assessed maximum annual take for the aquifer; and

ii. The mean annual recharge of the aquifer; and

iii. The effect of the take on the hydrodynamic properties of the aquifer and the vulnerability of the aquifer to compaction; and

iv. Whether any part of the take would constitute allocation from any connected perennial surface water body, and the availability of that allocation; and

v. The rate, volume, timing and frequency of groundwater to be taken and used; and

vi. The proposed methods of take, delivery and application of the groundwater taken; and (vii) The source of groundwater available to be taken; and

vii. The location of the use of the groundwater, when it will be taken out of a local catchment; and

viii. In the case of takes from an aquifer identified in Schedule 4B, the restrictions for the aquifer (as identified in that schedule) to be applied to the take of groundwater, if consent is granted; and

ix. The consent being exercised or suspended in accordance with any Council approved rationing regime; and

x. Any adverse effect on the existing quality of groundwater in the aquifer; and

xi. Any irreversible or long term degradation of soils arising from the use of water for irrigation; and

xii. Any actual or potential effects on any surface water body; and

xiii. Any adverse effect on the habitat of any indigenous freshwater fish species that are listed in Schedule 1AA; and

xiv. Any effect on any Regionally Significant Wetland or on a regionally significant wetland value; and

xv. Any financial contribution for regionally significant wetland values or Regionally Significant Wetlands that are adversely affected; and

xvi. Any adverse effect on any lawful take of water, if consent is granted, including potential bore interference; and

xvii. Whether the taking of water under a water permit should be restricted to allow the exercise of another water permit; and

xviii. Any arrangement for cooperation with other takers or users; and

xix. Any water storage facility available for the groundwater taken, and its capacity; and (xxi) The duration of the resource consent; and

xx. The information, monitoring and metering requirements; and

xxi. Any bond; and (xxiv)The review of conditions of the resource consent; and

xxii. For resource consents in the Waitaki catchment the matters in (i) to (xxi) above, as well as matters in Policies 6.6A.1 to 6.6A.6.

It is noted that Section 13 of the RPWater is not applicable to the proposal as there are no regionally significant wetlands located within the site, and there is no proposed land use activities on, within or near to (within 100m) lakes or rivers.

6.5.2 Stormwater discharge

The RPWater contains rules relating to the discharge of stormwater.

As stated in Section 4.8 of this AEE, all runoff from the active landfill face is held in the immediate tip face area for ground soakage and is then captured by the leachate collection system. Runoff from the active landfill face is therefore not considered to be “stormwater” but is rather collected, treated and discharged as “leachate” via the leachate management system.

The two stormwater ponds on site capture runoff from the general site, including access roads and collected landfill areas.

The RPWater defines stormwater as:

> *“The water running off from any impervious surface such as roads, carparks, roofs, and sealed runways.”*

As the discharge from the general site (such as gravel roads and completed landfill areas) are from pervious surfaces, the discharge is not considered to be “stormwater” for the purposes of the RPWater.

It is noted that the RPWater defines an “industrial or trade process” as:

> *"Includes every part of a process from the receipt of raw material to the dispatch or use in another process or disposal of any product or waste material, and any intervening storage of the raw material, partly processed matter, or product."*

The landfill is therefore considered to be an "industrial or trade process" as it involves the disposal of any product or waste material.

Rule 12.B.4.1 of the RPWater provides for the discharge of water (excluding stormwater) or any contaminant from an industrial or trade premise to water or to land as a **discretionary activity**. As the discharges are from an industrial or trade premise, resource consent is required under Rule 12.B.4.1 of the RPWater.

6.6 Regional Plan: Air for Otago

The Regional Plan: Air for Otago was made operative on 1 January 2003.

It is noted that the discharge of landfill gas, flared exhaust gases, dust and odour into air from the Mt Cooee landfill falls under the ambit of Rule 7.6.1 of the Waste Plan, which is discussed in Section 6.4.1 above.

It is noted that there are no backup diesel electricity generators at the landfill.

Any discharges of dust associated with any road upgrades and earthworks associated with the landfill expansion fall under Rule 16.3.14.1 of the Air Plan, which states that the discharge of contaminants into air from:

> ...
>
> *2) Building and construction activities, including road construction and maintenance, but excluding the remediation of asphalt surfaces (seal burning); or*
>
> ...
>
> *is a permitted activity, providing any discharge of smoke, odour, particulate matter or gas is not noxious, dangerous, offensive or objectionable at or beyond the boundary of the property.*

Any proposed dust discharges to air associated with the landfill expansion will comply with these conditions and therefore is considered a **permitted activity** and not require resource consent.

6.7 Summary of Consents Required

The proposed landfill operation requires the following resource consents from the ORC:

Type of Consent	Activity	Rule Assessment	Term Sought
Discharge Permit	To discharge the following contaminants for the purpose of constructing and operating a Class 1 landfill: • Discharge waste and leachate onto land • Discharge landfill gas, odour and dust into air	**Discretionary activity** under Rule 7.6.1 of the Regional Plan: Waste	35 years

Discharge Permit	To discharge hazardous waste onto land for the purpose of operating a Class 1 landfill	**Discretionary activity** under Rule 6.6.1 of the Regional Plan: Waste	35 years
Discharge Permit	To discharge surface water from an industrial or trade premise (being stormwater from access roads and completed landfill areas) to land (stormwater retention ponds) before discharging to the Clutha River / Mata-Au	**Discretionary activity** under Rule 12.B.4.1 of the Regional Plan: Water	35 years
Water Permit	To abstract up to 80,000 L/day of groundwater for the purposes of the leachate containment system	**Restricted discretionary activity** under Rule 12.2.3.2A of the Regional Plan: Water	35 years

6.8 Duration requested

A consent duration of 35 years is requested for the discharge permits. This is consistent with other landfill consents granted in recent years (such as the Smooth Hill Landfill granted for 35 years in Otago; the Dome Valley Regional Landfill in Auckland, and the AB Lime Landfill in Southland granted for 25 years).

A duration of 35 years is also relative to the value of investment that CDC has, and will be required to make in order to design the extended landfill and also prepare the consent application and all the technical assessments. A 35-year consent duration would also give assurance to CDC and their ratepayers that the extended landfill will operate for a sufficient time to make it economically feasible. The 35-year durations sought are appropriate for a significant 'public good' and regionally significant infrastructure project such as the Mt Cooee Landfill.

A consent duration for the take and use of groundwater of 35 years is sought, and while this is inconsistent with the maximum 6 years' duration indicated by proposed PC7 policy 10A.2.2, is considered appropriate in light of the likely low and reducing volumes of water that will be abstracted, long-term use of the landfill, and the value of the investment in landfill infrastructure, and noting that the final form of policy 10A.2.2 is yet to be confirmed by the Environment Court (at the time of writing this consent application).

6.9 Section 124 of the RMA

As the consent application has been lodged within the 3-6 month timeframe under section 124 of the RMA, CDC request that ORC apply their discretion and allow CDC the section 124 rights to continue to exercise their existing consents associated with the Mt Cooee Landfill while the new consent application is processed. Regular discussions with the ORC (Rebecca Jackson and Shay McDonald) have been undertaken regarding the section 124 issue, with no concerns raised by the ORC. The ORC stated they would prefer a complete application, including a Cultural Impact Assessment, lodged past 1 April 2023 rather than an incomplete application without a Cultural Impact Assessment (CIA). Lodgement of the application was delayed pending completion of the CIA by Aukaha.

6.10 Sections 104 and 104B

Section 104 of the RMA sets out those matters that the consent authority shall have regard to when considering an application for resource consent. In particular, Section 104 requires the consent authority to have regard to the following:

a) Any actual or potential effects on the environment of allowing the activity;

b) Any relevant provisions of a national environmental standard, policy statement, plan or proposed plan; and

c) Any other matters the consent authority considers relevant

Section 104B of the RMA states that when considering an application for a resource consent for a discretionary activity, a consent authority –

a) may grant or refuse the application; and

b) if it grants the application, may impose conditions under section 108.

6.11 Sections 105 and 107 of the RMA

Section 105 of the RMA states that if an application is for a discharge permit, the consent authority, in addition to the matters in section 104(1), have regard to:

(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(b) the applicant's reasons for the proposed choice; and

(c) any possible alternative methods of discharge, including discharge into any other receiving environment.

These matters have been considered and are discussed in Section 5 of this report, with the conclusion that disposal at an alternative receiving environment (a new landfill within the Clutha District and / or other landfills elsewhere within the Otago or Southland region) and additional treatment prior to discharge (removal of putrescible waste from the waste stream) are alternatives that could be had regard to in this situation when determining whether or not consent should be granted.

Section 107(1) of the RMA states that a consent authority shall not grant a discharge permit allowing if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

(c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(d) any conspicuous change in the colour or visual clarity:

(e) any emission of objectionable odour:

(f) the rendering of fresh water unsuitable for consumption by farm animals:

(g) any significant adverse effects on aquatic life.

7 Assessment of Effects on the Environment

The following assessment identifies and assesses the types of effects that may arise from the proposed works, both during the construction phases and during the operation of the landfill. The conclusions in the following sections have been drawn from the technical assessment reports attached in the Appendices.

The actual and potential effects on the environment associated with the proposed Mt Cooee Landfill, both existing and proposed cells, have been identified as being:

- Positive effects
- Land and slope stability effects
- Seismic risk
- Effects on Groundwater Quantity
- Effects on Groundwater Quality
- Effects on Surface Water Quantity
- Effects on Surface Water Quality
- Effects on Air Quality (Odour, Dust and Landfill gas)
- Effects on Cultural Values
- Effects on Archaeological Values
- Noise effects
- Effects on amenity and natural character
- Construction effects

7.1 Positive Effects

The continued operation and expansion of the Mt Cooee Landfill will result in a range of positive effects, including:

- Provision of a controlled disposal location for Clutha District's waste, avoiding potentially significant adverse effects associated with uncontrolled disposal of waste;
- Provision of landfill capacity to enable and support Clutha District for the next 35 years, including any population growth and development;
- Economic benefits for the surrounding community, including employment and new expenditure in the district associated with the expansion and new Resource Recovery Centre;
- Positive use of biomass in daily and intermediate cover;
- Minimisation of transportation time, costs and greenhouse gas emissions compared to transporting the waste out of the Clutha District; and
- Potential to provide recreational opportunities in the area in the future, as the cells close and aftercare is implemented.

Municipal landfills are a vital piece of regional infrastructure. The establishment and operation of infrastructure in itself provides a positive benefit to the Clutha District and wider Otago region, as it provides a necessary service which enables society to function. Landfills such as the Mt Cooee Landfill provide an important component of the overall waste management system for the

Otago region. They provide a final point of disposal for residual wastes which cannot be reduced, reused or recycled. Waste is generated by both residential households and businesses as well as through construction activity. The functioning and growth of the Clutha District cannot be supported if there is no infrastructure in place to deal with waste generated and dispose of it appropriately. The Mt Cooee Landfill will continue to provide a purpose-built and designed landfill facility that is centralised, contained and provides a controlled location for disposal of residual waste which has not been diverted or recycled.

7.2 Land and slope stability effects

The underlying geology of a site is important when considering whether a site is suitable for a landfill as the geology can be impacted by seismic activity, soil instability and groundwater seepages.

7.2.1 Site suitability

The ground investigations detailed in the Geotechnical Factual and Interpretive Reports (attached as Appendices E and F) indicate that the underlying geology of the site is generally suitable and appropriate for landfill development. The site overlies Caples Terrane bedrock and recent investigations and preliminary geological mapping suggest the strength and weathering of the bedrock is relatively consistent across the site and is highly jointed. The bedrock generally contains low permeability, which will provide a good natural containment for waste and leachate. The site is not close to the coast or any active faults and does not overlie high permeability sand and gravel. The rock and soil materials available on the site are generally suitable for a landfill operation.

The Geotechnical Reports state that the alluvial deposits across the site are highly variable and are not likely to achieve the low permeabilities required for use as a liner. Therefore, additional engineering controls are proposed (i.e. low permeability clays and an engineered liner) to provide additional contaminant and protect the surrounding environment.

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

7.2.1 Slope stability

It is important to identify potential instability risks when developing new cells at the Mt Cooee Landfill and design the cells accordingly to appropriately reduce or manage the potential risks.

The Geotechnical Report stated that:

Based on the ground conditions, preliminary safe cut batters of 1(V): 1.5(H) and 1(V):2(H) are proposed for weathered bedrock and 1(V):2.5(H) are proposed for alluvium. Any fill slopes should comprise well compacted granular fill (AP65 or similar approved) at slopes not exceeding 1(V): 2(H).

Given the shallow depth to bedrock and the limited thickness of the soil cover across the majority of the site, long term settlements under the loads from the proposed structures or fill slopes are anticipated to be small and occur immediately.

7.2.2 Seismic risk

Earthquakes pose a potential risk to landfill stability and containment. In the event of an earthquake, there is a risk of liner failure or collapse. Accordingly, the potential seismic risk was a key consideration during the Mt Cooee project and is contained within the Geotechnical Factual and Interpretive Reports (attached as Appendices E and F).

The reports concluded that preliminary global stability assessments using the Slope/W software indicate that the proposed landfill faces at 1(V) achieve the acceptable factors of safety under the static and seismic cases. A moderately conservative assessment of the stability of the existing landfill site, ignoring any pinning effect from the existing cut-off wall, also indicates that the factors of safety under the static and seismic SLS cases are achieved and minor displacement of the landfill face of up to 100mm in a DCLS event, but this is considered to be acceptable.

The reports also concluded that due to the shallow depths to bedrock across the eastern section, liquefaction or cyclic softening is not anticipated. A quantitative liquefaction assessment based on the SPT data within BH1 indicates that liquefaction nor cyclic softening of the alluvial deposits below the groundwater table are anticipated under seismic SLS or ULS shaking events.

Overall, the Geotechnical Reports confirmed that the underlying geology within the landfill site is suitable for landfill development. The site is not close to any active fault lines and given the geotechnical hazards and risks will be managed appropriately over the life of the landfill, it is considered that the potential adverse effects of seismic risk are considered to be less than minor.

7.2.1 Flooding risk

A Clutha River Flood Hazard Assessment for the Mt Cooee Landfill has been prepared by GHC Consulting (attached as **Appendix O**).

The Hazard Assessment concludes that the parts of the site likely to be affected by a major flooding event are limited to the berm area between the Kaitangata Highway and the landfill face, including the stormwater ponds and the proposed Resource Recovery Centre. The report suggests the depth of inundation will vary depending on the severity of the flood event but is unlikely to exceed 1.0m.

The design has incorporated the flood hazard information and accordingly, it is considered that effects associated with flood risk are less than minor.

7.3 Effects on Groundwater Quantity

WSP Ltd has undertaken an Assessment of Effects of the proposed Mt Cooee Landfill proposal on groundwater quantity and quality (attached as **Appendix I**). The assessment examines the potential impacts of the following two scenarios:

- The existing landfill cells, which will be fully closed and capped
- The existing landfill cells plus the development of the proposed development cells (worst-case scenario)

The report states that in terms of potential impacts on groundwater recharge and flow, no changes are anticipated in how the existing landfill cells affect the groundwater system in terms of water quantity. This is largely because the existing cells are unlined, therefore, groundwater flows through the existing landfill area. It is estimated that due to leachate captured by the leachate collection system in the existing landfill area, a reduction of 78% (26,963 m^3 /year) in groundwater recharge to the Mt Cooee catchment is estimated. However, it is expected that actual total groundwater flow within the catchment is higher, therefore, the overall reduction in flow resulting from leachate collection would be lower than 78%.

The proposed landfill expansion cells will be lined, so it is anticipated they will not intercept upgradient groundwater flow, however shallow groundwater is likely to be redirected around the new cells to some degree. Due to leachate collection, it is estimated that a further 6% reduction (2,092 m^3/year) in groundwater recharge to the Mt Cooee catchment once the expansion cells have been filled to capacity.

The estimated reduction in total groundwater discharge from the Mt Cooee catchment to the Clutha River / Mata-Au is not considered to impact the river in terms of water quantity. The

reduced flow accounts for approximately 0.0003% of mean annual low flow in the Clutha River/Mata-Au.

A small decrease in groundwater levels (0.37 m) downgradient of the expansion area is anticipated, which is unlikely to be measurable. This reduction in groundwater levels is not likely to adversely affect the small stream and wetland in the southeast corner of the site.

Overall, the effects from the proposed groundwater take on groundwater quantity are considered to be less than minor.

7.4 Effects on Groundwater Quality

Water quality monitoring on the site indicates leachate from the existing landfill is migrating beyond the existing landfill cells to some extent. Monitoring in groundwater wells and the watercourse directly downgradient of the existing landfill area show potential leachate impacts, particularly in the form of elevated ammoniacal nitrogen, boron, and nitrate-nitrogen. No impacts of landfill activities have been observable in recent water quality sampling in the Clutha River / Mata-Au downstream from the site.

Given the existing landfill cells are unlined, we anticipate leachate to continue to migrate out of the cells and impacts be observed in downgradient groundwater. As this area of the landfill has nearly reached full capacity, it is anticipated that leachate volumes are nearly at their maximum levels, therefore downgradient impacts from leachate should not worsen from their current state due to the existing landfill area. Downgradient impacts from leachate are likely to improve given the previous stormwater pipe under the landfill was blocked off, and water from this pipe is now collected and treated as leachate. This assumes that the current leachate collection system (including underlying drainage and sheet pile cut-off wall) remains functional.

Given the estimated very low volumes of leachate leakage produced from the proposed expansion area, we do not anticipate this will adversely impact downgradient groundwater or surface water conditions. It is considered the proposed landfill expansion will be an improvement in landfill practice in the region and decrease potential adverse effects on groundwater quality overall.

7.5 Effects on Surface Water Quantity

Based on the estimated reductions in groundwater levels and flow down-gradient of the proposed landfill expansion area, there will be no measurable impact on the flows to the wetlands located in the south-eastern corner of the site. It is expected that the construction of the new landfill cells will block off some upgradient, shallow groundwater flow, however this is considered to be a small impact.

A small decrease in groundwater levels (0.37 m) downgradient of the expansion area is anticipated, which is unlikely to be measurable. This reduction in groundwater levels is not likely to adversely affect the small stream and wetland in the southeast corner of the site.

7.6 Effects on Surface Water Quality

4Sight Ltd undertook an Assessment of Effects on Surface Water Quality as part of the Mt Cooee project (attached as **Appendix Q**).

The Assessment analysed water quality assessments that were undertaken within the Clutha River / Mata-Au, collected on four occasions. The results indicate that any leachate from the Landfill, at the time of sampling, had negligible effects on water quality in the Clutha River / Mata-Au.

The Assessment states that there are effective measures in place to reduce leaching and run-off with a steel sheet pile that effectively diverts the leachate. Accordingly, very little to no leachate is

anticipated to be discharged to the Clutha River / Mata-Au. The sheet piles extend a wall down to the bedrock across the full width of the valley with the wall capped with a low permeability compacted clay bund. The wall and bund have therefore formed a dam for groundwater flow, which minimises the deeper percolation of leachate but also directs groundwater flow out of the site towards the leachate collection system. The leachate/contaminated groundwater is then pumped to the CDC sewer for treatment. Combined with the diversion of the stormwater channel around the landfill (in 2021), these appear to be effective measures to minimise impacts on the Clutha River.

The Assessment concludes that there are large flows in the Clutha River / Mata-Au (mean annual low flow at Balclutha 272 m^3/s), enabling a substantial dilution with the likely small discharge from the Landfill. These flows, combined with the Landfill design, means the potential contaminant contribution from the leachate to the overall contaminant load of the river is unlikely to be detectable. However, there were a limited number of sampling occasions in this study (n=3), which does apply some limits to the strength of the conclusions drawn in this memo. Although more data may be beneficial, the Assessment considered that is was unlikely that it would change the conclusion that the effects of the leachate on the Clutha River / Mata-Au water quality is negligible, and, at worst, less than minor.

The Terrestrial, Wetland and Waterway Assessment prepared by 4Sight Ltd (attached as **Appendix J**) concluded that the stream and two wetlands located within the landfill site are located reasonable distances away from any landfill activities (at least 100m) and therefore, the assessment concluded that it is not anticipated that the waterway or two wetlands will be adversely affected by the proposed activities. The waterway is already compromised by stock access and has poor water quality, as indicated by the low MCI score the site. No stormwater will be discharged direct to the stream or wetlands, and earthworks located on the site will be managed appropriately to minimise potential silt and sediment discharge to the waterway and wetlands.

Overall, the effects on surface water quality as a result of the proposal are considered to be less than minor.

7.7 Effects on Air Quality

The potential air quality effects from a landfill are generally those associated with landfill gas generation and combustion; and those associated with odour and dust. The effects on air quality from the proposed landfill were assessed as part of the Assessment on Air Quality (attached as **Appendix H**).

It is noted that the Air Quality Assessment stated that the proposed landfill expansion contains enhanced design elements compared to the existing landfill, such as:

- A covered on-site refuse transfer station;
- A Resource Recovery Centre;
- The addition of a base liner;
- Leachate and landfill gas collection systems that are in line with the industry best practice for a Class 1 Landfill;
- Best practice landfill capping / cover; and
- Landfill aftercare and maintenance program.

7.7.1 Odour Effects

The Assessment of Air Quality Effects states that all waste types and areas on the Mt Cooee Landfill have been assessed for the potential to discharge odour into the receiving environment. The assessment was based on a review of site activities, management / monitoring practices, the receiving environment, meteorology and terrain effects, industry experience, field odour observations, and a review of community feedback.

The key potential odour sources identified on site included the active fill area of the landfill, the liquid disposal area, and the leachate collection system (including the leachate pond). Based on the throughput and landfill gas monitoring results, the assessment concluded that landfill gas is expected to result in negligible off-site odour effects.

Based on a review of the receiving environment and local terrain, the sensitive locations are at least 250 m from the potential odour sources and not downwind frequently or in drainage flow conditions.

WSP evaluated community feedback including complaint records and direct surveying of nearest neighbours. There have been no odour or dust complaints in the last five years and all respondents to community survey did not report any odour or dust effects. This feedback in combination with WSP's own offsite observations of odour indicates that there are currently less than minor odour effect at all offsite locations.

Therefore, given the application is for continued operation of the landfill no differently than it is currently operated, then it is concluded that there is only minor potential for adverse odour effects at all offsite locations for the future operation of the landfill provided the mitigation measures described in section 6.6 are implemented.

7.7.1 Dust Effects

Dust may generated at the landfill during the construction earthworks, stockpiling of material or from daily landfilling operations, particularly during dry and windy conditions.

The Air Quality Assessment stated that the nature of clay material that will be stockpiled on the site is generally damp and in a stable pile that is not prone to wind erosion.

In terms of the site roads, these are unsealed gravel roads. The number of truck coming onto the landfill site each day are between 2 to 6 and the number of cars / trailer units can be up to 40. Other heavy machinery on site includes front end loader or excavator and compactor. On occasion the site has used waste oil for dust suppression. The landfill also enforces a speed limit of less than 20 km/hr on site. These activities are considered to have a very minor potential of dust and likely to be contained within site boundary.

Based on a review of site activities and nature of discharges, the potential for dust effects from the site are expected to be very minor to negligible.

7.7.1 Landfill gas

The Air Quality Assessment stated that if landfill gas capture is required in the future under the Emissions Reduction Plan, this would lessen the quantity of LFG venting through the landfill capping on the new cells. This will result in reduced odour potential too. The capping material used for daily, intermediate and final cover follows the current industry best practice standard recommended by WasteMINZ (2022) guidelines and provides a better method of containing gas compared to the existing system.

The Air Quality Assessment states that the landfill gas monitoring currently being undertaken show very low concentrations of both methane (50 to 80 ppm) and H_2S (0 to 1 ppm) at both these locations compared to the Vic EPA threshold guideline values. Given the low concentrations at source, it is expected that the LFG concentrations in ambient air from the existing site will be negligible provided good mitigation measures are routinely practiced. It is likely that the gas

release from capped areas on existing landfill are low considering the waste is old and has released most LFG already.

Monitoring of new boreholes within the proposed cell location has shown no indication that landfill gas from the existing cell is migrating through the underlying geology and being emitted to air outside of the current cell.

Based on these results and the enhanced design elements of the proposed expansion, it is considered that effects from landfill gas will be less than minor.

7.8 Landscape and Visual Effects

As stated earlier, Mr Mike Moore (Landscape Architect) undertook a Landscape Mitigation Concept and Effects Assessment Report (attached as Appendix D) as part of the proposed Mt Cooee Landfill project.

Mr Moore's report states that the existing Mt Cooee Landfill operation already impacts rural amenity values to an extent, and he concludes given the proposed mitigation and rehabilitation of the site, the nature and extent of the effects on landscape values from the proposed expansion will remain generally similar.

Mr Moore states that the development will not impact the Clutha River / Mata-au or its margin, and the two wetlands identified in the south-east portion of the site will also not be affected by the proposed activities. Rehabilitation of the existing landfill will avoid significant expansion of the area of exposed, unvegetated ground, and the proposed revegetation with indigenous, locally-appropriate tussock will enhance native biodiversity and natural character. Mr Moore states that the proposed screen plantings (also using indigenous species) will effectively mitigate the visual effects of the landfill activities from the Kaitangata Highway and more distant viewpoints beyond the Clutha River / Mata-au. Mr Moore states that there will continue to be visual effects from the north but assesses that the impact of the proposed landfill activities within these views will be generally similar in nature and degree to those existing now.

Mr Moore states that the final form of the new landfill area will integrate well within the landform character of the wider setting, as long as it is blended sensitively with adjacent areas and rounded to appear as natural as possible.

Overall, Mr Moore's assessment concludes that the landscape and visual effects from the proposed landfill expansion will be no greater than adverse (low / minor), particularly given the context of the existing landfill.

7.9 Effects on Cultural Values

Aukaha were engaged by CDC to undertake a Cultural Impact Assessment for the Mt Cooee project (attached as Appendix M). Section 6 of the CIA details the potential effects of the Mt Cooee Landfill on the cultural values of the area.

In terms of tapu and tikaka, the CIA states that it is not tika to construct and operate a landfill by a waterway, especially one of great significance such as the Mata-au. The Mata-au was a significant traditional mahika kai trail. Generations of whānau travelled the length of the Mata-au by mōkihi taking food resources and other resources like pounamu back with them to the coast. The lower Mata-au and its tributaries were particularly rich in taoka species and supported significant mahika kai activity. These species included īnaka, waterfowl, and tuna. The Mata-au still holds great significance for mana whenua today, and as the landfill is located in close proximity to the awa, the CIA states that it is imperative that robust measures are in place to ensure that potential adverse effects on the mana whenua values are avoided. It is noted that there are several measures proposed to avoid, remedy and mitigate effects on the river, such as collecting and treating all leachate and discharging it off site (to the Balclutha WWTP); collecting

and treating all stormwater from the site; and undertaking regular monitoring of both groundwater and surface water.

The CIA states that the potential for contaminants to leach from the landfill and into the Mata-au is a primary concern that mana whenua have. To Kāi Tahu, wai is a taoka under their mana and rakatirataka. Rather than employing an economic model of ownership, mana whenua view the protection and enhancement of wai as part of their role as kaitiaki, a role which is inherited through whakapapa and that is exercised as an expression of mana.

The CIA states that involvement of manawhenua is vital to the implementation of Te Mana o Te Wai, an approach that has been applied to the development of the PORPS, which affirms the Kāi Tahu ki Otago interpretation of Te Mana o Te Wai in their takiwā. The whakapapa of water is a core consideration when assessing a waterway through a Te Mana o Te Wai lens. In the case of the Mata-au, its whakapapa is rooted in the Kāi Tahu whakapapa that traces the genealogy of water. As such, the CIA states that mana whenua are deeply committed to protecting the mana and mauri of the Mata-au.

The CIA states that mana whenua are supportive of all new cells being appropriately lined before receiving waste and ensuring that areas of waste are covered with intermediate cover or final capping as soon as is practicable to prevent water permeating through placed waste and to ensure that as much water as possible is diverted to the leachate collection system.

The CIA states that mana whenua support locating the new cells to the south-east of the existing cells, further away from the awa. The CIA outlines concerns regarding the flooding risk to the site, which have been covered in detail in Section 7.2.1 of this AEE.

7.10 Effects from Bird Nuisance

4Sight Ltd prepared a Bird Management Plan for the Mt Cooee Landfill (attached as **Appendix T**). It is noted that the landfill is located approximately 500m from the Balclutha Aerodrome.

The Bird Management Plan assessed the qualitative bird strike risk for the Balclutha Aerodrome and concluded that the risk is generally considered low due to the following:

- The Balclutha Aerodrome has a low number of flights and currently reports few bird strikes on aircrafts;
- The flight path is to the east of the landfill; and
- The current landfill incorporates some waste disposal practices that minimise exposure of putrescible waste, although some birds are still attracted to the landfill.

The Plan stated that there are not expected to be any additional bird strike risks or increased bird numbers associated with the landfill expansion, due to no more waste coming into the landfill; the proposed screen plantings alongside Kaitangata Highway; and the proposed expansion resulting in the clearance of pasture, thereby reducing the habitat available.

The Bird Management Plan included several recommendations, such as deterrence methods, daily cover recommendations and bird monitoring, which will be incorporated into the Landfill Operations Plan.

Overall, given the proposed mitigation measures, the risk of bird strike from the Mt Cooee Landfill is considered to be less than minor.

7.11 Construction effects

Earthworks and on-site activities associated with the project will increase the risk of sediment loads. Increased sediment loads can have adverse effects on freshwater ecology and channel morphology.

Initial construction works will include the formation of the new accessway layout, the Transfer Station area and Resource Recovery Centre, a new sediment pond and the first landfill cell, all of which require earthworks.

7.11.1 Erosion and sediment

Erosion and sediment control measures will be implemented in order to minimise the extent of soil erosion and sediment yield during construction works. A site-specific Erosion and Sediment Control Plan (ESCP) will be prepared prior to construction works commencing, which will outline general mitigation measures to be put in place. The works will be staged and specific controls implemented for the terrain and scale of works.

The general mitigation strategies to be undertaken on site include:

- Minimise land disturbance;
- Stage construction and minimise open areas of earthworks;
- Protect steep slopes;
- Protect watercourses;
- Provide rapid progressive stabilisation of exposed areas;
- Install perimeter controls to divert clean water around earthworks areas to avoid generating more sediment laden water;
- Train staff and contractors; and
- Inspect, monitor and maintain the controls.

Additionally, on-going monitoring of erosion and sediment control measures will be undertaken throughout the construction period. This monitoring will provide feedback to enable an adaptive approach to be used. Additional controls or measures will be implemented where there is a greater risk of sediment discharges, or where monitoring indicates that additional controls are required.

Considering the points above, including the taking of an adaptive approach to management, and assuming best practice erosion and sediment control, any potential effects on the environment arising from erosion and sedimentation during the construction phase are expected to be less than minor.

7.11.2 Construction-stage discharges

During the operational phase of the landfill, the potential sources of sediment are associated with cell construction and moving fill into and out of the stockpiles. To manage the potential generation of sediment-laden water, a range of sediment control measures will be utilised. This will include the provision of a new sediment control pond uphill from Kaitangata Highway and near the new landfill cells. The sediment pond will be designed in accordance with best practice guidelines.

Even during periods of high flow, no stormwater will be discharged to the two wetlands or stream on site, and the sediment pond will provide a high level of sediment removal.

Given the proposed additional sediment pond to be installed on site and the erosion and sediment control measures to be put in place, it is considered that the adverse effects associated with sediment discharges will be less than minor.

7.12 Effects on Archaeological Values

As stated earlier, New Zealand Heritage Properties Ltd undertook an Archaeological Assessment for the Mt Cooee Landfill (attached as **Appendix L**).

The Archaeological Assessment determined that there are no clear archaeological remains or features within the Mt Cooee Landfill site. A small group of introduced trees is present at the top of a small gully at the southeast of the proposed expansion area; while there are no clear archaeological remains visible on the surface within the trees, there is the potential for subsurface remains in this area. A potential pre-1900 building and associated features are located at the south of the property, outside the current proposed expansion. An area at the centre of the property, recently cleared, was the former location of a potential pre-1900 cottage, and there is potential for subsurface archaeological remains in this area as well.

As a result, the Archaeological Assessment concluded that there is no reasonable cause to suspect that an archaeological site, as defined by the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014), is within the proposed work area. As such, the assessment recommended that planning for an archaeological authority as per the HNZPTA 2014 is not required. However, the assessment stated that works must operate under an Accidental Discovery Protocol, which will occur.

7.13 Effects from Noise

WSP Ltd undertook an assessment of the noise associated with the proposed Mt Cooee Landfill (attached as **Appendix R**).

The assessment concluded that the expected operational noise emissions from the proposed landfill extension are predicted to comply with the boundary or notional boundary noise limits at adjacent properties.

Noise assessed at the site boundary doesn't comply near the entry / exit road only, due to vehicles accessing the site. However, boundary noise levels in rural zones are there to protect future sensitive buildings that have not yet been constructed. When assessed at the nearest property boundary which could be developed in the future (located across the Kaitangata Highway and the Clutha River / Mata-Au), noise levels are lower than the boundary noise limit of the District Plan.

The assessment concluded that effects from operational noise associated with the proposed Mt Cooee Landfill are considered to be acceptable.

7.14 Effects on the Transportation Network

WSP Ltd undertook an Integrated Transport Assessment for the Mt Cooee project (attached as **Appendix N**).

The existing site access will remain and will be upgraded as part of the proposed expansion works. The Assessment concluded that although there is a proposed 98% increase in traffic movements to the landfill site over a daily period, the performance modelling of the surrounding network (Kaitangata Highway) demonstrates that there will be no more than a minor effect. It is noted that the Transport Assessment will be provided to Clutha District Council for review as part of the Outline Plan process.

Overall, it is expected that the transportation effects from the Mt Cooee Landfill development can suitably be managed with the following improvements and mitigations, to address any adverse effects:

- Upgrade the intersection of the Kaitangata Highway with the existing site access to limit the conflict with turning movements, in line with a Safe System approach.
- Construction Traffic Management Plan to be submitted before the construction starts to ensure the construction activities are appropriately managed so that any generated traffic effects are acceptable.

7.15 Conclusion

In summary, the proposed landfill extension at Mt Cooee will generate a number of positive effects. The landfill will provide an upgraded facility for the efficient and effective disposal of waste in the Clutha District. The landfill will continue to provide employment and job opportunities in the Clutha District and it has the potential to provide for improved recreational use in the area in the future.

As discussed above, it is considered that the effects relating to land stability, air quality, groundwater quality and quantity, surface water quality and quantity, leachate, and construction effects will be less than minor. This has been achieved through careful consideration in regards to the design of the landfill and the mitigation measures implemented.

It is considered that the risk of low probability but high impact events will be appropriately managed by a combination of measures which are intended to avoid the event and / or the resulting effects occurring, as well as contingency measures to respond should an event occur.

In regard to cultural effects, Aukaha's CIA states that all practicable measures are to be taken to prevent leachate entering the Mata-au (which the design has incorporated and these measrures are detail throughout this report, such as collecting and treating all leachate via the leachate management system and discharging if off-site at the Balclutha WWTP). The CIA also states that all practicable measure are to be taken to prevent cross-contamination of the leachate and stormwater systems – this has been undertaken in the design and all water from the active landfill face is discharged into the leachate management system.

With regard to landscape character and visual amenity, the effects are considered to be less than minor as the landscape form will be keeping in with the natural character of the area. The wider outlook for viewing audiences will remain relatively unchanged, and the additional planting and screening will provide acceptable outcomes.

8 Statutory Assessment

The purpose of this statutory assessment is to provide an analysis of the proposal against the relevant policy framework within which the resource consents are sought. This AEE has been prepared within the statutory framework provided by the following relevant legislation and plans:

- Part 2 of the RMA
- National Policy Statement for Freshwater Management 2020 (NPS-FW)
- Partially Operative Otago Regional Policy Statement 2019 (PORPS)
- Proposed Otago Regional Policy Statement 2021 (PRPS)
- Regional Plan: Waste for Otago (RPWaste), including proposed Plan Change 1
- Regional Plan: Water for Otago (RPW), including Plan Change 7

These documents present a hierarchy whereby the provisions of regional and district plans are required by the RMA to give effect to the higher order policy direction within the regional policy statement, which in turn are required give effect to any relevant national policy statement. However, in the Otago region, the current regional plans in particular pre-date and do not yet fully give effect to the higher order policy contained in the PORPS, PRPS and NPS-FW and, therefore, all have had to be considered.

The assessment of the above documents is provided in **Appendix U.** This assessment concludes that the proposal is consistent with the relevant provisions.

8.1 Part 2 of the RMA

The proposed activity is subject to an assessment under Part 2 of the RMA (sections 5-8).

The purpose of the RMA, as set out in section 5, is to "*promote the sustainable management of natural and physical resources*". Sustainable management means "*managing the use, development and protection of these resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while –*

a) *Sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and*

b) *Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*

c) *Avoiding, remedying, or mitigating any adverse effects of activities on the environment".*

The proposal is consistent with the overall purpose of the RMA for the following reasons:

- The on-going use and further development of the Mt Cooee Landfill will enable people and communities of the Clutha District to provide for their social, economic and cultural well-being and for their health and safety, by providing a sanitary and contained facility for the disposal of waste that cannot be reduced, reused or recycled;
- The life supporting capacities of air, water, soil and ecosystems will be protected by robust operating practices and monitoring regimes, consistent with best practice for landfill management; and
- Potential adverse effects from the on-going operation of the landfill will be avoided, remedied or mitigated through landfill design, construction management measures, and

operational procedures (particularly controlled that the Landfill Management Plan and the proposed conditions of consent).

Section 6 sets out the matters of national importance which must be recognised and provided for. In terms of section 6(a), the preservation of the natural character of the Clutha River / Mata-Au and the two wetlands located on site is a key matter of relevance to the proposed Mt Cooee Landfill development. Potential effects of the proposal on the natural character of the Clutha River / Mata-Au and the wetlands have been considered throughout the project's development. The location and design of the proposed landfill has taken into account these natural features, and the design of the new cells purposely ensured that all activities were at least 100m away from both the wetlands and the Clutha River / Mata-Au to avoid directly impacting these features. Riparian planting and restoration of native vegetation on the site is proposed and this will enhance the natural character values of the surrounding area. Public access to the Clutha River / Mata-Au will not be affected by the proposal, and due to the desire by CDC to provide walking or cycling tracks within the finished landfill after its closure, the public access to the wetlands may be enhanced in the future.

Section 7 of the RMA provides a list of further matters that particular regard must be given to. In respect of the proposed activity, the project will maintain the quality of the existing environment, including amenity values, by keeping consistent with the surround landform and planting additional vegetation for screening purposes. The landfilling operation is generally not visible off-site, therefore the visual amenity of the surrounding area is generally maintained (as set out in the Landscape and Visual Assessment). Additional landscaping is also proposed. It is noted that CDC are investigating how the project can provide for mana whenua kaitiaki to exercise kaitiakitanga through consultation with Aukaha.

Section 8 of the RMA requires that the principles of the Treaty of Waitangi be taken into account when exercising functions under the Act. The Court of Appeal has identified four principles, which form the basis of developing a relationship of partnership and communication. These are the principles of Essential Bargain, Tribal Self-Regulation, Treaty Relationship and Active Protection. The third principle, the Treaty Relationship, accords Māori with special status as a Treaty Partner, distinct and separate from status as an 'affected party'. It is considered that the principles of the Treaty of Waitangi have been taken into account. The potential adverse effects from this application have been considered. It is considered that the effects of this application are likely to be less than minor and therefore do not contravene section 8 of the RMA. CDC is currently engaging with iwi (via Aukaha) to ensure that their culture and traditions, and their ancestral land and water are considered and that the principles of the Treaty of Waitangi are taken into account.

9 Consultation

The Fourth Schedule of the RMA indicates that an AEE should identify: *"those persons interested in or affected by the proposal, the consultation undertaken and any response to the views of those consulted"*. The following parties have been consulted about the project.

9.1 Aukaha

Several meetings and discussions have been held between CDC and Aukaha. Aukaha were engaged by CDC to undertake a Cultural Impact Assessment for the Mt Cooee project (attached as Appendix M) and were consulting with the relevant Rūnanga (Te Rūnanga o Otakou and Te Rūnanga o Araiteuru).

CDC continue to engage with Aukaha, particularly in regards to potential restoration efforts that can be undertaken in regards to the two natural wetlands located on site. CDC has sought the written approval of Aukaha.

9.2 Otago Regional Council

Several meetings and correspondence has been held between CDC and ORC over 2022-2023, particularly Rebecca Jackson, Shay McDonald and Joon van der Linde. The ORC received a copy of this consent application and all the technical assessments in April 2023 to peer review before the application was formally lodged.

9.3 KiwiRail

A meeting was held with KiwiRail in February 2023, as operator of the Main South Railway Line. KiwiRail had no major concerns but stated they needed to easily access the line and didn't want low hanging trees planted adjacent to the railway line, for health and safety purposes.

KiwiRail have received a copy of the consent application and technical assessments, and CDC has sought their written approval.

9.4 Department of Conservation

A meeting was held with DOC in February 2023 to discuss the proposal. DOC had no major concerns but wanted to see the detail.

DOC have received a copy of the consent application and technical assessments, and CDC has sought their written approval.

9.5 Fish and Game

A meeting was held with Fish and Game in February 2023 to discuss the proposal. Fish and Game had no major concerns but they wanted to see the detail.

Fish and Game have received a copy of the consent application and technical assessments, and CDC has sought their written approval.

9.6 Balclutha Aerodrome and Golf Club

CDC has had on-going discussions with the Aerodrome and the Golf Club regarding the proposal, with no major concerns raised. Both have a copy of the consent application and technical assessments, with CDC seeking their written approval.

9.7 Nearby residences

CDC has had on-going discussions with nearby residences, who were also asked questions as part of the Air Quality Survey in 2022. These residences included the following:

- Craig and Jillian Dempster (125 Kaitangata Highway)
- Rotoiti Farm Limited (280 Kaitangata Highway)
- Mavora Holdings Limited (Kaitangata Highway)
- Karen and Kenneth Blair (Kaitangata Highway)
- Abacus Limited (Colin and Valerie Weir – 197 Kaitangata Highway) – dwelling
- Christine and Russell O'Hara (223 Kaitangata Highway) – dwelling
- Russell Wilson (36 Golfers Drive) - dwelling
- Nicola and Thomas Blaikie (1 Arthur Terrace) - dwelling
- Hem and Pushap Chandel (5 Arthur Terrace) - dwelling
- Ronald and Jennifer Davis (7 Arthur Terrace) - dwelling
- David Brown and Lynley McFarlane (9 Arthur Terrace) - dwelling
- Russell Moloney (15Arthur Terrace) - dwelling
- Ollerenshaw Logging Limited (37 Kaitangata Highway)

10 Notification

Sections 95A to 95F of the RMA establish a stepped process for determining whether an application for resource consent should be publicly or limited notified. The relevant elements of these steps are summarised below.

Public Notification – section 95A

Public notification is not considered necessary for the following reasons:

- the applicant (CDC) has not requested public notification (section 95A(3)(a));
- the application does not include a proposal to exchange reserve land (section 95A(3)(c));
- notification of the application is not required by a rule or national environmental standard (sections 95A(5)(a) and 95A(8)(a));
- the application will not have adverse effects on the environment that are more than minor (section 95A(8)(b)); and
- there are no special circumstances that would warrant public notification (section 95A(9).

Limited Notification-sections 95D and 95E

Limited notification is considered necessary for the following reasons:

- there are no affected protected customary rights groups (section 95B(2)(a));
- the activity will not affect a statutory acknowledgement (section 95B(3)(a));
- limited notification is not precluded by a rule or national environmental standard (section 95B(6)(a)); and
- persons are considered to be adversely affected (sections 95D and 95E) – the key stakeholders listed below.

Having regard to the steps in sections 95A and 95B, it is considered that the proposal does not require public notification, but it is considered that the following are considered affected / interested parties:

- Aukaha
- KiwiRail
- Department of Conservation
- Fish and Game
- Balclutha Aerodrome
- Balclutha Golf Course
- Nearby residential properties (list)
    - Craig and Jillian Dempster (125 Kaitangata Highway)
    - Rotoiti Farm Limited (280 Kaitangata Highway)
    - Mavora Holdings Limited (Kaitangata Highway)
    - Karen and Kenneth Blair (Kaitangata Highway)

- Abacus Limited (Colin and Valerie Weir – 197 Kaitangata Highway) – dwelling
- Christine and Russell O'Hara (223 Kaitangata Highway) – dwelling
- Russell Wilson (36 Golfers Drive) - dwelling
- Nicola and Thomas Blaikie (1 Arthur Terrace) - dwelling
- Hem and Pushap Chandel (5 Arthur Terrace) - dwelling
- Ronald and Jennifer Davis (7 Arthur Terrace) - dwelling
- David Brown and Lynley McFarlane (9 Arthur Terrace) - dwelling
- Russell Moloney (15Arthur Terrace) - dwelling
- Ollerenshaw Logging Limited (37 Kaitangata Highway)

11 Proposed Consent Conditions

The proposed consent conditions for the Mt Cooee Landfill project are attached as **Appendix S**.

12 Conclusion

Clutha District Council (CDC) operate the Mt Cooee Landfill on Kaitangata Highway, on the outskirts of Balclutha. The landfill has been operating since 1985 and is the only municipal solid waste landfill in the Clutha District. The landfill is currently operating under several existing resource consents held from the Otago Regional Council (ORC), which expire on 1 October 2023. The existing landfill cells are nearing the end of their life with capacity expected to be reached in approximately 2025. CDC propose to expand the landfill within the existing site by adding five new cells over a 35-year lifespan.

The proposed works require several consents (discharge permits and a water permit) as a **discretionary activity** and **restricted discretionary activity** (water permit) under the ORC Water and Waste Plans.

This AEE report draw the following conclusions:

- The works are consistent with Part 2 of the RMA;
- The works are considered to be generally consistent with the relevant objectives and policies in the NPSF; the Operative and Proposed Otago RPS; and the Otago Water and Waste Plans;
- The proposal will have positive economic effects and will provide important infrastructure to support the continued growth and sustainability of the Clutha District; and
- The proposal will have less than minor effects on the surrounding environment, particularly on air quality, visual amenity, groundwater and surface water quality and quantity; and
- The CIA included several recommendations, which are the subject of further discussions between Aukaha and Clutha District Council. The majority of recommendations, such as take all practicable measures to prevent leachate entering the Mata-au, have been implemented in the design of the landfill and are detailed in this AEE.

Due to the importance of this project to the Clutha District and the investment that is required for the expansion, CDC request a duration of 35 years for the consents to give confidence to the Council and its ratepayers that the project is worth the investment required and will be a long-term project. This duration is also consistent with other landfills that have been granted consents in the past five years, many of which were much larger than Mt Cooee. It is noted that the Clutha District Council has signalled its intension to the ratepayers to progress with obtaining a consent to extend the life of the landfill (through its existing Long-Term Plan and Annual Plan process) and received no submissions from the district on this.

Due to the assessment of effects on the environment showing that the proposal will have less than minor effects on the environment, particularly with the mitigation measures proposed, CDC consider that the consent application can be notified to the key stakeholders and potentially affected persons listed in Section 10 of this AEE.

Proposed consent conditions are provided in Appendix S.

Appendix A - Certificates of Title

Appendix B - Design Report

Appendix C - Design Drawings

Appendix D - Landscape and Visual Assessment

Appendix E - Geotechnical Factual Report

Appendix F - Geotechnical Interpretive Report

Appendix G - Sheet Pile Wall Memorandum

Appendix H - Air Quality Assessments

Appendix I - Groundwater and Surface Water Assessment

Appendix J - Groundwater and Surface Water Assessment

Appendix K – Baseline Contamination Assessment

Appendix L - Archaeological Assessment

Appendix M – Cultural Impact Assessment

Appendix N – Integrated Transport Assessment

Appendix O – Flood Hazard Assessment

Appendix P – Stormwater Design Memorandum

Appendix Q – Assessment of Effects on the Clutha River / Mata-au

Appendix R - Acoustic Assessment

Appendix S – Proposed Consent Conditions

Appendix T – Bird Management Plan

Appendix U – Policy Assessment

Appendix V – Landfill Management Plan

wsp.com/nz