Proposed Expansion, Mt Cooee Landfill, Balclutha

Landscape Mitigation Concept and Effects Assessment Report

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Introduction

Clutha District Council (CDC) is applying for water and discharge permits to authorize the continued use and expansion of the Mt Cooee Landfill adjacent to Kaitangata Highway, Balclutha. Areas of existing fill are to be capped and remediated, whilst a new area for landfill activity, a transfer station area, and a resource recovery area (RRC) are to be developed.

The purpose of this report is to present a landscape mitigation / rehabilitation concept for the landfill and provide an assessment of the landscape effects of the proposed development of the site. The report is structured as follows:

- Statutory context.
- Methodology.
- Site and area description.
- Landscape values.
- The proposed development.
- Proposed landscape mitigation and remediation.
- Landscape effects assessment.
- Statutory provisions assessment.
- Conclusion.

Statutory Context

The Mt Cooee Landfill is designated under the Clutha District Plan (CDP) (designation number 120) with the requiring authority being CDC. The designation covers the land parcels Lots 1 and 2 DP 12203 and Part Sections 4 and 5 BLK XIV, North Molyneux SD, as shown on planning maps U5 and H64A. The purpose of the designation is “Refuse Disposal” purposes, although it is also for “Landfill” purposes, and the underlying zone is the Rural Resource Area. There is no lapse date as it has been given effect to. The designation does not contain any conditions.

It is considered that the proposed expansion works, such as a new resource recovery centre and additional cells for landfill use, meets the designation purpose of "Refuse Disposal"[1]. As all the proposed works fall within the boundary of the designation and meets the purpose of the designation, the underlying zone and accompanying rules are not relevant. An Outline Plan of the proposed works will be submitted to Clutha District Council as a separate process.

Methodology

This assessment follows the concepts and principles outlined in the New Zealand Institute of Landscape Architects (NZILA) Landscape Assessment Guidelines[2], and has been informed by a review of the relevant statutory provisions and site visits on 31 January and 17 May 2023.

Site and area description

The site

As shown in **Figure 1**, the site is located on the eastern outskirts of Balclutha on the northern (true left) side of the Clutha River / Mata au. It is accessed from the Kaitangata Highway which borders the site to the south, and its northern boundary is defined by the Main South Railway line. The land is characterised by gently rolling downland of underlying schist geology and the site is located at the southeastern edge of the Otago peneplain surface (where unconcealed by younger sediments)[3]. A natural gully, now interrupted by landfill landform runs through the site from the north, and the associated watercourse has now been diverted around the golf course side of the railway line. A minor watercourse drains the southeastern part of the site.

[1] Pers Comm – A Craw, Senior Planner WSP
[2] Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.
[3] Bishop B & Turnbull I, 1996, Geology of the Dunedin Area. Institute of Geological and Nuclear Sciences Ltd.

The site has been used and developed for landfill purposes since 1985 and includes existing resource recovery areas, an office / staff building and associated weighbridge, disposal areas for various types of fill / refuse, internal roadways, drains and settling ponds. The south-eastern part of the site remains undeveloped and is currently grazed. There are existing farm sheds and exotic shelter trees (macrocarpa and pine) in this area. A mature macrocarpa shelterbelt, approximately 16 – 20m in height, on the neighbouring property (125 Kaitangata Highway) defines the eastern boundary of the site. Near Kaitangata Highway there is a natural wetland. This is dominated by exotic species and has been assessed as having low ecological values.[4]

The landscape context

The site is located on the edge of low hill country defining the north-eastern side of the lower Clutha Valley, and its relevant landscape context includes Balclutha and the rural land within the valley to the southeast of the town. Being at a low elevation, the site does not have significant visibility beyond approximately 3km from within the valley, and landform generally screens it from the higher hill country to the north and northeast.

The immediate site context is rural, but the site is near the edge of the urban area of Balclutha and separated from the town by the Main South Railway. A few residential properties (adjacent to Golfers Drive / Arthur Terrace) are located approximately 200m away from the site boundary and can be seen from the site. The land to the east is zoned rural and developed as pastoral farmland. Across the railway line, the land to the north is also zoned rural and is developed as a golf course.

Across the Kaitangata Highway from the site to the south-west, is the Clutha River / Mata au, which separates into the Matau and Koau branches at this point. The river margins in this area generally, are highly modified by stopbanks and the dominance of exotic grass and tree cover. Adjacent to the northern part of the site, the riverbank consists of a mainly flat berm area, approximately 30 – 40m in width, approximately 2m below the level of the highway and dropping away more steeply to the river itself. This is

[4] 4sight Consulting, 2023, Mt Cooee Landfill Expansion Area: Terrestrial Wetland and Waterway Assessment.

covered in a rough exotic grass sward with some (mainly) exotic trees. Where the highway diverges from the riverbank near the southern end of the site, the river margin is defined by a stopbank.

Figures 2 - 10 illustrate the character of the site and area.

Identification of the Clutha River / Mata-au margin

The Mt Cooee landfill site forms part of the wider landscape context of the Clutha River / Mata-au. In the vicinity of the site, I consider that the river margin is most appropriately defined as the Matau Branch stopbank near the southern end of the site, and the Kaitangata Highway adjacent to the northern end of the site. The Flood Hazard Assessment[5] indicates that during very large-scale events, river flooding can impact the lower, settlement pond area of the site, and it could be argued that this low-lying area is within the margin. In my assessment however, in terms of landscape character overall, the highway defines the less built / developed margin from the more built / developed area across the road and creates a low stopbank form in itself.

Landscape values

Landscape is defined as follows:

'Landscape embodies the relationship between people and place: it includes the physical character of an area, how the area is experienced and perceived, and the meanings associated with it'[6].

Much of the site is highly modified by landfill activities and natural landform and waterway flow has been significantly changed, however the natural landform and rural character of the currently undeveloped area at the south-eastern end of the site

[5] GHC Consulting, 2023, Clutha River Flood Hazard Assessment. Mt Cooee Landfill
[6] Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines. Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

contribute to local rural character. There is a natural wetland within this area, albeit modified by exotic vegetation and with low ecological values.

In the wider landscape, the Clutha River / Mata-au is a natural feature of major significance, but its natural character has been highly modified, with its margins characterised by stopbanks and exotic vegetation. The Otago Regional Council (ORC) Natural Character, Riverscape and Visual Amenity Assessment of the Clutha / Mata au[7] assessed the natural character of this lower section of the river as moderate.

As outlined in the Cultural Impact Assessment[8], the river is of important cultural significance and there is a Statutory Acknowledgement over it under the Ngai Tahu Claims Settlement Act 1998. The Mata-au was traditionally a significant Mahinga kai trail and route for transportation of pounamu and the river mouth / delta area was the site of various permanent and temporary settlements. There are numerous wahi tipuna in the wider Mata-au delta area.

The presence of the flowing water contributes to visual amenity and as described in the ORC Natural Character, Riverscape and Visual Amenity Assessment[9], has a 'big river presence' associated with its volume, power, and currents, however aesthetic (naturalness) values are modified by its highly modified setting. The river is not identified as an 'outstanding natural feature or landscape', or 'area with high degree of naturalness' in the Otago Regional Plan Water.

The site is within a rural landscape context on the fringe of the urban area of Balclutha. The rural landscape has visual amenity values associated with rural character, in particular openness / low impact of built form and natural landform legibility under pasture cover. These rural character values are modified however, by the adjacent presence of the town and by vegetation patterns that are not always coherent on the landform. Where visible, landfill activity including machinery movement, visible rubbish, disturbed natural landform, and unvegetated areas within the existing landfill also detract

[7] Boffa Miskell, 2018, Natural Character, Riverscape & Visual Amenity Assessment – Clutha / Mata Au Water Quality Plan Change – Stahe 1, ORC
[8] Aukaha, 12 June 2023, Cultural Impact Assessment, Mt Cooee Landfill Resource Consent Application.
[9] Boffa Miskell, 2018, Natural Character, Riverscape & Visual Amenity Assessment – Clutha / Mata Au Water Quality Plan Change – Stahe 1, ORC

from rural amenity. There are no especially recognized landscape values pertaining to this site or area identified in the CDP but the Plan refers to rural amenity values based on 'natural open environmental character' and 'open space and natural character'[10].

As confirmed in the Archaeological Assessment[11] there are no heritage values of particular significance within the site.

Overall, the site is within a peri-urban rural environment with no landscape values given particular recognition in statutory documents. Landfill activities have modified the natural landforms and currently detract from rural character values but to a modest degree in the wider setting, due to low elevation and limited visibility. The portion of the site that remains under pastoral land use contributes to rural character and contains a natural wetland which whilst modified, retains some natural character value.

The feature of greatest landscape significance in this area is the Clutha River / Mata au. Whilst this has notable physical, associative and perceptual values, these are reduced by its modified nature.

The proposed development

As described in detail in the AEE and illustrated in **Figure 11,** the proposed development includes the following:

(a) Closure and rehabilitation of the existing landfill area.

The existing landfill cells will be closed, capped and planted in the short term (3 years), and landfill activity will move to a new area in the eastern part of the site. The existing landfill has generally reached its final height but there will be some further filling and shaping in some areas. It will then be capped and planted.

[10] CDP Section 4.1.1 and Policy RRA.7.
[11] New Zealand Heritage Properties Ltd, 2022, Mount Cooee Landfill, Balclutha. An Archaeological Assessment

(b) Development of the proposed landfill area

The landfill extension area in the eastern part of the site provides for 348,000m^3 of fill, and eventually fill to a maximum height of 36m (including capping). Land fill activity in the extension area will be undertaken in phases as illustrated in **Figure 12**. In overview, the phased development can be described as follows:

- Stage 1 (approx. 5.25 years): Further excavation of the area followed by filling in the north-east area of the pit, up to 27.5m height. Excavated materials will either be exported off site or stockpiled within the landfill footprint.

- Stage 2 (approx. 6 years): Filling in the south-east corner of the pit up to a height of 27.5m.

- Stage 3 (approx. 7 years): Filling in the south-west corner of the pit up to a height of 27.5m.

- Stage 4 (approx. 6 years): Filling on top of the Stage 1 – 3 areas to a height of 31m.

- Stage 5 (approx. 4.5 years): Filling on top of Stage 4 to a final height of 36m.

The overall timeframe to reach landfill capacity is given in the AEE as 35 years. Activity will involve transporting material from the transfer station and compacting it on-site with machinery (similar to that used currently on the existing landfill area). As per the existing landfill activity, temporary bunding and litter fences will be erected. Activity will be localized to an active working area which will migrate over time.

(c) On-site Transfer Area

The on-site transfer area will be developed within the existing operations area to the south and east of the existing operations building and weigh bridge but will involve some expansion of this area and associated excavation. Facilities in this area will include a 22 x 10m bulk items pad, 2 x organics pads (15 x 20m combined), and a 20 x 30m covered

transfer station push pad. A 45 x 15m sediment retention pond is also proposed in this area.

(d) Resource Recovery Area (RRC)

Development of the RRC area will involve earthworks to flatten an area to the south of the existing access drive including creation of a gentle embankment up to approximately 2m high, adjacent to Kaitangata Highway. The RRC facility will include a 45 x 10m covered recycling drop-off pad, a 25 x 16m building platform for a resource recovery shop and graveled and sealed areas. There will be a boundary fence, with planting on the embankment between this and the operations area.

Proposed landscape mitigation and remediation

The proposed landscape mitigation and remediation measures are as follows. Their objectives are to minimise adverse physical and visual landscape effects on rural character and amenity and to ensure appropriate integration of the landfill with its setting.

(a) Limits to expansion

The landfill expansion area will not extend significantly closer to Kaitangata Highway than the extent of the currently disturbed areas. This setback provides for:

- Avoiding impacts on the wetland and areas within 100m of it (as discussed in the Terrestrial Wetland and Waterway Assessment[12]).
- Retention of a buffer of open rural land between the landfill expansion area and the highway.
- Landform screening of the early stages of the landfill extension.

[12] 4sight Consulting, 2023, Mt Cooee Landfill Expansion Area: Terrestrial Wetland and Waterway Assessment.

Landfill expansion area – progressive landform screening

Beginning at Stage 2, the proposed new landfill level will begin to rise above the land levels surrounding the pit. To reduce visibility of landfill activity and associated unvegetated land, it is proposed that the filling activity maintains bunding around the edges of each stage where it will provide screening of activity from viewpoints beyond the site, and that the outward facing slopes are progressively topsoiled and grassed. This screening and revegetation will be ongoing as the landfill rises. **Figure 13** conceptually illustrates this progressive screening.

(b) Final rehabilitation of the existing and proposed landfill areas

Once the landfill areas have reached their final heights, they will be capped and planted. The final shape of the proposed landfill area is illustrated in Figure 12. The new landfill area will be a flat-topped hill, approximately 7m higher than natural landform surrounding, with slopes generally 4(h):1(v). Final rehabilitation will provide for smoothing to result in rounded, non-engineered looking forms. The capping method is detailed in the Design Report[13] and will include top layers of topsoil (150mm depth) and Subsoil (300mm depth).

As shown in **Figure 14** it is proposed that Copper tussock (Chionochloa rubra subsp. Cuprea) is planted on both the existing and proposed capped landfill areas. This species is ecologically appropriate to the area and tussock generally, is suitable in this situation as its root systems are not deep and will not penetrate the landfill cap. The use of a single species will give an appropriately coherent visual appearance on the hill forms. **Appendix A** outlines the recommended planting and management specification, including provision for management to control invasion by woody, deeper rooting species.

[13] WSP, 2023, Mt Cooee Landfill Expansion Design Report

(c) Screen plantings

As shown in Figure 14, there are areas where screen plantings of indigenous species appropriate to the character of the area are proposed to provide screening and visual enhancement. The keys areas proposed, and their rationale is as follows:

(i) The Kaitangata Highway frontage adjacent to the landfill activities

This planting will be established to screen and visually soften views of the Resource Recovery area, and eventually when the existing poplar trees are removed, it will be extended to screen and enhance the appearance of the stormwater pond area. **Appendix B** outlines the recommended planting and management specification.

(ii) The railway boundary

Planting is proposed adjacent to the existing drain and access track adjacent to the railway boundary to enhance the appearance of the site from the golf course and other viewpoints to the north-west. The planting is constrained as to scale, by railway operational considerations, and to extent up the slopes by the required capping. It will be established and managed as per the recommended specification outlined in **Appendix C**.

(iii) Reinforcement of landform screening

As shown in Figure 14, where the hill form to the south of the proposed landfill expansion and Transfer Station area dips, it is recommended that some additional screen planting is established. This will be as per the specifications in **Appendix B**.

Screen plantings are not proposed along the eastern side of the site as this boundary is already well screened by an existing mature macrocarpa shelterbelt. Establishment of trees near this shelterbelt would be difficult, however, should the shelterbelt be removed, screen plantings should be established at that time.

The following conditions, relating to landscape mitigation, are recommended:

a) *Landfill activities should be carried out in accordance with the Landscape Mitigation and Rehabilitation Concept Plan (Figure …) and as specified in Appendices A – C.*

b) *The Landfill Operations Plan[14] shall include measures for the progressive landform screening of the future hardfill areas as viewed from beyond the site, as outlined conceptually in Figure 13.*

c) *The final form of both the existing and the proposed future landfill areas shall be finished to provide a natural (non-engineered) appearance so as to blend appropriately with the surrounding contours and to integrate with the landform character of its downland landscape context.*

d) *In the event that the mature exotic shelterbelt along the eastern boundary of the site is removed, a replacement belt of planting is to be established on the Mt Cooee Landfill site within six months of the removal of the existing trees. This shall be designed to provide timely and effective screening mitigation from the 125 Kaitangata Highway property, and to integrate well with the rural character of the area.*

Landscape effects assessment

Landscape effects are defined as follows:
'An adverse or positive outcome for a landscape value as a consequence of changes to a landscape's physical attributes.[15]

I assess the landscape effects of the development against the landscape values discussed above, and those inherent in the relevant statutory provisions. Landscape effects may be positive or adverse in nature, and I rate the degree of effect in terms of the following 7-point rating scale. The relationship of this scale to the relevant RMA terminology is also shown.

[14] As provided for in the Design Report – WSP, 2023,
[15] Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Insitiute of Landscape Architects, July 2022.

Degree of effect assessment scale

Very low	*Low*	*Low-mod*	*Moderate*	*Mod-high*	*High*	*Very high*
Less than minor		*Minor*	*More than minor*		*Significant*	

Physical effects

The site is already highly modified in terms of its landform, hydrology and ecology, and the landfill has existing adverse effects on natural landform pattern, rural character and amenity, and landscape coherence that I assess as adverse / moderate-high within its landscape context. The proposed works will further modify some areas but will also tidy up and rehabilitate areas of existing disturbance. Overall, I assess the effects of the proposed works as improving the current situation such that the landfill will have adverse effects of lower magnitude than those currently existing. My reasons are as follows:

- The existing landfill area will be capped and revegetated with indigenous tussock, which will enhance indigenous biodiversity. Its form (largely as existing) will integrate well with surrounding landforms.

- The landfill development will expand an area of existing disturbance (rather than create an entirely new area of impact).

- Landfill activity is already present on the site and will relocate to the proposed landfill area from the existing landfill area. The scale of filling activity at any one time, will not be significantly different to that existing presently on the existing landfill, and rehabilitation will take place progressively.

- The final form of the new landfill area will be a flat-topped hill, approximately 7m higher than natural landform surrounding, with moderate slopes. Final rehabilitation will provide for smoothly rounded, non-engineered looking forms that will integrate with the character of the surrounding natural landforms. The proposed indigenous tussock cover will enhance indigenous biodiversity.

- Natural hydrology within the site is already highly modified and the proposed works will not significantly alter this. The drain around the railway boundary of the site will have planting treatment that will enhance indigenous biodiversity.

- There will be no significant impacts on the minor watercourse in the south-eastern part of the site, nor on the natural wetland.

- The RRC and Transfer Station development will result in tidying up of areas with already very modified landform and scruffy character. Screen planting associated with the RRC area will enhance both indigenous biodiversity and roadside amenity on Kaitangata Highway.

- Screen / amenity plantings along the railway boundary and to the south of the proposed landfill area will enhance natural character and rural amenity.

Visual effects / Viewpoints assessment

The site has visibility from Kaitangata Highway adjacent and is also visible in more distant views across the river. On its north side, the golf course is a significant viewing area, along with a few dwellings to its south-west[16]. The railway line is also a potentially significant viewpoint although currently mainly used for freight rather than passenger trains.

Kaitangata Highway (see Figures 3 - 5.)

The landfill site is directly adjacent to the highway, forming the foreground to north-eastward views from the road over a length of approximately 700m.

As shown in Figure 3, the landfill elements are already visible from the north-western end of this stretch, but the proposed development of the RRC will introduce a significant new element close to the highway in an area that has previously been quarried and which has an unkempt appearance. The visual impact of the existing landfill mound will be remedied by the proposed capping and revegetation. A key mitigation will be the

[16] 1, 5, 7 and 9 Arthur Terrace

proposed planting adjacent to the proposed Resource Recovery Area, which will screen and soften views of the built elements. This screening will become effective progressively, however, significant screening impact can be expected within 5 – 10 years following planting. In time, the existing roadside poplar trees will be replaced with lower stature indigenous species, and this will enhance natural character and rural amenity values.

At the south-eastern end of this frontage (see Figures 4 and 5), the site currently has a predominantly rural character with landform mostly screening the landfill activities further back. The proposed new landfill area will not intrude closer to the highway and whilst the expanded transfer station involves some excavation to extend approximately 20m southward, the transfer station facilities will be at a lower level than the intervening land and largely screened. The proposed planting in this area will reinforce this screening. Where visible, the capped existing landfill area will appear as open tussock covered hill-form.

Seen from the highway by the south-eastern end of the site, the new landfill will become progressively more visible from stage 3 onwards, with effects including visibility of unvegetated land, occasional working machinery, and litter fencing. These effects will be adverse on rural amenity values and their degree will wax and wane dependent upon where activity is currently taking place. The proposed progressive landform screening will provide effective mitigation, however.

The final landfill landform will be seen from the highway as a slightly higher hill-form above the existing rising paddock slopes. There will be a transition from pasture to copper tussock, but this will not look out of place in the rural landscape context where landcover can vary from paddock to paddock. The landfill hill form will not be uncharacteristically steep, and its overall shape will blend well with the character of the natural download landforms in my assessment.

Overall, I rate the visual effects of the proposed works on landscape values from Kaitangata Highway as follows:

	Nature / degree of effect
Existing effects of the landfill The existing landfill activities can be seen beyond foreground elements from some places. The proposed RRC area has a disturbed / untidy appearance. The south-eastern area of the site maintains rural character.	Adverse / moderate
Short – medium term (up to approx. 10 years) Once built and mitigated with planting, the RRC facilities will tidy up the site near the site entrance, and the existing landfill area will be rehabilitated. The proposed native plantings will enhance the natural character of the area. There will be minimal visibility of works associated with the new landfill area.	Adverse / low
Medium – long term (approx. 10 – 35 years) The RRC area will remain well screened. The existing landfill will be seen as a tussock covered hill where visible. There will be some impacts (that vary in intensity over time) associated with the new landfill. The progressive landform screening and grassing will effectively mitigate these.	Adverse / moderate
Post works / Long term Whilst artificial, the new landforms will integrate well with the landform character of the landscape setting and the indigenous grassland and screen plantings will enhance naturalness qualities in the rural landscape.	Adverse / low

More distant viewpoints from across the Clutha River / Mata au (see Figures 6 - 8)

The landfill site is visible from various places to the west and south, across the Clutha River / Mata-Au. Figures 6 - 8 illustrate views from Chicory Road on Inch Clutha, the Balclutha Showgrounds, and the informal access track across the river from the site adjacent to the Balclutha Aerodrome, which I consider are generally representative of viewpoints from this direction.

Seen within its wider context, the landfill property is sited low in the landscape with considerable screening by vegetation and overall, its current visual impact is modest. The proposed development will not change this situation significantly.

The revegetation of the existing landfill mound will reduce its current visual impact, and the new landfill area will initially be well screened by landform. The proposed RRC structures will have some visibility (e.g. Figure 8) but will be mitigated by the proposed screen planting. Eventually, from stage 3 onwards, the new landfill activity will become visible from some viewpoints but the impact of this will be mitigated by the proposed progressive landform screening and grassing of the outer slopes. Seen in this broader context, the finished height of the proposed landfill is not excessive (approximately half the height of the existing adjacent shelter trees) and its horizontal extent is likewise, relatively modest.

The final rehabilitated fill form will be higher than the existing landform of the site but will integrate well with the character of the surrounding landforms. The tussock on both the existing and proposed landfill forms will add some natural character and will blend readily into the vegetative mosaic of the rural landscape.

Overall, I rate the visual effects of the proposed works from these more distant viewpoints as follows:

	Nature / degree of effect
Existing effects of the landfill The landfill has limited visibility overall, due to screening by vegetation and landform. Impact is also modified by viewing distance. Where visible the existing unvegetated landfill mound contrasts with its setting	Adverse / low
Short – medium term (up to approx. 10 years) The visual impact of the existing landfill area will be remedied by the proposed revegetation and the RRC elements will not look out of place in this working rural context and will be softened by plantings. There will be no additional visibility of the proposed landfill.	Adverse / very low

Medium – long term (approx. 10 – 35 years) There will be some impacts (that vary in intensity) associated with the new landfill. The progressive landform screening and grassing, combined with the significant viewing distances will effectively mitigate these. In the scale of the wider landscape, visual prominence will be modest. The proposed landfill remains rehabilitated with tussock cover.	Adverse / low
Post works / long term Whilst artificial, the new landforms will integrate well with the landform character of the landscape setting and the indigenous grassland will enhance the naturalness of the rural landscape. The site is not seen as visually prominent.	Adverse / very low

Viewpoints to the north (see Figures 9 and 10)

The landfill site is visible from the railway line directly adjacent to the site, and from the golf course to the north of this. Also, whilst there is some vegetation buffering, residential properties at 1, 5, 7 and 9 Arthur Terrace will have views toward the site from some windows. The viewing direction from these windows is south-east and unlikely to be within the main (likely north facing) views from living areas. Other than from the railway, these viewpoints are generally at a higher elevation and whilst there is some partial tree screening, the existing landfill is already a feature of views in this direction.

The effects associated with the existing landfill (machinery activity, disturbed land etc) will continue for a short period (approx. 3 years) and then the area will be finally capped and rehabilitated. The proposed fringe of indigenous plantings will enhance its lower edge. Structures and activity associated with the Transfer Station will be largely screened by the existing landfill landform but from some places, the RRC area will be visible, extending the built facility footprint to a small degree.

The proposed landfill area is already modified by excavation and landfill activity will take place in this area for the life of the project. Impacts will be similar to those existing now on the current landfill but will be further distant from viewpoints in this area and there will

be less traffic / machinery activity given the development of the Transfer Station. The footprint of the new landfill area will extend by approximately 60m to the north-east but the proposed progressive reinstatement of the outer slopes of the developing landfill will help to limit the visual impact of the activity overall. The final landfill landform will integrate well from northern viewpoints in my assessment. It will not appear unnaturally high or steep, and the proposed copper tussock cover will enhance naturalness.

Overall, I rate the visual effects of the proposed works from these northern viewpoints as follows:

	Nature / degree of effect
Existing effects of the landfill Rural character and amenity are modified by the existing landfill activity and unvegetated land seen in the near – middle distance. The excavated future landfill area can also be seen beyond this. Effects on the existing landfill vary with exact location of the filling activity and existing management / mitigation measures (regular covering of refuse etc) help to minimise impacts.	Adverse / moderate – moderate-high
Short term (until the existing landfill area is rehabilitated) The visual impact of landfill activities in total will expand as operations on the existing area are finished and as works begin on the new landfill area and the RRC. The already very modified character of the site limits its sensitivity to this.	Adverse / moderate-high
Medium – long term (for the life of the landfill from the time the existing landfill rehabilitation is complete) There will be a similar area of landfill activity disturbance, but this will be at greater distance from the viewpoints, and the progressive mitigation proposed will assist to limit impacts. The tussock covered existing landfill with its fringe of indigenous trees and shrubs will enhance naturalness and amenity values in the foreground.	Adverse / moderate – moderate-low
Post works Whilst artificial, the new landforms will integrate well with the landform	Adverse / low

character of the landscape setting and the indigenous grassland and trees will enhance the naturalness of the rural landscape.	

Landscape effects conclusion

The landscape context has no values of particularly recognized significance and the site itself is already developed as a landfill and has low sensitivity to the future developments proposed. The river margins and wetland are not impacted, and the development proposed will tidy up already disturbed areas; and limit and progressively mitigate the effects of the landfill activities. Rehabilitation and mitigation planting will ensure that indigenous biodiversity and natural character is enhanced.

The landfill already adversely impacts rural amenity values to an extent and the proposed works will continue these effects but considering the mitigation proposed, generally to a lesser degree in my assessment. Whilst the final rehabilitated landfill will be unnatural, I consider that it will integrate visually, with its setting.

Overall, I characterize the landscape effects associated with the existing landfill and proposed works as:

- Existing effects: Adverse / moderate-high.
- Effects associated with the proposed works until finally rehabilitated: Adverse / moderate.
- Long term effects (once rehabilitated): Adverse / moderate-low.

Statutory provisions assessment

Mt Cooee Landfill is a designated site in the CDP. As such, the underlying zone and accompanying rules are not relevant. An Outline Plan of the proposed works will be submitted to Clutha District Council as a separate process. Part 2 of the RMA is relevant however, and the following is a brief overview assessment against the key landscape relevant provisions.

Section 6(a):

The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development.

The site is not within the coastal environment, and in my assessment, it is within the landscape context rather than the margin, of the Clutha River / Mata-au. There is a natural wetland within the site however, and this, along with its proximity to the river makes an assessment against Section 6(a) relevant.

The wetland is not identified as a regionally significant wetland by ORC[17] and as confirmed in the Terrestrial Wetland and Waterway Assessment[18], is degraded. The proposed landfill expansion does not extend within 100m of the wetland and the development proposed will have no effects on this part of the site.

The lower lying part of the site potentially impacted by major flooding events is the existing settlement pond area. The development does not propose any change to this area other than establishment indigenous plantings. These will have positive natural character effects.

Section 6(b)

The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development.

The site does not impact any identified ONL or ONF.

[17] www.orc.govt.nz/managing-our-environment/water/wetlands-and-estuaries/clutha-district
[18] 4sight Consulting, 2023, Mt Cooee Landfill Expansion Area: Terrestrial Wetland and Waterway Assessment.

Section 7(c) and Section 7(f)

The maintenance and enhancement of amenity values

Maintenance and enhancement of the quality of the environment

My assessment has found that the existing landfill has adverse effects on landscape values including rural character and amenity. As the proposed development expands into new areas, the existing landfill will be rehabilitated. Overall, considering the mitigation measures proposed I consider that the proposed works will generally tidy up the site and that ongoing adverse effects will be of lower magnitude than those existing now. It is also my assessment that the final form of the landfill will integrate well in this setting with minimal / neutral adverse effects, considering the rehabilitation proposed.

Conclusion

This report presents a landscape mitigation concept for the proposed Mt Cooee landfill expansion and assesses the effects of the proposed development on landscape values.

The site is located near the edge of the urban area of Balclutha but within a rural setting. The area does not have any landscape values of recognised significance in statutory documents, but qualities of open space and natural character are valued aspects of rural amenity in the CDP. It is my assessment that the margin of the Clutha River / Mata-au does not extend into the site.

The landscape mitigation measures proposed include limits to development to provide for screening and to avoid impacting an area of wetland, progressive landform screening and re-grassing on the outer faces of the proposed landfill, screen plantings, and final rehabilitation planting of the capped landfill areas.

The site is already developed as a landfill and has low sensitivity to the on-going / future developments proposed. The river margins and wetland are not impacted, and the development proposed will tidy up already disturbed areas; and limit and progressively mitigate the effects of the landfill activities. Rehabilitation and mitigation planting will ensure that indigenous biodiversity and natural character is enhanced.

The landfill already adversely impacts landscape values to an extent and the proposed works will continue these effects but considering the mitigation proposed, generally to a lesser degree in my assessment. I consider that the final rehabilitated landfill will integrate well in its context.

Insofar as landscape effects are concerned, it is my assessment that the proposed expansion does not constitute inappropriate use and development in terms of the relevant provisions of Part 2 of the RMA.

Mike Moore
Registered NZILA Landscape Architect

Appendix A: Proposed Planting on decommissioned / capped landfill areas - Specification

Areas to be planted are to be fenced from stock grazing as required, and pest plants and animals are to be controlled. If required, plants are to be provided with an eco-shelter for protection against rabbit and other pest species browse.

Prepare the areas for planting and implement planting in accordance with best horticultural practice. Ensure a planting bed of at least 200mm topsoil / compost. Use fertilizer tablets or granules to assist establishment and growth as appropriate. Plant grades are to be Pb3 (or similar) minimum.

Irrigate plants and use mulch as required for successful establishment and growth. Control competing grasses and weeds until well established. Monitor plantings for survival and immediately replace dead plants.

It is proposed that the following species is planted at minimum 1m spacing.

Botanical name	***Common name***	***Approx % of planting***
Chionochloa rubra subsp cuprea	*Copper tussock*	*100*

Maintain the planted areas by removal of woody species and weedy species where these establish to ensure roots do not compromise the capping layer and to maintain a coherent, tussockland cover. Maintenance checks for woody / weed plants are to be undertaken at least 6 monthly. Where required, immediately replant any gaps in the tussock canopy.

Appendix B: Proposed Screen Planting - Specification

Areas to be planted are to be fenced from stock grazing as required, and pest plants and animals are to be controlled. If required, plants are to be provided with an eco-shelter for protection against rabbit and other pest species browse.

Prepare the areas for planting and implement planting in accordance with best horticultural practice. Ensure a planting bed of at least 400mm good quality topsoil. Use fertilizer tablets or granules to assist establishment and growth as appropriate. Plant grades are to be Pb3 (or similar) minimum.

Irrigate plants and use mulch as required for successful establishment and growth. Control competing grasses and weeds until well established. Monitor plantings for survival and immediately replace dead plants.

It is proposed that the following species are planted at minimum 1.5m spacing.

Botanical name	***Common name***	***Approx % of planting***
Austroderia richardii	*Toetoe*	*10*
Carpodetus serratus	*Putaputaweta*	*5*
Coprosma propinqua	*Mingimingi*	*10*
Cordyline australis	*Cabbage tree*	*10*
Griselinia littoralis	*Broadleaf*	*5*
Hebe salicifolia	*Koromiko*	*10*
Kunzea robusta	*Kanuka*	*5*
Leptospermum scoparium	*Manuka*	*5*
Myrsine australis	*Matipo*	*5*
Phormium cookianum	*Flax*	*10*
Pittosporum eugenioides	*Lemonwood*	*5*
Pittosporum tenuifolium	*Kohuhu*	*10*
Pseudopanax crassifolius	*Lancewood*	*5*
Sophora microphylla	*Kowhai*	*5*

Maintain the planted areas by removal of weedy species where these establish. Maintenance checks for weed plants are to be undertaken at least 6 monthly. Where required, immediately replant any gaps from the plant list above, to ensure the screening function of the planting is sustained.

Appendix C: Proposed Railway Boundary Planting - Specification

Areas to be planted are to be fenced from stock grazing as required, and pest plants and animals are to be controlled. If required, plants are to be provided with an eco-shelter for protection against rabbit and other pest species browse.

Prepare the areas for planting and implement planting in accordance with best horticultural practice. Ensure a planting bed of at least 400mm good quality topsoil. Use fertilizer tablets or granules to assist establishment and growth as appropriate. Plant grades are to be Pb3 (or similar) minimum.

Irrigate plants and use mulch as required for successful establishment and growth. Control competing grasses and weeds until well established. Monitor plantings for survival and immediately replace dead plants.

It is proposed that the following species are planted at minimum 1.5m spacing.

Botanical name	***Common name***	***Approx % of planting***
Austroderia richardii	*Toetoe*	*15*
Carex geminata	*Cutty grass*	*15*
Carex virgata		*15*
*Coprosma propinqua**	*Mingimingi*	*5*
*Cordyline australis**	*Cabbage tree*	*5*
*Hebe salicifolia**	*Koromiko*	*5*
*Leptospermum scoparium**	*Manuka*	*5*
Phormium cookianum	*Flax*	*30*
*Pittosporum tenuifolium**	*Kohuhu*	*5*

- Plant at least 2m from drain / boundary only

Maintain the planted areas by removal of weedy species where these establish. Maintenance checks for weed plants are to be undertaken at least 6 monthly. Where required, immediately replant any gaps from the plant list above, to ensure the screening / landscape enhancement function of the planting is sustained.