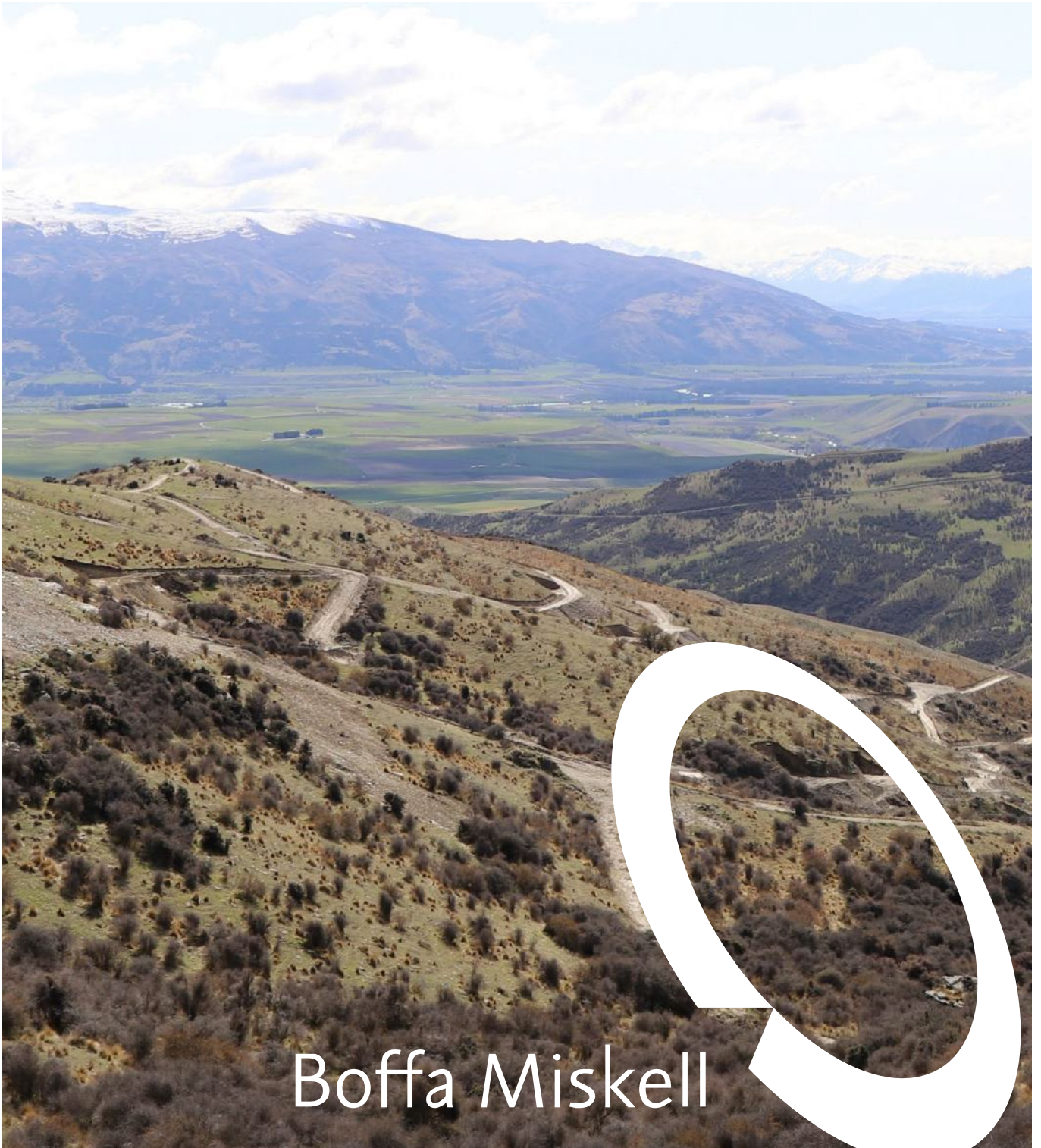


Bendigo Ophir Mine

Landscape, Natural Character and Visual Effects Assessment

Prepared for Matakanui Gold Limited

8 August 2025



Boffa Miskell

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Cover photograph: View from Battery Hill (B10D) overlooking proposed Rise and Shine Pit. © BML, 2024.

Executive Summary

Matakanui Gold Limited (MGL) is proposing to develop and establish a 450 ha gold mine operation on the western slopes of the Dunstan Mountains within the Shepherds Creek and Rise and Shine Creek valleys. The Site is located within the Dunstan Mountains Outstanding Natural Landscape (ONL) and contains several tributaries and springs within the upper reaches of the creek catchments.

The proposal will include start-up, mining activity, and closure phases which will occur over a 30-year period. Beyond this, passive closure will include continued pest management, monitoring of water quality, and support ongoing rehabilitation with native vegetation.

This Landscape Assessment concludes the proposed mining activity will inevitably result in some significant adverse landscape effects during operation, albeit which remain relatively well contained within the broader Dunstan Mountains ONL. The location of the proposed open cast mines and consequent modified landforms have been developed in response to the underlying landscape context and its identified values and reduces the potential for any broader scale significant adverse landscape or natural character effects. In particular, mined extents have been located to reduce perceived impacts on the mountain's broader coherent back drop and skyline and includes rehabilitation of completed engineered landforms, stockpiles, haul roads, and process areas and tailings as well as backfilling the proposed Come-in Time Pit.

In combination with mining activity, extensive rehabilitation of native vegetation will occur within the catchments of Shepherds Creek and Rise and Shine Creek to enhance associated biophysical landscape values. This will occur in tandem with mining activity during operation and endure beyond closure. Once completed, the proposed development will remain embedded within a larger mosaic of rehabilitated habitats that contributes to enhancing the landscape's broader conservation values, including maintaining enduring recreation access through Thomson Saddle and continued opportunities to observe evidence of successive gold mining activity. Despite the scale of the project, potential external views of mining activity will remain relatively limited including avoiding potential significant adverse visual effects beyond the Site.

Landscape Effects

The landscape character of the Site is largely contained within the broader Dunstan Mountains ONL. In this context it forms a legible transition between the broad flat character of the peneplain to the south and the more defined angular ridgeline to the north. The valleys are highly expressive of their tectonic and fluvial formative processes, although the Rise and Shine Creek valley has remnant gold sluicing from the historic Bendigo goldfield. Vegetation within the valley has been modified to accommodate stock grazing, with remnant kowhai, and matagouri found within the sheltered valleys, and tussockland and herbfield present at higher altitudes. At the centre of the Site, is Battery Hill (trig station number B10D) a local and legible feature visible along the broader Dunstan Mountains skyline. The Rise and Shine Creek valley within the Site was also once an alternative travel route for mana whenua between Moeraki and Makarora.

Key elements of the proposed mine which give rise to potential adverse landscape effects include the Rise and Shine Pit, Come in Time Pit, and Srex Pit which, with the exception of backfilling the Come-in-Time Pit, will endure. The proposed mining activity will also involve the construction of permanent landscape features such as the Tailings Storage Area (TSF), Shepherds Engineered Landform (ELF), Western ELF and Srex ELF with associated diversion channels which will be progressively rehabilitated. Additional effects throughout the project include the construction and use of the haul roads, construction of the plant, site workers camp and geology compound, the Thomson Gorge Road realignment as well as the subsequent rehabilitation of Come and Time Pit. Many of these effects will be most prominent during the mining activity phase of the project and will gradually reduce as mining activity is completed and progressively rehabilitated.

Overall effects of the proposed mine in the context of the broader Dunstan Mountains Outstanding Natural Landscape are considered **moderate adverse**. The coherent interface between the northern and southern Dunstan Mountains will remain albeit with more substantial but relatively localised disruption within the Rise and Shine Creek and Shepherds Creek valleys. While evident from beyond the Site, these effects will not significantly detract from the values of the overall outstanding natural landscape. At a local scale, the level of adverse effects ranges from **low** to **high** during mining activity, with the greatest effects resulting from permanent changes to create the Rise and Shine Pit. At the local scale, cumulative effects of the proposed mine will further modify the

Shepherds Creek valley, and sections of the Rise and Shine Creek valley while remaining integrated within the western backdrop of the Dunstan Mountains which includes the relatively intact form of Battery Hill along the skyline.

Visual Effects

Views of the Site are contained to the Upper Clutha valley to the north of Lake Dunstan. In this context, views are available from several private and public viewpoints throughout the valley in proximity of Bendigo, Tarras, Lindis Crossing, Queensbury, and Mount Pisa Settlement, including State Highways 8, 8a, and 6. This also includes public conservation areas within the Pisa Range, and Dunstan Mountains.

Visual effects from private viewpoints and residential dwellings range from **very low adverse** to **moderate - high adverse** during the height of mining activity. The greatest effects are experienced from Ardgour Road, and Bendigo Terrace where the elevated topography and proximity to the Site provides for views into the Shepherds Creek and Rise and Shine Creek valleys. Views from Tarras, Queensberry, and Mount Pisa settlement are long distance views which include views of the Shepherds Creek valley, Rise and Shine Pit, Come in Time Pit, haul roads, Pest Exclusion Area, TSF and ELF. Views in proximity of the Site from lower elevations are largely truncated by the foothills to the west of the Site, and intervening topography.

Visual effects from local roads and the State Highway range from **low adverse** to **moderate adverse** with the greatest effect experienced during the mining phase observed from Thomson Gorge Road as this is relocated to Ardgour Rise. Views from Thomson Gorge Road will be primarily associated with the construction of the site workers camp. These effects will reduce to **neutral** at closure. Within the broader context, visual effects are no greater than **moderate adverse** during the height of mining activity and are largely oblique.

Visual effects from conservation areas range from **very low adverse** to **low moderate adverse**. From these areas, views are largely concealed by intervening landform and otherwise seen over substantial viewing distances, including Ardgour Conservation Area to the southeast of the Site, and Pisa Conservation Area approximately 15km west. Views from the Ardgour Conservation Area are primarily associated with the TSF, Thomson Gorge Road realignment (Ardgour Rise), and the ELF, while views from the Pisa Conservation Area primarily include Rise and Shine Pit, ELF, Ardgour Rise, and open views of the Come in Time pit and Site Workers Camp /Geology Compound.

Natural Character Effects

The Site includes two creek catchments, namely Shepherds Creek and Rise and Shine Creek. The Shepherds Creek catchment is characterised by several ephemeral, perennial, and intermittent streams in the upper catchment. The upper and lower reaches contain sand and gravels and are gentle in gradient. These reaches are separated by a narrow, rocky, gorge containing waterfalls, boulders, and pools. The active bed largely follows its original course, albeit within a modified pastoral context. The Rise and Shine Creek catchment is part of the Clearwater Creek catchment and is characterised by its steep headwaters on the upper slopes of Mount Moka, its modified valley floor from historic gold mining in the valley, and the gorge downstream. The existing level of natural character of Shepherds Creek is considered **moderate**, while the existing level of natural character within Rise and Shine Creek is considered **low moderate**.

Key elements of the proposed mine which give rise to natural character effects include the TSF, ELF, and plant infrastructure within the Shepherds Creek catchment, and the SRX pit, SRE pit, SRX ELF, Rise and Shine pit, and haul roads within the Rise and Shine Creek catchment.

Natural character effects of the proposal on Shepherds Creek are no greater than **moderate-high adverse** and will reduce the overall level of natural character from **moderate**, to **low**. Natural character effects on Rise and Shine Creek are considered no greater than moderate adverse and will reduce the overall level of natural character from **low moderate** to **low**.

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1.0 Introduction

Boffa Miskell Limited (BML) has been engaged by Matakanui Gold Limited to prepare a landscape and natural character effects assessment for the proposed Bendigo-Ophir Gold Mine. The proposed gold mine is located within the Shepherds Creek and Rise and Shine Creek catchments of the Dunstan Mountains which are recognised as an Outstanding Natural Landscape in the Central Otago Operative District Plan.

The assessment considers the proposal in relation to its broader landscape context and character, visual catchment, and effects on the natural character of the Shepherds Creek and Rise and Shine Creek and their tributaries. BML has worked collaboratively with Frank Boffa and the project team to inform mitigation and long-term rehabilitation opportunities at project completion.

The proposed Bendigo-Ophir Gold Mine comprises several project components. Within the broader project area (hereinafter referred to as the 'Site'), the proposal will take the form of a typical open cast gold mine operation. There are four proposed open pits, the largest being located within the Shepherds Creek catchment, an underground mine within the Shepherds Creek catchment, tailings storage facility (TSF), and engineered landforms (ELFs). In addition to the main components of the proposal, supporting infrastructure includes a processing plant, run of mine stockpiles, sediment pond, haul roads and supporting infrastructure including power, fibre, water pipeline, offices, temporary construction camp and access roads.

The first part of this report sets out an understanding of the project in its broader landscape and statutory context. Part A of this report sets out an assessment of the project elements within their respective landscape and visual contexts. Part B of this report sets out an assessment of natural character effects, focussed on Shepherds and Rise and Shine Creeks including their margins and catchments. This assessment has involved a combination of visibility analysis, fieldwork, and preparation of visual simulations from representative publicly accessible viewpoints to understand the level and nature of landscape and visual effects which would result from this project.

To assess potential worse case adverse effects, the various elements of this application have been considered in terms of proposed maximum heights and corresponding maximum extents of the proposed project elements. It is recognised that activity will occur gradually and sequentially across various stages of development and will not occur simultaneously everywhere all at once. This landscape assessment has been undertaken concurrently during the design of the project and accordingly has informed the nature and form of the proposed landscape mitigation and its subsequent rehabilitation to avoid, remedy or mitigate potential for adverse effects.

2.0 Approach

2.1 Overview

This assessment follows the concepts and principles outlined in *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*¹. A full method is outlined in **Appendix 1** of this report. In summary, the effects ratings are based upon a seven-point scale which ranges from very low to very high.

Several site visits and workshops have been undertaken to inform this assessment. Once the general parameters of the project had been defined, a Site visit was undertaken by the project team on the 24th and 25th September 2024 to understand the landscape character and context of the proposed Site, and visual catchment of the proposal within the Clutha valley. Weather for the duration of the Site visit was sunny with patchy cloud and good visibility.

2.2 Familiarisation of the Project and Receiving Environment

2.2.1 Desktop Analysis of the Receiving Environment

Prior to conducting the assessment, a desktop study was completed which included a review of the relevant information relating to the landscape and visual aspects of the project. This information included:

- the statutory setting of the project area and surrounding context;
- existing landscape assessments undertaken within the receiving environment; and
- base map data (such as contours and aerial photography).

2.2.2 Site Analysis and Input into the Project Layout

To inform this assessment and assist with managing the potential for adverse landscape, natural character and visual effects, the project drawings prepared for the application have been reviewed by BML landscape architects and further developed through an iterative design process. Through this process, input into the proposed project layout has included the siting, size and appearance of landforms and ancillary structures where possible to assist in integrating these elements within the landscape, and associated planting to rehabilitate disturbed areas and mitigate potential adverse effects. Current aerial imagery and Zone of Theoretical Visibility (ZTV) modelling has also assisted with project shaping.

2.2.3 Preparation of Visual Simulations

A series of visual simulations were prepared to understand the extent of visibility of the project and the potential impact on the surrounding viewing audiences. Visual simulations are detailed in **Sections 7.5.1** of this report and included within a separate Graphic Supplement accompanying this report. Viewpoint photographs provide representative views from the available viewing areas located at a range of viewing distances and locations. Visual simulations have been prepared in

¹ *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

accordance with NZILA Best Practice² and adhere to BML's internal Visualisation Guidelines to assist with an accurate understanding of the proposed visual change.

3.0 Landscape Context

3.1 Project Setting

The Dunstan Mountains frame the eastern extent of the Upper Clutha Valley and form the broader context of the Site. The topography within the mountains ranges from approximately 400 masl to 1,667 masl at Mount Dunstan, and comprises a network of deep, incised streams forming tributaries to the Mata Au Clutha River in the west, and Manuherikia River in the east (**Figure 1** of the accompanying Graphic Supplement).

The Dunstan Mountains are defined by two distinctive character areas which are defined by the Thomson Gorge Fault. The fault line, now inactive, is represented today by the Rise and Shine Creek valley forming a coherent transition point between the northern and southern character areas. The northern extent of the Dunstan Mountains is characterised by a distinctive ridgeline orientated in a north-east to south-west direction, while the southern extent comprises both a broad peneplain³ south of Rise and Shine Creek along with several distinctive tor features along the skyline such as Haehaeata Leaning Rock. The central component of the Dunstan Mountains forms the broader context of the Site, including local features such as Thomsons Saddle (900 masl) with access through the Dunstan Mountains provided through this natural low point along Thompson Gorge Road, Mount Kamaka (1,102 masl), and Mount Moka (1,222 masl).

3.2 Topography

The local topography of the Site (**Figure 2**) is typical of the transition between the broad peneplain to the south and northern Dunstan Mountain range and comprises two incised valleys, each with an associated network of streams and gullies. Central to the proposed Site is a trig known locally as Battery Hill (B10D) which steeply rises to 916 masl and separates the Shepherds Creek and Rise and Shine Creek catchments. Thomsons Saddle forms a low pass through the Dunstan Mountains at 900 masl (approx.) with Mount Moka forming the highest part of the wider catchment.

3.3 Land Cover

The historic landcover within the Dunstan Mountains once included expansive areas of narrow leaved and slim snow tussockland and shrubland in the upper reaches. The dominant species included hard and silver tussock at lower altitudes, and snow tussock above. Within the gullies Hall's totara woodland would have been present, including species such as *Dacrydium bidwillii*, *Phyllocladus alpinus*, *Dracophyllum longifolium* and some *Podocarpus nivalis*. Areas of matagouri (*Discaria toumatou*), native brooms (*Carmichaelia*, *Chordospartium*), and kanuka (*Kunzea sp.*) would also have occurred. *Luzula ulophylla* would also have been found within areas prone to

² NZILA Best Practice Guide, Visual Simulations BPG 10.2, February 2010.

³ A more or less level land surface produced by erosion over a long period, undisturbed by crustal movement. Oxford English Dictionary.

erosion with alpine areas and herbfield ecosystems dominated by *Celmisiaviscosa* and *Poa colensoi*, transitioning into cushionfield in the most exposed alpine zone (McEwen, 1987).

Today due to historic mining, historic and ongoing pastoral farming, and significant numbers of introduced pests such as rabbits, the landcover present within the Dunstan Mountains is often dominated by depleted tussockland and scabweed (**Figures 3 and 4** of the accompanying Graphic Supplement). Where pastoral grazing occurs, the dominant species are usually exotic and include sweet vernal (*Anthoxanthum odoratum*), Kentucky bluegrass (*Poa pratensis*), *Bromus* spp. (soft brome (*B. hordeaceus*), ripgut brome (*B. diandrus*), cheatgrass (*B. tectorum*)), and cocksfoot (*Dactylis glomerata*) alongside native tussock, shrubs and herbs usually at low densities. There are also isolated areas of matagouri (*Discaria toumatou*), and larger areas of briar rose (*Rosa rubiginosa*) at lower elevations to the west with exotic pasture and weed communities on alluvial fans (McEwen, 1987). Areas of mingimingi (*Coprosma propinqua* var. *propinqua*), and scented tree daisy (*Olearia odorata*) also occur as well as kowhai (*Sophora microphylla*) and kānuka (*Kunzea* sp.) occasionally up to 6 m in height.

Along valley floors, vegetation communities tend to occupy deeper organic and hydric soils which have developed where the ground is permanently saturated. The dominant species are native *Carex* spp. sedges (mainly Sinclair's sedge (*C. sinclairii*), rautahi (*C. coriacea*), and *C. diandra* with less common speckled sedge (*C. testacea*), Buchanan's sedge (*C. buchananii*), and pukio (*C. secta*)). *Juncus* spp. (exotic soft rush (*J. effusus*), jointed rush (*J. articulatus*)) and native herbs are also common.



Photograph 1: View into the upper reaches of the Shepherds Creek catchment. Vegetation to be disturbed will largely include matagouri scrubland and avoid the golden spaniard, tussockland, and matagouri near the Thomsons Saddle shown here.

Generally, above 750 metres more extensive indigenous vegetation remains (see **Photograph 1**). Blue tussock (*Poa colensoi*), hard tussock (*Festuca novae-zelandiae*), silver tussock (*Poa cita*) and snow tussock (*Chionochloa rigida*) continue to dominate, with extensive alpine cushionfield and herbfield towards the southern extent of the mountain ranges (McEwen, 1987). Golden Spaniard (*Aciphylla aurea*) also occurs near the Thomsons Saddle.

Within the Bendigo Scenic and Historic Reserves, the remnant stands of kanuka which remains in association with former mining activity is significant, being one of few remnants in Central Otago⁴.

Vegetation communities within the Site can be split into nine categories⁵. These are outlined below:

- **Exotic Pasture:** Found at mid - to low-altitudes on south-facing slopes, dominated by exotic species such as sweet vernal, Kentucky bluegrass, *Bromus spp.*, and cocksfoot. Native tussock, shrubs, and herbs are present at low density.
- **Mixed Depleted Herbfield and Grassland:** Located on north-facing slopes with rocky soils, dominated by native *Raoulia spp.* and exotic herbs such as viper's bugloss and great mullein. Native shrubs and tussock are established in the gullies.
- **Native Dominant Tussockland:** Found at mid- to high-altitudes, dominated by native tussock species like Fescue's tussock and silver tussock. Exotic pasture, native shrubs, herbs, and golden Spaniard are present at low density.
- **Native Dominant Scrubland:** Common in gullies, dominated by native shrubs including matagouri, mingimingi, and scented tree daisy. Rare kowhai and kānuka emerge up to 6 m. Exotic pasture establishes in areas of scattered scrub.
- **Exotic Dominant Scrubland:** Found at lower altitudes on steep faces, dominated by exotic briar rose. Native shrubs matagouri and mingimingi are less common, with exotic grasses forming the ground cover.
- **Native Hermland and Shrubland:** Common at higher altitudes, with native herb golden Spaniard and low-stature native shrub matagouri. Native tussock species like Fescue's tussock and Matthew's tussock are also common.
- **Mixed Scrubland:** Found at mid-altitudes, comprising exotic briar rose and native shrubs like matagouri and mingimingi.
- **Mixed Herbaceous Wetland:** Located on valley floors with deep organic soils, dominated by native *Carex spp.* sedges and *Juncus spp.* Exotic soft rush, jointed rush, and native herbs are also common.
- **Mixed Tussock Shrubland and Exotic Grassland:** A mosaic of native tussock, native shrubs like matagouri and mingimingi, and exotic pasture species like sweet vernal, *Bromus spp.*, and cheat grass.

3.4 Landscape Character

A rural landscape study was undertaken at a district scale for the Central Otago District in 2007 by Central Otago District Council. The purpose of the study was to characterise the Central Otago District into a series of landscape character areas, and in addition identify outstanding natural landscapes, landscapes of district significance, and significant natural or landscape features based on the level of landscape sensitivity.

A subsequent study was undertaken by BML in 2024⁶ to understand the values of this landscape in alignment with Te Tangi a Te Manu. The study was commissioned by Matakanui Gold Limited, with the purpose of the assessment to understand the character and values of the landscape prior to undertaking the landscape effects assessment.

In addition to the landscape character and values assessment above, a cultural values statement has also been prepared for Matakanui Gold Limited as part of ongoing mana whenua engagement. It is understood the Central Otago landscape, including the Dunstan Mountains, was once part of a network of traditional travel routes connecting the coastal settlements of Te Waipounamu to Central Otago. This was primarily centred around the Mata-au Clutha River, and was primarily

⁴ <https://www.doc.govt.nz/globalassets/documents/parks-and-recreation/places-to-visit/otago/bendigo-area-brochure.pdf>

⁵ Categories provided by RMA Ecology.

⁶ Bendigo-Ophir Mining Project, Assessment of Dunstan Mountains Outstanding Natural Landscape, 14 May 2024.

used by Kati Kuri, Ngati Ruahikihiki, Ngati Huirapa and Ngai Tuahuriri⁷. This cultural assessment is ongoing and informs the landscape character and values assessment where available.

3.4.1 Central Otago District Rural Review Landscape Assessment, 2007

The Central Otago District Rural Review Landscape Assessment⁸ was completed in 2007 and was undertaken in response to possible adverse effects from rural subdivision and other development with a focus on landscape sensitivity, rather than landscape value⁹. The purpose of the assessment was to identify landscape units based on their landscape characteristics, assess landscape values, and determine the visual absorption capability and its vulnerability to change for each landscape unit. The value and vulnerability of each unit was assessed on a seven-point scale from 1 (low) to 7 (high).

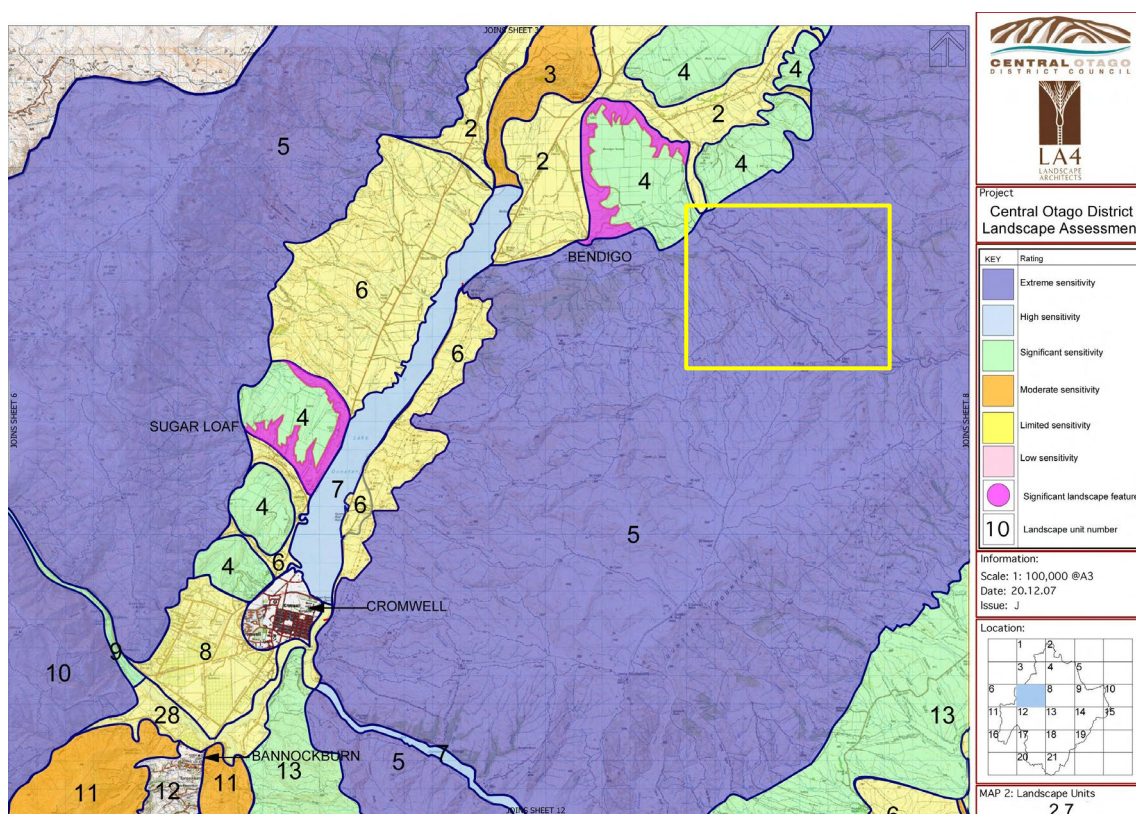


Image 1: Map 2 of the Central Otago District Rural Review Landscape Assessment, 2007. The Dunstan Mountains have been identified as an outstanding natural landscape with an extreme sensitivity to development. The approximate extent of the Bendigo-Ophir Mine proposal is outlined in yellow. LA4, 2007.

The proposed Bendigo-Ophir Mine proposal is located within Landscape Unit 5, the Pisa and Dunstan Ranges, and the 'Main Ranges' landscape character category. The 'Main Ranges' are large structural elements within the landscape and form the backdrop to the broader Central Otago

⁷ Kai Tahu (2018) Cultural Values Statement

⁸ LA4 (2007) Central Otago District Rural Review: Landscape Assessment Report and Recommendations.

⁹ Since the completion of this study, Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines⁹, was released. According to the guidelines "... 'sensitivity' means the susceptibility of a landscape's values to the potential effects of certain types of activity... Generic attributes such as sensitivity... can be useful and necessary in policy-based assessments, or in comparing alternative routes/localities, but they become redundant once the actual effects of a specific proposal can be assessed directly". The guidelines then state "...it is more direct and transparent to describe the actual nature and degree of effect on the landscape's actual values (and attributes) and explain with reasons...". 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

landscape. These mountain ranges largely extend in a south-west to north-east direction with most peaks exceeding 1,600 masl characterised by distinctive schist tors, and broad tussockland. Although these mountain ranges have been modified to accommodate farming, and mining land uses, they retain a high sense of naturalness.

Within this study, the overall visual absorption capability ranged from low to moderate (tolerance to change) due to varying degrees of openness, modification, and presence of tors and indigenous vegetation. Of the ten units assessed within this landscape character category, the Pisa and Dunstan Mountains were assessed as an outstanding natural landscape (ONL), with extreme sensitivity to development including new farming regimes, forestry, new tracks and roads, wilding pines, and rural residential subdivision. This landscape effects assessment has considered the proposal within the broader context of the Pisa and Dunstan Mountains Landscape Unit as well as the more local landscape encompassing the Site and within which mining activity is proposed.

3.4.2 Bendigo – Ophir Gold Project, Assessment of Dunstan Mountains Outstanding Natural Landscape, 2024

An initial landscape assessment was undertaken by BML in May 2024 to understand the relevant landscape values of the area recognised as the Dunstan Mountains ONL within the Central Otago District. The purpose of this assessment was to inform the important landscape values within the identified Dunstan Mountains ONL and which are necessary to address when seeking to avoid, remedy or mitigate potential for adverse landscape and visual effects.

Current professional practice conceptualises landscape as three overlapping physical, perceptual and associative dimensions through which landscape character can be described and landscape values can be identified and assessed. The proposal is located on the interface of the North Dunstan Mountains and South Dunstan Mountains landscape character areas, with Shepherds Creek being the defining boundary between the two-character areas (**Figure 5** of the accompanying Graphic Supplement in **Appendix 5**). A summary of relevant landscape values in relation to the Dunstan Mountains ONL identified through this assessment is set out below¹⁰:

Physical

- *Highly intact mountain sequence, expressive of its tectonic, and glacial formative processes.*
- *Remnant peneplain from the Cretaceous period remains highly legible and forms an extensive summit plateau feature to the south which remains distinct from the more angular mountain forms and summits to the north.*
- *At higher altitudes vegetation including blue tussock (*Poa colensoi*), hard tussock (*Festuca novae-zelandiae*), snow tussock (*Chionochloa rigida*) and extensive alpine cushionfield and herbfield remain present. These are recognised as valuable remnants of historic vegetation within the area.*
- *Within the area and adjoining Bendigo Scenic Reserve is a remnant stand of kanuka valued as one of a few remnants left in Otago associated with former gold mining activity.*

Perceptual

- *Panoramic views of a broader mountain backdrop and unobstructed skyline are highly valued and broadly visible throughout the Upper Mata au/Clutha and Manuherikia catchments.*
- *Important local landmarks and wayfinding features include the Mata-au gorge, Haehaeata and Thomsons Gorge.*
- *The underlying geology and geomorphology of the landform is an important feature of this landscape. Schist tors, the gradual movement of soil at higher elevations (solifluction), and intricate network of streams and creeks form legible characteristics which express their formative processes.*

¹⁰ Bendigo-Ophir Mining Project, Assessment of Dunstan Mountains Outstanding Natural Landscape, 14 May 2024.

- *The shifting shadows across open landforms at different times of the day and year form a key dynamic characteristic of this mountain backdrop alongside changing weather patterns and transient influences of winter snowfall and fog.*
- *Rugged kanuka covered promontory along the immediate skyline (part of which falls outside the ONL within Bendigo Scenic Reserve) adjoins the north-eastern end of Lake Dunstan before transitioning into a broader more defined grassland plateau and mountain backdrop above.*
- *General lack of visible structures and modifications ensures the landform remains largely open and is perceived as natural with some more localised and limited evidence of gold mining amongst a broader coherent and open mountain backdrop.*

Associative

- *Matakinui (Dunstan Mountains) formed part of a traditional travel route between Makarora and Moeraki. The area is recognised as a mahika kai site where weka and tikumu (mountain daisy) were gathered, as well as taramea (wild spaniard) which was gathered for its perfume. The Mata au (Clutha River) to the south of this ONL was also significant for gathering tuna (eels), kanakana (lamprey) and kokopu. This section of the river formed part of a traditional travel route, prior to passing through the Matakinui /Dunstan Mountains¹¹.*
- *The Bendigo area is renowned for its gold mining history from the mid-1800s. Remnants of this time period are still present today near the settlement of Bendigo.*
- *Several stations including Bendigo, Northburn, Matakanaui, Cloudy Peak and Cluden Stations support a strong farming history in the area that dates back to the 1850's when the large Morven Hills Station was formed. This land use is ingrained in the character and shared associations of the landscape.*
- *The Dunstan Mountains are highly valued for their recreational opportunities, including hunting, tramping, mountain biking, 4WD, and horse trekking. Day walks are available near Bendigo in addition to backcountry experiences including within the larger Lauder Basin Conservation Area which is located to the north-east of the ONL.*

3.5 Summary of Context and Character

The proposal is located within the Dunstan Mountains ONL. The Dunstan Mountains are characterised by a distinctive south-west to north-east ridgeline, intersected with a large peneplain and tectonic activity in proximity of the Site which is highly expressive of the underlying formative processes. Key topographical features include Haehaeata Leaning Rock (1,647 masl), Mount Dunstan (1,667 masl), Mount Fulton (1,550 masl), and Mount Apiti (1,509 masl). Schist tors are a key characteristic of this landscape including the distinctive Haehaeata Leaning Rock to the south of the mountain range. The slopes of the ranges include incised gullies and valleys containing a network of rivers and streams forming tributaries of the Mata Au Clutha River in the west and Manuherikia River to the east.

The broader landscape, including the skyline, remains distinctive and coherent and predominantly void of obvious built form or modification. This is predominantly characterised by extensive areas of sub alpine vegetation and tussockland at higher elevations and areas of pasture on the lower slopes. The stunted nature of this vegetation allows for expansive views of the Dunstan Mountain Range and valleys below. Within the valleys, kanuka, manuka, and matagouri grey scrub are prominent and the valleys include influences from ongoing human activity including previous mining activity.

The Dunstan Mountains retain a high sense of naturalness albeit entrenched in human influence over several centuries. As a low point through the mountains, Thomsons Saddle formed part of a traditional travel route from Moeraki on the east coast of Te Waipounamu to Makarora to the north of Lake Wanaka. In later years, the mountains became the site of gold exploration within the

¹¹ Kai Tahu (2018) Cultural Values Statement

Bendigo area, of which relics of this time are still present today. Present land use is largely associated with farming of merino sheep with grazing typically more evident on the lower slopes.

3.6 Site Appraisal

The Site is primarily located within the Rise and Shine, and Shepherds Creek catchments, two incised streams within the Dunstan Mountains. The Site forms part of the vast schist tor landscape interwoven with areas of pasture, tussockland, grey scrubland, kanuka forest and remnants of mining activity adjoining the Bendigo Historic Reserve. A series of Site Appraisal Photographs have been selected to describe the existing character of the Site. The location of these photographs outlined below are represented within **Figure 6** of the accompanying Graphic Supplement.

The western extent of the Site comprises the lower extent of the Shepherds Creek valley and lower slopes of ridgeline extending west of Battery Hill (B10D). Accessed by Thomson Gorge Road, the exposed ridgeline to the south of Shepherds Creek is characterised by grazed pasture, steep rocky slopes and sporadic areas of tussock and shrubland. The ridgeline gradually slopes towards the toe of Battery Hill as demonstrated in **Site Appraisal Photograph A**. The ridgeline to the north of Shepherds Creek in comparison is characterised by more intensively grazed pasture within Ardour Station which forms a distinctively different character to that of Bendigo Station to the south as shown within **Site Appraisal Photographs B and C**. The slopes are characterised by a series of unnamed incised tributaries of the lower Shepherds Creek catchment containing a mixture of exotic and native shrubs, grazed pasture, and tussockland (**Site Appraisal Photograph D**).

The lower extent of the Shepherds Creek valley is more sheltered than the exposed upper slopes. The base of the valley forms the margins of Shepherds Creek, characterised by a gently undulating valley system, sheltered by the ridges to the north, and south of the creek. The valley is currently grazed by stock shown in **Site Appraisal Photograph E** and contains extensive areas of grey shrubland, tussockland, and pasture. Within the lower reaches of the valley remnants of a dam are present, and form a large pond area, as shown in **Site Appraisal Photograph B**.

Further east, the topography of the ridgeline steadily climbs towards Battery Hill and nature of the valley narrows towards the Shepherds Creek gorge demonstrated in **Site Appraisal Photograph F**. Access to this area of the Site is currently from a private farm track, and becomes more undulating and characterised by the slopes of Ferret Gully. As shown in **Site Appraisal Photograph G**, the gully is broad, and open, extending from 500 masl at Shepherds Creek to 800 masl at the base of Battery Hill. The gully includes extensive cover of matagouri scrubland, and tussock, which is also grazed by stock. Interspersed between the vegetation are large schist outcrops and boulders. Intersecting the vegetation and landform are several single lane gravel tracks which traverse the slopes.

To the south the landform falls steeply towards Rise and Shine Creek. The Rise and Shine Creek catchment is characterised by historic gold workings, which have formed the flat topography found within the valley floor. This is currently grazed by stock and can be accessed via Thomsons Gorge Road. The lower reaches of the valley intersect with Thomson Gorge Road before passing through the Rise and Shine Creek gorge shown in **Site Appraisal Photograph H**. The gorge contrasts with the lower reaches of the valley, transitioning from predominantly grazed pasture, with some tussockland and mature grey scrubland, to dense grey scrubland, crack willow in Bendigo Creek and rocky outcrops. Above the gorge is an existing pond and dam structure currently used for storing water and for stock access (shown in **Site Appraisal Photograph I**). From this viewpoint Battery Hill is a prominent feature on the skyline, separating the Rise and Shine Creek valley from the Shepherds Creek valley.

To the north of Battery Hill, the ridge continues to steadily climb towards the Thomsons Saddle. Along this ridgeline, there are open views towards the upper reaches of Shepherds Creek, including one of its main tributaries Jean Creek. Jean Creek as shown in **Site Appraisal Photograph J** is a steep gully system with a narrow creek which traverses the base of the valley. The valley is characterised by its undulating topography, with grass and sparse tussock within the upper, more exposed reaches, and areas of dense matagouri scrubland within the lower reaches.

The upper reaches of Shepherds Creek have a more remote and exposed character in comparison to the western extent of the Site. Similar to Jean Creek, the character of the valley comprises a steep undulating topography which falls towards the narrow creek bed at the base of the valley. The Shepherds Creek catchment splits into two within the upper reaches before reaching its headwaters at the Thomsons Saddle. The exposed ridgelines remain predominantly clad in pasture and tussockland, while within the sheltered steep gullies below, the vegetation becomes more dense in the form of grey scrubland. This is evident within **Site Appraisal Photographs K and L**. Within the headwaters of the catchment the Site becomes highly exposed near the summit of the Thomsons Saddle. Vegetation present transitions into areas of spaniard, native herbland, and tussockland, as shown in **Site Appraisal Photograph M**.

The character of upper Rise and Shine Creek valley to the south of the Shepherds Creek headwaters are characterised by the grazed slopes of Mount Moka, and areas of grey scrubland on the lower slopes. Within this area, areas of gold mining previously undertaken by sluicing remain apparent from the historic Bendigo Gold Rush and influence the flat form of the valley floor. The area is currently grazed and traversed by Thomson Gorge Road to the true left of the creek bed. This is demonstrated within **Site Appraisal Photograph N**.

Beyond the valley, the Site is characterised by the lower terraces on the fringes of the Dunstan Mountains as demonstrated in **Site Appraisal Photograph O**. This area has a flatter topography, and therefore more conducive to more intensive farming, and irrigation practices. From this viewpoint, the skyline and backdrop of the Dunstan Mountains becomes more evident, including features such as Battery Hill.

To the north of the Shepherds Creek Valley is Ardgour Station which transitions from the more intensely farmed landscape to the north-west, to the exposed upper slope of the Dunstan Mountain Range. As demonstrated within **Site Appraisal Photographs P and Q**, the character of the adjacent valley transitions into a rugged and exposed landscape containing several schist tors, tussockland, and taramea in the upper reaches. **Site Appraisal Photograph Q** illustrates the definition between the grazed slopes of Ardgour Station and the protected area of taramea within the Ardgour Conservation Area.

3.7 Visual Appraisal

An assessment of the potential viewing audience for this project has identified that partial views of the Site are available within the Upper Clutha basin, including near the settlements of Tarras, Queensbury, Lindis Cross and as far south as Mount Pisa Settlement. The available viewing audience includes users of the three main state highways and local roads, as well as private viewing audiences such as dwellings, and nearby conservation and recreational areas.

A series of Site Context Photographs were taken to help identify and assess existing views of the Site. The locations of Site Context Photographs are shown in **Figure 7** of the accompanying Graphic Supplement and described below. A tool often used for determining potential visibility (location of viewing audience) is a computer-generated Zone of Theoretical Visibility (ZTV) or Viewshed Analysis. A ZTV analysis was carried out based on the underlying landform to help determining the extent of field work and the selection of representative viewpoints for the assessment (**Figure 7: Viewpoint Plan**).

The viewing catchment includes views to the south-west of the Site within the Bendigo Scenic Reserve, albeit limited and at higher elevations. **Site Context Photograph 1** demonstrates views of the Site from the western extent of the Kanuka Loop within the scenic reserve. Panoramic views of the Upper Clutha valley are available from this viewpoint, including views towards Tarras, and Lindis Pass. Views of the Site are largely truncated by intervening landform within the South Dunstan Mountains to the south of the Site, however glimpsed views of Battery Hill (B10D) are sometimes available.

Views immediately west of the Site are equally limited due to the nature of the intervening topography associated with the Shepherds Creek catchment and eastern extent of the Bendigo Historic Reserve. As demonstrated in **Site Context Photograph 2**, views of the Site in proximity of the Site are limited to the ridgeline to the north of Shepherds Creek, and the presence of Battery Hill (B10D) on the skyline. These views are available from Thomson Gorge Road, a well-established recreational four-wheel drive route and recognised cycle touring route through the Dunstan Mountains via the Thomsons Saddle into the Manuherikia Valley. Further west on Thomson Gorge Road views of the Site are more open, including the lower slopes of Battery Hill (B10D) as shown in **Site Context Photograph 3**.

Approximately 6 kilometres west of the Site at its nearest point is State Highway 8. The highway is a key access route between Cromwell and Tarras for both local commuters and tourists travelling between Central Otago and the Mackenzie Basin. As shown in **Site Context Photograph 4**, Views of the Site from here include the upper reaches of the Shepherds Creek valley, and Battery Hill (B10D). These views are transient and in some areas are truncated by intervening terraces between the toe of the Dunstan Mountains and the highway.

To the west of State Highway 8 views of the Site become more evident. Local roads including Māori Point Road provide access to properties to the true left of the Clutha Mata Au River. As shown in **Site Context Photograph 5**, views of the Site from local roads to the west of the State Highway are largely glimpsed, including views of Battery Hill, on the skyline and its lower slopes, and the ridgeline to the north of the Shepherds Creek valley.

To the north of the Site, the landscape associated with the settlement of Tarras and its surrounds becomes more undulating with a remote rural character. A key local road which connects to Thomson Gorge Road is Ardgour Road. Views, as shown in **Site Context Photograph 6** are largely truncated by the ridgeline to the north of Shepherds Creek, and the terraced landform to the west of Ardgour Road. From here, Battery Hill is seen below the skyline against the larger backdrop of the South Dunstan Mountains.

To the north-west of Tarras, the landscape gradually begins sloping upwards towards the foothills of the Grandview Mountain Range. The character of the landscape becomes more gently undulating and characterised by broad open paddocks framed by exotic shelter belts. Residential dwellings are sparse throughout this area and predominantly accessed along narrow gravel roads. As shown in **Site Context Photograph 7** long distance views of the Site are available from this area, including views of the ridgeline to the north of Shepherds Creek, and Battery Hill and its lower slopes.

State Highway 8A is a second State Highway connection within the viewing audience of the Site. The highway connects the settlements of Hawea and Wanaka to Tarras and State Highway 8A. Views of the Site from State Highway 8A include long distance views of the ridgeline to the north of Shepherds Creek and Battery Hill and its lower slopes as demonstrated in **Site Context Photograph 8**. These views are available along parts of this road between Luggate on the true left of the river (shown in **Site Context Photograph 9**) to the State Highway connection at Tarras.

Within the broader context of the Site, there are several elevated residential areas near the settlement of Queensbury. From these elevated areas, views of the broader backdrop of the Dunstan Mountains can be observed, with many properties orientating towards the mountain

range. Views of the Site from public viewpoints in this area include a broader panorama of the Dunstan Mountains with elevated views of Battery Hill and its lower slopes, the ridge to the north of the Shepherds Creek catchment, and the upper reaches of the Shepherds Creek catchment concealed from the valley floor. These views are demonstrated by **Site Context Photograph 10**.

Above Queensbury is the Pisa Range Ridge Track which connects to several walking tracks throughout the Pisa Range. The track climbs steadily above Queensbury settlement and has long distance open views of the Dunstan Mountains, including Battery Hill, and western extent of the Shepherds Creek valley. As shown within **Site Context Photograph 11**, the walking track has views of the broader Upper Clutha basin, and the transition between the defined ridgeline of the northern Dunstan Mountains, and the highly legible peneplain to the south.

To the south-west of the Upper Clutha valley, State Highway 6 connects the settlements of Luggate, Hawea, and Wanaka to Cromwell and Queenstown. The road is therefore a popular route for local commuters and tourists, and several local residential properties are accessed from the highway. Long distance, transient views of the Site are available from the State Highway and include views of the lower section of the Shepherds valley, Battery Hill, and ridgeline to the north of Shepherds Creek. This is demonstrated within **Site Context Photograph 12**.

At the south-western extent of the Upper Clutha basin, views of the Site become more limited in the context of Mount Pisa settlement. Views of the Site are largely curtailed by the intervening landform to the south of the Site as shown in **Site Context Photograph 13**. Glimpsed views of the Site can be seen, encompassing Battery Hill, the lower Shepherds Creek valley, and ridgeline to the north of Shepherds Creek.

4.0 Statutory Planning Context

A brief summary of the statutory context relevant to this assessment is outlined below. The full extent of the statutory planning context for this assessment, including the relevant objectives and policies, is outlined within **Appendix 2** of this assessment.

4.1 Fast Track Approvals Act 2024

The purpose of this Act is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.

The Bendigo – Ophir Gold Project is listed in Schedule 2 of the Fast Track Approvals Act 2024, described as to: “Establish, operate, and remediate an open pit and underground gold mine”.

As per Schedule 4 of the Fast Track Approvals Act, regarding approvals relating to the Resource Management Act 1991, matters to be covered in an assessment of environmental effects includes Section 4(b) *any physical effect on the locality, including landscape and visual effects*.

4.2 Resource Management Act 1991

The key sections identified with the RMA regarded as being relevant to this landscape effects assessment include:

Section 6(a) – *the preservation of natural character of... wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate, subdivision use and development*

Section 6(b) – *the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development*

Section 7(c) – *the maintenance and enhancement of amenity values*

Section 7(f) – *maintenance and enhancement of the quality of the environment*

This assessment has taken account of the relevant objectives, policies and rules of the Otago Regional Policy Statement, Proposed Otago Regional Policy Statement, Regional Plan: Water for Otago, and Central Otago District Plan as set out in the Assessment of Environment Effects. The key overlays of relevance to this assessment are shown in **Figure 8** of the accompanying Graphic Supplement. Key matters relevant to this landscape assessment are set out in **Appendix 2** and summarised below.

4.2.1 Natural Character (RMA s.6(a))

Although the RMA does not define natural character, from a technical perspective, natural character is defined as “...an area’s distinctive combination of natural characteristics and qualities, including degree of naturalness...”¹².

For this assessment, natural character has been considered with specific reference to RMA s6(a) as applied to lakes, rivers, wetlands and their margins. Such matters primarily relate to biophysical and some sensory landscape attributes in identified areas and reflect the extent to which natural elements, patterns and processes occur and have undergone human modification. As such, the highest degree of natural character occurs where there is the least apparent modification. Conversely, rivers, wetland and their margins that have been highly modified will have a lower (but retain some) level of natural character.

Natural character effects will be assessed in response to effects on Shepherds Creek, Jean Creek, and Rise and Shine Creek and their tributaries.

4.2.2 Outstanding Natural Landscape (RMA s.6(b))

The Dunstan Mountains are recognised as an ONL within the Central Otago District Plan and this includes the Site.

Section 6(b) of the RMA requires the “... *protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development*” as a matter of national importance that shall be recognised and provided for.

The Central Otago District Plan (COPD) recognises the Dunstan Mountains as an ONL, recognised for the following:

The mountain range forms part of the backdrop to the Manuherikia Valley to the east and the Upper Clutha Valley to the west and is a memorable feature of the Central Otago landscape. The crest is an extensive summit plateau extending from Haehaeata / Leaning Rock northwards, distinctive rock tors are visible on the skyline.

¹² ‘Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines’, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

The CODP recognises the need to protect the unique and distinctive landscape of Central Otago, and outstanding natural landscapes from inappropriate subdivision, use and development. It also recognises that while those landscapes are constantly evolving through natural processes, the rocky and semi-arid nature of this landscape can be vulnerable to the presence of new structures, cultivation of tussock grasslands, large earthworks, new roads, and establishing woodlots, production forestry or shelterbelts on elevated land.

4.2.3 Amenity Values and Quality of the Environment (RMA s.7(c) and 7(f))

Beyond the Dunstan Mountains ONL, the landscape context is characterised by established rural land use which contributes a distinct rural landscape character and amenity which can be differentiated from the adjoining ONL. In amenity terms, the RMA defines amenity values as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes. There are no additional landscape overlays within the Site, including those in relation to amenity values and quality of the environment, notwithstanding the overlying ONL classification which applies across the whole Dunstan Mountains.

4.3 National Policy Statement for Freshwater Management (NPSFM, 2020)

The policies of relevance to this assessment in relation to the NPSFM are associated with the natural character effects assessment. These include:

Policy 6: There is no further loss of extent of natural inland wetland, their values are protected, and their restoration is promoted.

Policy 7: The loss of river extent and values is avoided to the extent practicable.

It is also noted that none of the waterways within the Site have been identified as an outstanding water body.

4.4 (Operative) Otago Regional Policy Statement, 2019

Chapter 3, Part B of the Otago Regional Policy Statement, 2019 includes two parts. The first ensuring the values of the ecosystems and natural resources within the Otago Region are maintained or enhanced where degraded. The second, ensuring that those highly valued and significant natural resources are identified, protected and enhanced where degraded. This includes the management and protection of freshwater bodies, and natural features and landscapes, including wetlands.

With regard to this assessment, Policy 5.4.8 specifically addresses adverse effects from mineral exploration and processing. While it is not practicable to avoid locating the proposed mine within an ONL where this resource occurs, this requires measures which seek to avoid, remedy or mitigate, as necessary, adverse effects on identified values.

4.5 Proposed Otago Regional Policy Statement, 2021

The Land and Freshwater Chapter within the Proposed Otago Regional Policy Statement, 2021 is of relevance to this assessment and specifically with regard to the protection of the values associated with freshwater, natural wetlands, outstanding waterbodies, and preserving and protecting the natural character of lakes, rivers, and their margins.

In addition to freshwater, the Proposed RPS also sets out the need to identify the values associated with outstanding natural landscapes and protected from inappropriate subdivision, use and development. This includes avoiding exceeding the landscape capacity of the natural feature or landscape, and maintaining the values which contribute to the natural feature or landscape being outstanding¹³. We understand that the Proposed RPS is under appeal to the Environment Court and we refer to the weighting assessment by Mitchell Daysh in relation to that.

4.6 Regional Plan: Water for Otago

Chapter 5, Chapter 6, and Chapter 8 of the Regional Plan: Water for Otago are of relevance to this assessment.

The key objectives within Chapter 5 of the Regional Plan: Water for Otago are associated with maintaining and enhancing the natural and human use values that are supported by Otago's lakes and rivers. This also includes protecting these lakes and rivers from inappropriate subdivision, use, and development, and maintaining and enhancing their amenity values.

Chapter 6 relates to the need to retain flows in rivers to maintain their life-supporting capacity for aquatic systems, and their natural character.

Chapter 8 concerns the beds and margins of lakes and rivers. This includes but is not limited to the management of bed disturbance effects on the amenity values caused by reduction of water clarity, and maintaining and enhancing the amenity values, and natural character of lakes and rivers and their margins.

4.7 Central Otago District Plan

Within the Central Otago District Plan, Section 4 Rural Resource Area and Section 13 Infrastructure, Energy, and Utilities are of relevance to this assessment.

The Rural Resource Area is characterised by “...*Central Otago's unique, semi-arid landscape of broad basins separated by low mountain ranges with sparse vegetation, covered in tussock grassland and exotic pasture, and broken by schist rock outcrops...*”¹⁴. The key matters of relevance to this assessment include the protection of outstanding natural landscapes from inappropriate subdivision, use, and development, maintaining the open natural character¹⁵ of the hills and ranges, and preserving the natural character of the district's water bodies and their margins. This includes avoiding, remedying, and mitigating adverse effects on the landscape, natural, and amenity values of the rural environment.

The key objectives and policies of relevance to this assessment outlined within Section 13 are primarily focussed on ensuring the construction and operation of infrastructure, does not compromise landscape, natural character, and amenity values, including within ONLs.

¹³ Outstanding Natural Landscape currently under appeal, however attributes are similar to the Operative District Plan.

¹⁴ Central Otago District Plan, 2024

¹⁵ Not in the context of RMA Section 6(a) in relation to lakes, rivers, wetlands, and their margins.

4.8 Bendigo Conservation Covenant

The Bendigo Conservation Covenant protects the natural, cultural, historical and significant values of the Bendigo Area. The covenant applies to part of Bendigo Station and includes the following conservation objectives of relevance to this assessment:

- i. Protecting and enhancing the natural character of the land with particular regard to the natural functioning of ecosystems and to the native flora and fauna in their diverse communities and dynamic inter-relationships with their earth substrate and water courses and the atmosphere.
- ii. Protecting the land as an area representative of a significant part of the ecological character of the Dunstan Ecological District referred to in the draft survey report for the Protect Natural Areas Programme for the Lindis, Pisa, and Dunstan Ecological Districts dated February 1987.
- iii. Maintaining the landscape values of the land as referred to in the “Application for exchange of property rights” submitted to the Commissioner of Crown Lands.
- iv. Maintaining the historic values of the land as referred to in “The rich fields of Bendigo” by Jill Hamel February 1993.

5.0 Project Description and Landscape Strategy

Matakanui Gold Limited ("**MGL**") is proposing to establish within the Bendigo-Ophir Gold Project ("**BOGP**"), a new gold mine, ancillary facilities and environmental mitigation measures on Bendigo and Ardgour Stations in the Dunstan Mountains of Central Otago. The project site is located approximately 20 km north of Cromwell.

The BOGP is located within the footprint of Minerals Exploration Permit 60311, which overlays several pastoral stations that have grazed sheep and cattle in the area for over 100 years. MEP60311 is held by MGL under the Crown Minerals Act 1991. MGL has land access agreements with Bendigo and Ardgour Stations. The BOGP is located adjacent to land administered by the Department of Conservation ("**DOC**"), including the Bendigo Historic Reserve, the Bendigo Conservation Area and the Ardgour Conservation Area. The BOGP planned operations do not directly impact these areas.

The BOGP's exploration has discovered numerous soil geochemical anomalies and extensive drill evaluation has defined four (4) gold deposits worthy of economic extraction. The most significant is the Rise and Shine ("**RAS**") discovery which is the most significant gold discovery in New Zealand in the past 4 decades. The other discoveries at Come in Time ("**CIT**"), Srex ("**SRX**") and Srex East ("**SRE**") are smaller in size and tenor.

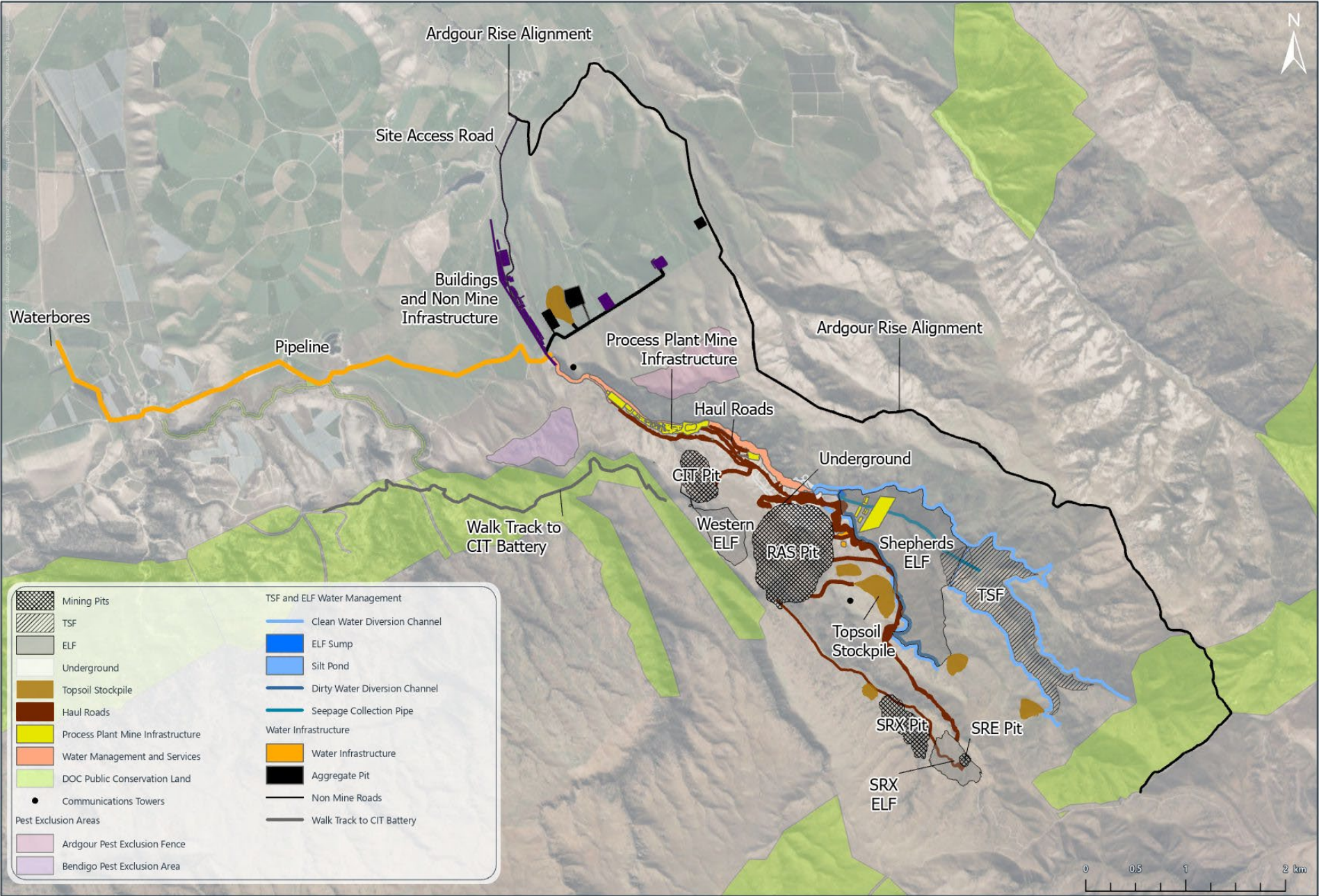
The defined orebodies are planned to be mined by open pit methods. Underground mining is planned for the deeper parts of the RAS orebody in the later years of development.

The majority of the mining activities, ancillary facilities and associated infrastructure will be located in the Shepherds Valley somewhat hidden from the view of the public. Access, and service and administration offices are planned to be located on the adjoining Ardgour Terrace.

Figure 1 below provides an overview of the footprint associated with the establishment, operation and rehabilitation within the BOGP. Direct disturbance in the pastoral area will be approximately 380 hectares. A disturbance contingency has been allowed around the mine and infrastructure for footprint adjustments during detailed design. A further 18ha (approximately) of disturbance will be needed to establish the Thomson Gorge Road alternative alignment (Ardgour Rise). Maximum potential disturbance in the pastoral area, including contingency and Ardgour Rise, is 568ha.

Additional disturbance of approximately 52ha will be required in the agricultural area on Ardgour Terrace. This area will be used for offices, security, medical, laboratory, laydown, storage, contractor areas, topsoil storage, emulsion manufacture and magazine facilities plus quarries and roading.

Figure 1: Overview Site Layout of the Bendigo-Ophir Gold Project



Ecological work will include rehabilitation on direct disturbed areas, ecological uplift activities and pest exclusion area(s) adjacent to the footprint on nearby areas such as Ardour and Bendigo Stations. A full description of the various activities comprising the establishment, operation and rehabilitation within the BOGP is provided in the Assessment of Environmental Effects prepared by Mitchell Daysh Limited. However, by way of summary, the BOGP includes the following components:

- The establishment of the RAS Open Pit and SRX Open Pit, which are planned to form partial pit lakes at closure;
- The establishment of RAS Underground;
- The establishment of the CIT Open Pit, which is the smallest of footprints and is planned to be progressively backfilled with waste rock from the RAS Open Pit and profiled to integrate with the surrounding terrain. Rehabilitation will enable nearby native herb fields to be re-established at the completion of mining activities;
- The establishment of the small SRE Open Pit, which will be backfilled with waste rock before being covered with overburden to form the engineered landform for the adjoining SRX Open Pit (**“SRX ELF”**).
- > A conventional hard rock gold processing plant (1.2 million tonnes per annum expandable to 1.8Mtpa) applying modern Carbon-in-Leach (**“CIL”**) technology constructed in the lower reach of Shepherds Valley. The plant will operate in a closed water circuit with the TSF. Residual chemicals in the tailings slurry will be detoxified and/or precipitated with specialist plant.
- > The operation of the process plant will be supported by ancillary facilities such as maintenance workshops, raw material and process chemical storage, fuel depot, laboratory and warehousing. Mine offices, carparking and security services will also be established.
- The construction of the plant in the lower reaches of the Shepherds valley will include the realignment of Shepherds Creek;
- The establishment of water storage dams and tankage for use in the process plant, dust suppression and drinking water supply;
- The establishment of a Tailings Storage Facility (**“TSF”**) in the upper reach of Shepherds Valley (including clean water diversion drains), which will utilise waste rock from mining activities within the project site;
- The establishment of permanent engineered landforms in the Shepherds Valley (**“Shepherds ELF”**) and an unnamed creek west of RAS pit as part of the broader catchment to Clearwater Creek (**“WELF”**);
- The establishment of temporary topsoil, vegetation and brown rock stockpiles around the project site;
- > The extraction of groundwater from the Bendigo Aquifer for use in mining-related activities as well as supplying BOGP drinking water and replacing small irrigation water takes from Shepherds Creek. Bore water will be pumped to the processing plant via a pipeline over a distance of approximately 7 km.

- > The establishment of supporting infrastructure / activities for the project, such as the upgrade of Ardgour Road and parts of Thomson Gorge Road to provide improved access to the BOGP, internal mine access and haul roads, water pipelines and underground utilities, and electricity supply to the project site from Lindis Crossing via a new 66kV overhead powerline that will follow the existing road reserve corridor;
- A realignment of part of Thomson Gorge Road, via Ardgour Station (Ardgour Rise) is planned to provide public access through to the Manuherikia Valley.
- Main explosives magazines and emulsion mixing facilities (located outside the project site on Ardgour Terrace);
- The establishment of non-operational infrastructure associated with the BOGP on the Ardgour Terrace, including security, first aid and administrative offices, geology facilities, high voltage substation and temporary construction workers accommodation; and
- The establishment of pest exclusion area(s) for ecological enhancement activities.

Project Staging

For the purposes of this landscape and natural character effects assessment, the proposed mine and associated infrastructure has been split into three stages. These are as follows:

- *Startup: Year 0-3. Project startup and development. Construction of initial infrastructure and preparation works.*
- *Mining activity: Year 3-11. Main extraction period. All components of the proposal will be operational during this stage of the project.*
- *Closure: Year 11-30. Project closure and rehabilitation following completion of extraction.*

Effects outlined within this assessment are assessed at each of these stages and are summarised within Tables 1 – 4 of this report.

6.0 PART A: Landscape Effects

6.1 Introduction

Landscape and visual assessments are separate, although linked, procedures. The existing landscape and its existing visual context all contribute to the existing 'baseline' for these assessments and include an understanding of the permitted development anticipated by the relevant Statutory Provisions.

The nature of effects can be summarised as follows:

- **Landscape Effects:** *Changes in a landscape's physical attributes and implications of changes on the landscape's values.*
- **Visual Effects:** *Relating to the changes that arise in the composition of available views as a result of changes to the landscape values and to the overall effects with respect to visual effects and amenity.*

The landscape assessment has been undertaken concurrently during the design of the project. The findings from this assessment are therefore intended to influence the nature and form of the proposed landscape mitigation and its subsequent rehabilitation to avoid, remedy or mitigate potential adverse effects. In short, this assessment considers the actual and potential landscape effects of the project in terms of the existing site characteristics and wider landscape context, together with visual effects that are likely to be experienced from people living, working or moving through surrounding areas.

The findings of this assessment are set out in **Sections 6.1 to 6.4** of this report with a full methodology describing the landscape and visual assessment method set out in **Appendix 1**. The findings of this assessment adopt the seven-point scale between very low and very high as endorsed by the NZILA to determine the overall level of effect:

6.2 Assessment of Landscape Effects

When assessing landscape effects, it is necessary to identify the landscape values of the Site and broader context, and the physical characteristics that embody those values¹⁶. Landscape values comprise a combination of physical, perceptual, and associative dimensions, and therefore an assessment should not only consider the physical environment, but also how it is perceived and associated meanings ascribed by people. The proposal includes changes to landform, vegetation patterns, hydrology, and roading patterns, as well as influencing existing and ongoing landscape characteristics and values.

Assessing landscape character effects provides judgement of the level and nature of impacts on the existing landscape character and values. This includes consideration of the specific attributes and interrelationship between physical, sensory, and associative landscape dimensions, depending on the location of the development proposed and judgement as to the extent to which such dimensions will undergo change. To inform an assessment of the landscape change, it is also important that the size or scale and the geographical extent of the area influenced is defined where possible together with the duration of the effect and whether potential effects are reversible.

In terms of scale, landscape effects have been assessed at both a Site scale in the context of the Rise and Shine and Shepherds Creek catchments encompassing Battery Hill, and the western aspect of Thomsons Saddle, and at a landscape unit scale in the context of a transition

¹⁶ 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

between the north and south landscape character areas as Dunstan Mountains ONL. This assessment is intended to enable the scale of the project to be considered in the context of the underlying ONL values.

6.3 Assessment of Visual Effects

Visual effects are a subset of landscape effects and are connected to landscape values. The nature of effect is the result of how the view is perceived. Therefore, a change in view does not immediately equate to an adverse effect, rather this is dictated by the perceived effect on the landscape values.

To assess the overall level¹⁷ and nature¹⁸ of visual effects, the assessment has considered the existing landscape values in conjunction with a desktop visibility analysis followed by fieldwork and a Site visit to identify potential views. This includes an analysis of representative viewpoints and visual simulations to assess the overall change, and effect on landscape values. Whilst the visual assessment has not included views from private properties, representative views have been provided from the nearest available public locations in accordance with best practice.

Visual simulations are included in **Appendix 6** and have been used to illustrate a predicted two-dimensional view as depicted in a photograph from a defined viewpoint, they are not a three-dimensional representation or 'real life view' as experienced by humans within a landscape. Notwithstanding this, visual simulations are technically accurate and are very useful tools to assist in the assessment of visibility and visual effects and for informing the decision-making process. Thus, the primary purpose of a visual simulation is to accurately portray the proposed activity or change in the landscape.

Site photographs were taken with a Canon digital SLR camera fitted with a 50mm focal length lens, mounted on a tripod. A series of photos were taken at predetermined viewpoints, in landscape mode. The viewpoints were situated on public land and the locations of each were fixed using the GPS unit built into the camera. Visual simulations have been prepared based on georeferenced single frame photographs taken to capture a 40° horizontal field of view and reproduced on a single A3 sheet to compare the existing and proposed views.

When printed at A3, visual simulations have been prepared to enable an accurate understanding of the extent that the proposed mine elements which form the development are visible when this is held at a comfortable arm's length viewing distance. The field of view and image reading distance has been specified to ensure an observer can correctly reconstruct the perspective seen in the context of the area of landscape observed from the viewpoint location which the photograph was taken.

¹⁷ The level of effect is assessed on a seven-point scale of very low to very high.

¹⁸ Adverse, neutral, or positive.

6.4 Landscape Effects Assessment Approach

In summary, this assessment aims to:

- Identify key landscape characteristics and values of the Site within its wider ONL context;
- Assess potential landscape and visual effects of the proposal on the characteristics and values of the landscape;
- Indicate measures proposed to avoid, remedy or mitigate those effects including proposed opportunities for rehabilitation; and
- Development of a landscape strategy and project outcomes that will guide and manage landscape change in an appropriate and sensitive manner.

6.5 Landscape Effects

Landscape effects consider the consequence of change on the existing characteristics and values of the landscape. Landscape character is derived from the distinct and recognisable pattern of elements that occur consistently in a particular landscape. It reflects combinations of geology, landform, soils, vegetation, land use, features of human settlement, and intangible associations. It creates a unique sense of place defining different areas of the landscape.

To assess the landscape effects associated with the project, the assessment has considered the landscape context and values outlined in Section 3 of this report, and the effects this proposal will have on these values at both the broader landscape scale of the Dunstan Mountains ONL and at the Site scale encompassing the catchments of the Rise and Shine and Shepherds Creeks.

Assessing landscape effects provides judgement of the level and nature of changes to the existing landscape character and values. This includes consideration of the specific attributes and interrelationship between physical, perceptual, and associative landscape dimensions and their consequent change through time. For this project, this will include substantial changes to the physical landform and associated vegetation disrupted by mining activity, as well as associated changes to the surrounding landcover including through ecological restoration. The key dimensions of this landscape which will be impacted encompass perceptions and association with this broader natural landscape and backdrop alongside its accessibility obtained through Rise and Shine Creek along the current alignment of Thomson Gorge Road.

The principal elements of the proposal that will give rise to landscape effects include:

- The construction and decommissioning of the Site Workers Camp, Geology Compound, and Administration Buildings on the inner edge of Bendigo Terrace (outside of the ONL).
- The construction and decommissioning of the mine plant within the lower Shepherd's Valley and on lower terrace of the Shepherds ELF.
- Construction of two quarries approximately 1 and 3ha in size, magazine storage, and an emulsion yard to the northwest of the Site (outside of the ONL).
- Establishment, extraction, and rehabilitation of the Rise and Shine, Come in Time, SRX, and SRE pits.
- Establishment of various haul roads throughout the Site.
- Construction of diversion channels within the Shepherds Creek, Jean Creek, and Rise and Shine catchments.
- Topsoil and overburden stacks located throughout the Site including within Jean Creek, Rise and Shine Creek, and Shepherds Creek valleys, and Thompson Gorge Road, and slopes of Battery Hill (B10D).
- Construction of the TSF within the upper Shepherds Creek valley.

- Construction and rehabilitation of the Shepherds ELF within the Shepherds Creek catchment.
- The construction and rehabilitation of two additional engineered landforms including the Western ELF (WELF), and SRX ELF.
- The construction and establishment of two Pest Exclusion Areas to the north and south-west of Shepherd's Creek, including predator proof fencing.
- Decommissioning of Thomson Gorge Road as a vehicle track, and establishment of a new vehicle track – "Ardgour Rise" to the north of Shepherds Creek above the valley.

6.5.1 Existing Characteristics and Values

6.5.1.1 Dunstan Mountains ONL

As outlined within Section 3 above, the Site is located within the Matakanui Dunstan Mountains ONL, which forms the backdrop to the eastern extent of the Upper Clutha Valley.

As a whole, the Dunstan Mountains are a highly intact mountain sequence which form the eastern extent of the Upper Clutha basin. The broader landform is highly expressive of its tectonic, and glacial formative processes, including a remnant peneplain which forms a highly legible summit plateau to the south of the mountain range. To the north, this transitions into an intact angular mountain range, separated by the legible faultline following the general alignment of Rise and Shine Creek. Key geological characteristics of this landform include the distinctive schist tors, formed through erosion of softer rock. In addition to the schist tors the gradual movement of soil at higher elevations (solifluction), and intricate network of streams and creeks form legible characteristics which express their formative processes.

Vegetation within the Dunstan Mountains is varied, from high country farming to matagouri and grey shrubland, and species such as blue tussock (*Poa colensoi*), hard tussock (*Festuca novae-zelandiae*), snow tussock (*Chionochloa rigida*) and extensive alpine cushionfield and herbfield. A large stand of rugged kanuka forms a distinctive feature to the south-west of the Dunstan Mountain Range ONL (some of which extends beyond the ONL boundary) before transitioning into the broad, open grassland plateau and mountain backdrop above.

The Dunstan Mountains form a distinctive mountain backdrop and unobstructed skyline to the east of the Upper Clutha basin. The broader mountains have a high level of perceived naturalness, with a general lack of structures and modifications, although localised and limited evidence of gold mining is present. Key features include the Mata-au/Clutha Gorge to the south, Haehaeata, Thomsons Gorge, and Cloudy Peak.

A key transient characteristic is the ongoing change in colours, climatic influences, and shadows which are characteristic of this landscape. Winter snowfall, and fog which lingers at the summit and within the valleys are key transient climatic influences of this landscape. The mottled browns and greys forming the colouration of the Dunstan Mountains ONL changes throughout the day with the shifting shadows of the sun, blending together due to a lack of linear modifications, and presence of built form.

The Dunstan Mountains are known by mana whenua as Matakanui and express a series of interwoven histories for both mana whenua and pākeha. The mountains are recognised as a mahinga kai site where weka and tikumu (mountain daisy) were gathered, as well as taramea (wild spaniard) which was gathered for its perfume. In addition, the Rise and Shine valley (now accessed by Thompson Gorge Road) was a traditional travel route for mana whenua between Central Otago and settlements on the east coast. Pakeha history within the Matakanui Dunstan Mountains is largely associated with the Bendigo gold mining from the mid-1800s, which substantially modified the landscape for several decades, and pastoral farming activities. Today, the mountain ranges remain occupied by several high-country stations, including Bendigo and Ardgour Stations, with areas of conservation land providing access to the Bendigo Historic Reserve.

6.5.1.2 Site Landscape Values

The Site is central to the Dunstan Mountains outstanding natural landscape and on the western slopes of the mountain range. The Site forms the boundary between the northern Dunstan Mountains which extends 30 kilometres north to the St Bathans Range, and 20 kilometres south to Lake Dunstan. The extent of the Site includes the Shepherds Creek and Rise and Shine Creek catchments including Battery Hill (B10D), Thomsons Gorge Road and Thomsons Saddle. The Site is located at a highly legible transition point between the peneplain to the south of the Site, and the distinctive ridges and gullies found to the north.

At this more local landscape scale, the Site forms the transition between the broad, flat character of the peneplain to the south and the defined ridgeline and ragged mountain tops of the northern Dunstan Mountains. The Shepherds Creek valley, including Jean Creek, remains highly expressive of its formative processes, although the landcover has been modified to accommodate grazing practices, and through introduction of animal pests such as rabbits. The underlying geology of the upper slopes of the Rise and Shine Creek valley and Mount Moka remain largely intact and expressive of their formative processes, however evidence of sluicing during the first Bendigo gold rush remains evident along parts of the valley floor.

There is less apparent historic modification extending within the upper reaches of Shepherds Creek valley and a greater associated presence of native vegetation including matagouri, mingimingi (*Coprosma propinqua* var. *propinqua*), scented tree daisy (*Olearia odorata*), rare kowhai (*Sophora microphylla*) and kānuka (*Kunzea* sp.). Within the upper slopes, vegetation becomes mixed between exotic pasture, and native tussock species such as Fescue's tussock (*Festuca novae-zelandiae*), and silver tussock (*Poa cita*). To the south-west of the Shepherds Creek catchment the vegetation becomes more modified transitioning to depleted herbfield and grassland. This area also contains most of the tracking associated with exploratory works. Vegetation within the Rise and Shine Creek catchment is dominated by mixed tussock shrubland, and exotic grassland, although some native scrubland is present with the gullies.

A key feature of the Site is the central component of Battery Hill (B10D) which separates the Rise and Shine Creek and Shepherds Creek valleys. This forms a highly legible local landscape feature, occasionally breaching the skyline from certain viewpoints within the Upper Clutha Basin (see **VS1-3**, and **VS8-9**). Hydrological features also influence the character of the local landscape which encompass the Shepherds Creek bed and its broader catchment including Jean Creek, and the Rise and Shine Creek bed and broader catchment. Both catchments have seepages and springs within the upper reaches.

The Site shares similar characteristics to the broader Dunstan Mountains ONL with a general lack of structures and linear elements, although tracking is more evident in this valley associated with public access along Thomson Gorge Road and mining exploratory works. The Site is subjected to the same transient climatic conditions of snow and fog albeit generally below the elevated summit and snowline, and the changing colouration and shadows of the mottled browns and greys characteristic of the Dunstan Mountains ONL. Although modified for grazing and historically mined, the Site retains a high sense of perceived naturalness and forms a coherent transition between the southern and northern extents of the Dunstan Mountains.

This area of the Dunstan Mountains contains several associative values and connections for both mana whenua and pakeha, primarily associated with the Rise and Shine Creek area. The traditional alternative travel route for mana whenua between the east coast of the South Island to Central Otago broadly followed the Thomson Gorge Road alignment to the Thomsons Saddle¹⁹. Upon discovery of gold, the Rise and Shine Creek became populated with gold miners during the late 19th to early 20th century of which evidence of this remains today. Today the area is more heavily associated with high country farming within the Ardour and Bendigo Stations, with access to the Thomsons Saddle and historic mining landscape through Thomson Gorge Road.

¹⁹ Kā Huru Manu, Ngāi Tahu Atlas, 2023.

6.5.2 Landscape Modification

All proposed mining activity will occur within the Shepherds Creek and Rise and Shine Creek catchments within the Site. The proposal includes several components which will modify the landscape character of the Shepherds Creek and Rise and Shine valleys and will be undertaken in 3 key stages over a period of approximately 30 years.

The initial stage of the project will include the construction of the core infrastructure of the mine, and pre-strip of the Rise and Shine Pit. This will largely be contained to the Shepherds Creek valley, and will also include the construction of the WELF to the south-west of the pit. Within the lower reaches of the valley, the 14ha mine process plant and operations area will be established on the true left of Shepherds Creek, involving earthworks and stream diversions within the active bed and margins of the creek. The mining operations area includes a Run of Mine (ROM), process plant, heavy vehicle workshops and service infrastructure, a future paste plant, and goods warehouse. All supporting infrastructure including power reticulation, water treatment, stormwater management, parking and circulation are included. Topsoil material from these earthworks will be stored adjacent to the plant for the duration of the project until required for rehabilitation.

To the north-west of the processing plant on the inner edge of Bendigo Terrace, an adjoining 13ha area is proposed to provide a Site Workers Camp, Geology Compound, and Administration Buildings. The Site Workers Camp will temporarily house 82-staff for the duration of the startup phase. Additional infrastructure will include an administration building, high voltage substation, Geology Compound and construction lay down areas. Water will be supplied and piped from a bore 6.5km west of the Site near Bendigo Creek and Bendigo Loop. Power will be supplied through a new 66kV overhead network approximately 10km north of the mine, utilising road reserve for the above ground network to a single 66 /11kV, 24 MVA transformer located at the entrance to the lower Shepherds Creek gorge.

Additional infrastructure will include the establishment of two small quarries (1.35 ha approx.), an emulsion yard (1.28ha), and magazine storage (1.72ha) on the terrace to the north-west of Shepherds Creek. The quarries will be used to establish roading within the Site.

From the processing plant, a 20-metre-wide haul road extending to the Rise and Shine pit and later the Come in Time Pit (year 6) will be constructed to enable the transportation of ore from the pit to the plant site for processing. Cut faces associated with the haul roads will be approximately 10 to 20 metres in height and will be constructed at a maximum slope of 1:1. A secondary haul road will also be constructed from the southern extent of the Rise and Shine pit to the Shepherds ELF to allow for the transportation of waste rock and overburden.

Additional infrastructure to be constructed within the initial stages includes a seepage collection sump, and silt pond near the toe of the proposed Shepherds ELF, and diversion channels within the Shepherds Creek and Rise and Shine Creek valleys. The northern diversion channel within the Shepherds Creek catchment will be cut from the hillside and extend from below Ardgour Conservation Area to the northern extent of the Rise and Shine Pit. Diversion channels will be required within Jean Creek to divert freshwater around and through the subsequent ELF. The first diversion channel will extend from the upper reaches of the creek between Battery Hill (B10D) and the western slopes of the ELF, terminating at the north of Rise and Shine Pit. The second will follow the eastern edge of the ELF, passing through a culvert to the northern diversion channel.

Within the Rise and Shine Creek valley, four diversion channels are proposed during operation. Within the upper catchment, three diversion channels are proposed to divert water from the slopes of Mount Moka around the SRX and SRE pits to the upper reaches of the Rise and Shine valley. Downstream another diversion channel will be constructed to divert water around the southern extent of the Rise and Shine pit, into Clearwater Creek.

During the initial stage of the project, the upper extent of the Rise and Shine pit (Rise and Shine Ridge) will be mined. Topsoil will be stockpiled on the slopes of Battery Hill for use in

rehabilitation and overburden will be removed from the southern extent of the pit footprint and transported to the Shepherds Creek valley to begin construction of the Shepherds ELF. Topsoil extracted from the pit surface will be stored on the lower slope adjacent to the pit footprint for the duration of mining, contoured to reflect the underlying landform, and stabilised with grass.

Once the lower extent of the Shepherds ELF is formed within the Shepherds Creek an additional Plant site will be constructed within on the lower benches of the Shepherds ELF. The Plant will include additional processing areas, workshops, and laydown areas.

The Rise and Shine pit will eventually intersect Thomson Gorge Road which will be closed on commencement of the project. The Thomson Gorge Road replacement – Ardgour Rise - will largely include the upgrade to an existing farm track on the northern extent of the Shepherds Creek valley. The track will remain unsealed and provide a similar grade of access for vehicles wishing to travel between Clutha Valley and the Manuherikia Valley via Thomsons Saddle. Access to Thomson Gorge Road will be reinstated at closure to provide for walking route which remains through this low area of landscape.

The construction and preparation associated with the Shepherds ELF will require removal of topsoil from the Shepherds Creek and Jean Creek valleys which will be stockpiled for progressive rehabilitation throughout the project. Topsoil will be stored within the upper reaches of Jean Creek and Shepherds Creek, above the footprint of the TSF, and Shepherds ELF.

During the startup stage of initial infrastructure and earthworks associated with the project, the mining will commence. Rise and Shine Pit, the largest pit, will be the first pit to be extracted. The pit will reach a depth of approximately 200 metres on the high wall to the north, and width of approximately 1000 metres at its widest point. The pit will include rock benches, approximately 15 metres in height, and 7 metres in width. These will be intersected by a 30-metre haul road which will allow access to lower elevations within the pit. Overburden (waste rock) from the Rise and Shine pit will be removed and deposited within the footprint of the Shepherds ELF.

The construction of the Shepherds ELF will begin in the upper reaches of Jean Creek and at the embankment of the TSF. The Shepherds ELF will comprise overburden from the Rise and Shine and Come and Time pits and will be gradually 'layered' and contoured for the duration of mining. The final landform will extend 230 metres above the toe of the Shepherds ELF within the Shepherds Creek reaching a plateau of approximately 775 masl to the east of Battery Hill.

The final landform of the Shepherds ELF will form an average slope of 1(v):3(h) allowing for the establishment of native vegetation. The level of the TSF will also gradually increase over the life of the mine. The height of the tailings embankment will rise to 687 masl. During mining activity, the elevations of tailings will gradually increase as this is pumped from the process plant for permanent storage in the TSF. A system of constructed drains will collect water draining to the base of the TSF and Shepherds ELF, delivering it to the lined seepage collection pond adjacent Shepherds Creek sediment pond at the toe of the Shepherds ELF.

In addition to open cast mining, two portals will be constructed on the south side of the Shepherds Creek valley, east of the process plant to provide access to ore to the north of the Rise and Shine Pit. Excavated material from the portals will be placed in the ELF. To control groundwater, a series of pump stations/pumps will pump ground water from the tunnels to the process plant for use as process makeup water. The underground mine will be progressively backfilled with cement paste (mixture of cement and tailings) to stabilise the landform. Upon completion of mining the underground mine will be completely backfilled with cement paste.

Ore extracted from Rise and Shine pit will be trucked to the processing plant or the ore stockpile located on the Shepherds ELF. Come in Time pit will create an elongated exposed face above Shepherds Creek, although shallower and smaller than the Rise and Shine Pit. Overburden from the Come in Time pit will be placed with the Shepherds ELF. Upon completion of mining, the Come in Time pit will be backfilled using overburden and rehabilitated using stockpiled topsoil. The landform will be recontoured and rehabilitated to integrate into the local context at

the end of the mining operation to resemble the existing landform following which the existing landcover including identified threatened species will be reintroduced.

SRX and SRE pits will be mined towards the end of the mining activity phase. The pits are located within the upper reaches of the Rise and Shine Creek valley on the lower slopes of Mount Moka. Similar to the Rise and Shine, and Come in Time pits, topsoil will be removed and stockpiled to the north-west of the pit for rehabilitation on closure. The pit will be approximately 32 metres in depth, with benches constructed at a height of 15 metres and width of 6.5 to 9 metres. Access to the rest of the mine site will be via an extension to the existing haul road north-east of Battery Hill, although narrower at 20 metres in width. The road will cross the Rise and Shine Creek in the upper reaches and provide access from the south-eastern extent of the pit. Overburden and topsoil extracted from the SRX and SRE pits will be moved into a localised SRX ELF to the south-east of the SRX pit and will be used to backfill SRE.

Rehabilitation and mitigation of effects will occur throughout the duration of the project, with topsoil stockpiles located throughout the Site each being used as part of the rehabilitation of each of the mine elements. During operation, the construction of the Shepherds ELF will be tiered with several benches, one of which will include mine infrastructure, buildings, and laydown areas. At completion of extraction, the Shepherds ELF will be recontoured to resemble the topography of the surrounding landscape, and to allow for the establishment of native shrubland. A similar rehabilitation method will be used for the SRX ELF, in that benching will be removed, and slopes will be recontoured to allow for the establishment of native vegetation. The WELF, will be rehabilitated in earlier years of the project and will be contoured to resemble the permanent landform using overburden from the RAS pit. No benching is proposed, with the landform being rehabilitated to support the recolonisation of cushionfield on north and western facing slopes.

The TSF will remain operable until extraction has ceased at the beginning of closure. At closure, the TSF will be capped to enable the establishment of native tussockland, at least 2ha of wetland, and 4ha of marsh. Gentle swales and humps are proposed to create distinctive wet and dry areas for overland flow paths, and habitat for lizards will be constructed. The margins of the TSF will be rehabilitated to support native vegetation, and the proposed diversion channels will be redirected to collect freshwater from the upper reaches of the catchment.

The adjacent Shepherds ELF will be rehabilitated to support native vegetation, although this will largely include shrubs and small trees (i.e., kowhai) with shallow roots. Proposed rehabilitation methods to the final landform will involve the construction of a minimum 20 metre in length root zone with a profile of 1v:2h along each of the benches to encourage the establishment of adjacent vegetation communities, and lizard species. The CIT pit will be backfilled with brown rock and covered with topsoil to resemble the topography of the surrounding context. SRE pit will also be backfilled on completion of extraction and amalgamated into the final landform of the SRX ELF.

Haul roads used by mine machinery will be resurfaced with material from the safety bunds and windrows to encourage the recolonisation of native vegetation.

At closure the Process Plants within the Shepherds Creek valley and on the Shepherds ELF will be decommissioned and the underlying landform will be rehabilitated. An ongoing water treatment facility will remain in the lower Shepherds Creek catchment on closure.

Infrastructure outside the Dunstan Mountains ONL includes the Site Workers Camp, Geology Compound, Administration Buildings, magazine storage, emulsion yard, and quarries. The Site Workers Camp will be removed following the startup phase of the project, including foundations, and will be re-established in pasture. On completion, a similar rehabilitation method will be undertaken for the Geology Compound, Administration Buildings, and Magazine Storage. The two quarries located on the terrace to the north west of the Site will be rehabilitated as part of the underlying rural activity and the transformer will remain.

During the main mine operation, the Pest Exclusion Areas will be established on the hillside to the north of Shepherds Creek. This will include the fencing of approximately 66.6ha of land for the purpose of creating lizard habitat, surrounded by a 2 metre high predator proof fence. Once established, this will form an apparent change in land use and landcover on the hillside, primarily as areas are retired from grazing. The perception of both the predator proof fence and the benefit of restoration of native flora and fauna will change over time and will also influence the nature of the effect.

On completion of the landform rehabilitation within the Site, Thomson Gorge Road is to be re-opened as a walking route providing access within the Rise and Shine valley. This will retain an enduring access through the Dunstan Mountains through areas of restored native vegetation and habitats and providing new views of the Rise and Shine Pit, and SRX Pit alongside enduring access to historic mining artifacts in Bendigo Historic Reserve west of Thomsons Saddle. Either access through the rehabilitated mine or Ardgour Rise will retain a permanent four-wheel-drive track and cycle trail providing varying enclosed and panoramic views out across the Upper Clutha Basin as part of this reconfigured road alignment.

6.5.3 Landscape Effects within the Site

6.5.3.1 Rise and Shine Pit

The Rise and Shine pit is the largest pit within the proposed mine development and will include significant earthworks. Excavation will remove a large section of the ridgeline to the west of Battery Hill (B10D) to approximately 760 masl infringing on the mid slopes of the broader feature which will remain legible along the skyline. The works will also involve the complete permanent removal of Ferret Gully along its western slopes creating distinguishable benches and earthworks. The proposed pit during startup and mining activity will interrupt and modify part of the coherent backdrop of the Dunstan Mountains, and intactness of its underlying geology and formative processes.

Landscape effects associated with the proposed Rise and Shine pit will include effects on the intactness and coherence of the slopes of Battery Hill, the introduction of highly engineered, linear features which are not otherwise present within this local landscape, and removal of access to the Rise and Shine Creek valley which have local historical associations for both mana whenua and pakeha. These effects will be evident from the startup stage of the project as the pit is extracted, gradually becoming more extensive during mining activity and remaining a permanent open cast mine at project closure.

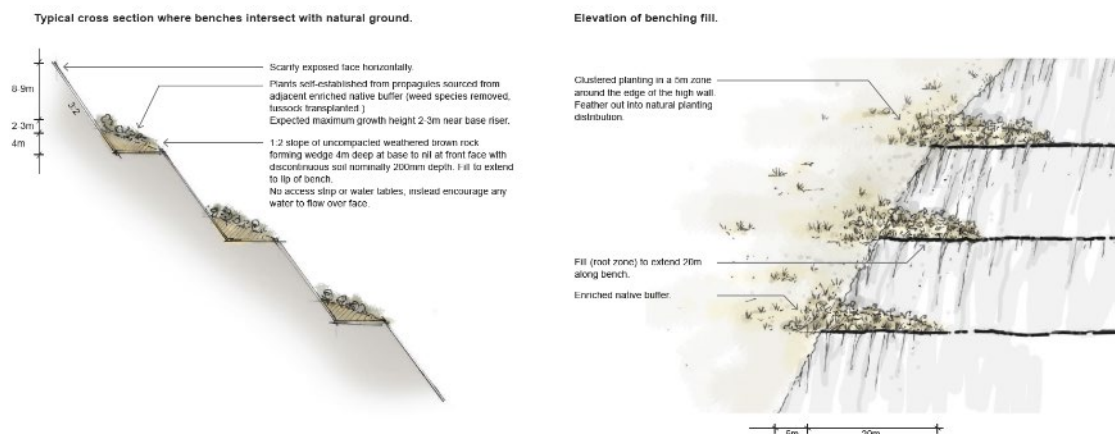


Image 2: Sketches of the proposed bench rehabilitation. Further detail is outlined within the Lizard Closure Rehabilitation Methods report.

Rehabilitation of the pit will be contained to the edges of the upper benches. A filled root zone of brown rock is proposed which extends a minimum of 20 metres from the edge of the pit along each bench. The surface will be scarified and planted in native tussock on a 1V:2H slope at 4

metres depth to allow lizards to colonise the edges of the benches. The remainder of the pit will be left open and include the establishment of a pit lake at 470masl. Benching and exposed rock associated with the pit will remain a legible feature within the landscape. Given the above, during the startup stage of the project construction effects resulting from the initial extraction of the Rise and Shine Pit are considered **moderate-high adverse** and will increase to **high adverse** effects during mining activity which remain at closure. Locating the open cast mine so that it maintains the integrity of the Battery Hill along the skyline and therefore reduce potential changes along the skyline or prominence of exposed pit walls works to reduce the potential for more significant landscape effects.

6.5.3.2 Rise and Shine Underground Mine

The Rise and Shine Underground Mine is an extension of the Rise and Shine Pit. Modifications associated with this aspect of the proposal will include the construction of two portals and tunnel infrastructure within the ridge to the north of Shepherds Creek. Once established, landscape effects associated with the underground mine and evident on the surface will remain limited. During mining activity, groundwater will be pumped from the underground mine and modify the underlying geology and hydrology. On closure the underground mine portals will be sealed according to Health and Safety at Work Mine Regulations. At closure the surrounding slopes will include rehabilitation of the exposed batters surrounding the portal and potentially the portal itself which will be covered with brown rock and re-vegetated.

During the mining activity phase of the project, landscape effects of the Underground Mine within the Site are considered **low-moderate adverse**. On closure, once the portals are sealed and partially rehabilitated, effects will reduce to **low adverse**.

6.5.3.3 Western Engineered Landform

The WELF will be constructed within the first two years of the project and will have a maximum RL of 725masl. The WELF will be constructed from overburden and topsoil from the RAS pit and will fill the upper reaches of an unnamed tributary of Clearwater Creek which is an ephemeral stream. Earthworks and the construction of the WELF will result in the disruption to the formative processes of the stream and lower slopes of this local area within the Dunstan Mountains typically seen below Battery Hill.

Proposed rehabilitation of the WELF will occur within the earlier years of operation and will be contoured to reflect the adjacent landform. A suitable root zone will be constructed to encourage the re-establishment of native vegetation, prioritising north to north-west aspects to establish cushionfield and spring annual herbs.

Effects of the WELF during the start-up phase are considered **moderate-high adverse** due to the prominence of the landform on the lower slopes of the Dunstan Mountains ONL and associated activity to form the WELF. This will include the continual operation of mining vehicles and activity within the catchment of the unnamed tributary. As the WELF is rehabilitated and its landcover appears sympathetic within the context of the adjacent landform to the north and the surrounding land cover, effects of the WELF will reduce to **low-moderate adverse**.

6.5.3.4 Come in Time Pit

CIT Pit will include extensive earthworks and modification to the southern face of the Shepherds Creek valley. Earthworks will disrupt the coherent connection between the northern, and southern Dunstan Mountains, including the introduction of exposed rock and linear benches. Exotic and native vegetation within the gully currently includes threatened native herbfields and spring annuals alongside habitat for several invertebrate species and will be removed during the extraction of Come in Time Pit. Ancillary effects will also include the transient presence of vehicles and mining trucks within the pit during mining. On completion of the Come in Time pit, the landform will be rehabilitated to broadly reflect the existing topography of the ridgeline and adjacent valley, and vegetation will be replaced to reflect the existing habitat present.

The key landscape values which will be impacted by the Come in Time Pit will include effects on the intactness of the underlying landform, introduction of highly engineered linear benches which modify the existing underlying landform and gully, and removal of existing native vegetation to a more intensive and industrialised land use. In addition, the overall coherence of the landform and vegetation patterns will be interrupted and reduce levels of perceived naturalness. This also includes a change in associated land use from a landscape with rural, pastoral associations as mining activity is established. These effects will be more evident during the main extraction phase (year 6 – 11) as effects are remedied and mitigated through re-establishing a landform and landcover which is reflective of surrounding landscape.

Effects during the mining activity phase are considered **high adverse**, reducing to **low-moderate adverse** at closure. This will also be completed during the mining activity phase.

6.5.3.5 SRX Pit and ELF, and SRE Pit

The SRX and SRE Pits will include the extraction of overburden (waste rock), and ore from the lower slopes of Mount Moka within the Rise and Shine valley. During operation, they will be largely concealed from public view, however the upper reaches of the Rise and Shine Creek will be altered through the construction of the SRX ELF, exposed rock benches associated with the pit formation, and diversion channels to divert several perennial streams. This extent of active mining activity is not currently evident within the Site and broader Dunstan Mountains ONL, although the valley has previously been subjected to mining activity. This included sluicing and evidence of landform modification that influences the adjoining downstream reach of Rise and Shine Creek.

Key landscape values which will be affected by the SRX and SRE Pits and SRX ELF include the relative intactness and expressiveness of the lower slopes of Mount Moka and the associated hydrological and geomorphological processes associated with the upper reaches of the Rise and Shine Creek. The pits and SRX ELF will intersect Thomson Gorge Road restricting access from the upper extent of the valley and will disrupt the overall coherence, and high-country rural character of the lower slopes of Mount Moka. Impacts will also occur in relation to the perceived naturalness associated with the upper Rise and Shine Creek valley, notwithstanding previous more substantial modification (historical sluicing). Effects on these values will occur later in the main extraction phase as both SRX and SRE are scheduled to be mined towards the end of the active mining phase.

On completion of mining, the SRX pit will remain open at approximately 32 metres deep, forming a pit lake at approximately 756 masl. SRE pit will be backfilled with overburden stored throughout the duration of extraction to the north-west of the SRX pit and will be incorporated into the broader SRX ELF. The SRX ELF will remain in perpetuity and contoured to appear more sympathetic with the rounded lower slopes of Mount Moka to enable the establishment of native shrubland. The benching within the SRX pit will be rehabilitated in a similar manner to the Rise and Shine pit with 20 metres of brown rock placed on upper benches that intersect the natural surface. Brown rock will be placed up to 4m deep at 1V:2H slopes to encourage the colonisation of native vegetation and lizards. The lower extent of the SRX ELF upon the backfilling of SRE pit will be rehabilitated to enable the construction of a recreation route aligned with the former alignment of Thomson Gorge Road.

At the height of mining activity, effects associated with SRX pit and SRE pit (including the localised ELF) are considered **moderate high adverse** within the Site and will reduce to **moderate adverse** at closure as benching necessary to form the ELF is progressively rounded off and rehabilitated to assist revegetation.

6.5.3.6 Shepherds Engineered Landform

The Shepherds ELF is one of the largest components of the proposal, comprising waste rock from the pits, underground mine, and infrastructure construction and will inevitably have substantial physical effects on the Jean Creek valley and a section of the Shepherds Creek

valley. The landform will create a broad local feature altering legibility of the geomorphology and hydrology within the Shepherds Creek and Jean Creek valleys.

Key landscape values which will be affected by the Shepherds ELF are largely associated with the geomorphological and hydrological processes of the Shepherds Creek and Jean Creek valleys, and the sense of remoteness and high levels of perceived naturalness in the upper levels of the valley. Landcover within the catchment has been modified in areas through grazing, however the valley and the Shepherds Creek catchment remain highly expressive of their formative processes, with pockets of intact native vegetation. Over the life of the mine, the gradual construction of the Shepherds ELF will progressively establish within the Shepherds Creek and Jean Creek valleys, modifying the natural geomorphology and hydrology of the valley, to its maximum height of 805 masl at its south-east end and introducing engineered modification into an area of landscape which is currently devoid of any equivalent substantial evident landform modification or structures. This will disrupt the existing sense of openness and naturalness currently encountered through this area of the Site.

During its progressive formation, the faces of the ELF will consist of five broad benches, one of which will support mining infrastructure and plant buildings introduced at an elevation of 615 masl near its toe. The lower face of the ELF within the Shepherds Creek catchment will be progressively rehabilitated. The larger ongoing operation will introduce an overt sense of localised modification to the north of and below Battery Hill. On completion, the plant will be removed and broad benching associated with the ELF will be rehabilitated to resemble the rounded folded topography of the surrounding landscape including accommodating reintroduced native tussockland and shrubland.. Once completed this is expected to recede into the backdrop of the Dunstan Mountains. Given the exposed nature of the Site however, it is noted that self-established native vegetation will likely take time to establish.

During startup and mining activity of the project, the overall landscape effects of the proposed ELF are expected to be **moderate high adverse** within the Site, with the greatest effects increasing **to high adverse** within the Site during the height of mining and exposure of unrehabilitated waste rock and ore stockpile. On completion, the final landform will be rehabilitated to enable the establishment of vegetation to reintegrate the exposed rock and overburden into a cohesive backdrop of the Dunstan Mountains and upper Shepherds Creek valley. Effects on closure and following successful rehabilitation are considered **low-moderate adverse**.

6.5.3.7 Tailings Storage Facility

The TSF will occupy the upper reaches of the Shepherds Creek catchment and will become a permanent landscape feature. An engineered embankment will detain tailings while freshwater diversion channels will be constructed to divert much spring water and rain falling in the catchment around the TSF.

Key landscape values which will be affected by the proposed TSF include the intactness of the upper Shepherds Creek valley, including its underlying geomorphology and hydrology, and extensive native scrubland within the upper reaches of the catchment. The landform will transition from a legible and coherent, intricate gully system to a plateau formed by the tailings and proposed dam structure. Due to the scale and nature of the proposed TSF, physical effects within this area of the Site will be significant. This will include permanent modification to a largely intact valley within the upper reaches of the Dunstan Mountains, including extensive areas of native tussockland and scrubland. Associated high country recreational and rural land use and level of perceived naturalness will equally be affected during mining activity of the mine as the TSF is established. Once the surface is capped, the facility will be rehabilitated to support wetlands, lizard habitat, and native vegetation within the margins. The feature will remain relatively contained, although a significant change to the hydrological and formative processes which presently remain apparent.

During the construction of the embankment and subsequent mining activity of the tailings facility landscape effects are expected to be **high adverse** within the Site, particularly during the

construction of the dam as the height of tailings are progressively lifted to their final level. During mining activity, these effects are reduced to **moderate high adverse** as construction ceases, although the geomorphology and vegetation within the valley is notably altered. At closure upon successful rehabilitation and the modified landform is largely reinstated within its valley landform, landscape effects associated with the TSF are **low adverse**.

6.5.3.8 Haul Roads

Within the footprint of the proposed mine site the haul roads will create a series of prominent cut, and fill batters and landscape features on the lower slopes of the Dunstan Mountains. Existing roads and farm tracks are a characteristic of this landscape and do not interrupt the overall legibility, and coherence of the broader landscape. Existing tracks within the Site include those for exploratory works, which are more extensive than existing farm tracks. Nevertheless, cut and fill associated with these tracks remain relatively contained and the general extent of tracking is largely contained to the more immediate context of Ferret Gully. The scale of the proposed haul roads represent a different order of magnitude which will interrupt the overall coherence of the landscape, and intactness of the underlying landform. Haul Roads will also facilitate transient effects of large mining trucks and other machinery, otherwise absent from the Site and broader Dunstan Mountains Outstanding Natural Landscape.

On completion of mining the proposed haul roads will be rehabilitated to integrate within adjoining batter slopes and reduce any more overt sense of modification disrupting natural landforms. This will be achieved through the distribution of overburden and topsoil to form a root zone at a 1:2 slope similar to the pit benches between the cut and fill slopes. This will be largely taken from windrows and bunds used during operation to enable the reestablishment of native vegetation. Overall effects of the proposed haul roads and supporting access are expected to be **moderate adverse** during startup, expanding existing disruption corruptly experienced within the Site. As mining activity is established, effects will become **moderate high adverse** within the Site. Based on proposed rehabilitation, adverse effects are expected to reduce to **low moderate adverse** on closure once rehabilitated, and vegetation is established.

6.5.3.9 Plant infrastructure

Plant infrastructure will be established from the outset of the project and will be largely concentrated to an area within the lower reaches of the Shepherds Creek valley. Several structures, and associated curtilage are proposed within this area, introducing a higher density of built form into the landscape. The proposed process plant will have temporary effects on the margins of Shepherds Creek for the duration of the project however will remain largely concealed from external view. Physical modification will include excavation and terracing of the hill side and realignment of the existing lower alignment of Shepherds Creek. On closure, the plant site will be removed, and a water treatment facility will be constructed for the duration of closure. This also includes retaining the realignment of Shepherds Creek along the northern valley wall and connection into a constructed wetland.

In addition to plant contained within Shepherds Creek, plant equipment is proposed on a lower terrace of the Shepherds ELF at an RL of 615 masl. This will remain embedded within the broader enclosure of Shepherds Creek valley, however, has potential to introduce additional temporary visible built form and lighting to a greater extent compared with plant introduced within the Shepherds Creek Gully below. This will be visible in partial views between 9 and 12 km through a wedge in lower landform seen along the alignment of Shepherd Creek seen from parts of the Upper Clutha Basin beyond the northern end of Lake Dunstan as well as more distant elevated views from along the Pisa Range. During operation the design of these elements should ensure that activity including sources of nighttime lighting remain concealed from external view.

Landscape effects of the proposed plant during the startup phase of the project will include effects on the lower reaches of the Shepherds Creek valley. This extent of the valley is more modified than the upper reaches and adjoining the active bed of Shepherds Creek. Benching

and levelling associated with the plant establishment will modify the lower slopes of the valley, and the valley floor. This will also include a change in associated land use from a rural pastoral landscape to an industrial landscape with several structures and associated curtilage. By comparison, plant introduced on lower terracing on the ELF will remain contained within this larger modified footprint.

During the startup stage of the project, construction effects of the proposed plant are considered **moderate adverse** within the Site, and becoming **moderate-high adverse** during mining as ongoing activity within the plant buildings becomes apparent. On closure, and following partial rehabilitation, effects of the plant are expected to be **low-moderate adverse** as the final form of the Shepherds ELF is established and alongside the re-establishment of the lower reach of Shepherds Creek in the context of an ongoing water treatment plant.

6.5.3.10 Site Workers Camp, Geology Compound, and Administration Buildings.

The Site Workers Camp, Geology Compound, and Administration Buildings will be established during the startup phase of the project and located immediately north-west of the Shepherds Creek valley. Accessed from Thomson Gorge Road, several structures and buildings will be located within the footprint of the Site Workers Camp to accommodate 82 workers, administration buildings, and laydown areas. This includes the workers camp itself, a future transformer, Administration and Visitors Building, Geology Compound, and Preliminary Site offices and stores. The Site Workers Camp will be temporary during the initial set up of the mine (years 1-3), while the remaining infrastructure will be removed at closure.

Landscape effects of the proposed Site Workers Camp, Geology Compound, and Administration Buildings will introduce a higher density of built form and structures within the lower Shepherds Creek catchment, currently characterised by open pasture. The proposed development will however remain contained to a modified paddock in the proximity of Thomson Gorge Road. During the implementation phase of the project, landscape effects associated with the construction of the Site Workers Camp, Geology Compound, and Administration Buildings will be internalised occurring outside the confirmed ONL and considered **low-moderate adverse**, reducing to **low adverse** during mining activity once established and the workers camp is removed. At closure, the Geology Compound and Administration buildings will be decommissioned and removed, returning to an open paddock. Landscape effects on closure are therefore considered **neutral** once buildings are removed, and pastoral land use is re-established.

6.5.3.11 Quarries, Magazine Storage, and Emulsion Area

Similarly, outside of the Dunstan Mountains ONL and immediately north of the Shepherds Creek catchment are two quarries, a magazine storage, and emulsion yard, including a road connecting each of these elements. The construction of each of these elements will occur within the startup phase of the project to enable the construction of project infrastructure including the haul roads and Ardgour Rise and represent localised areas of more substantial disruption that otherwise remain embedded within a farmed landscape.

Construction of the quarries will include extraction to of up to 10 metres depth and profiled to be free draining to avoid ponding of water with batters of up to 1:1. The base of the quarries will be rehabilitated at closure including being sheeted with topsoil and ripped before being seeded with pasture to support ongoing rural activity.

The Emulsion Yard and Magazine Storage will remain for the duration of the project and will be removed at closure.

Effects of the proposed quarries, magazine storage, and emulsion area are considered **moderate adverse** during the startup phase, and operation. At closure the final landform in these areas will be reinstated as part of the existing rural activity with **low-moderate adverse** effects.

6.5.3.12 Diversion channels

Throughout the Site there are several freshwater diversion channels which will remain permanent features within the landscape. The construction of these channels requires earthworks, modifying the currently intact geomorphology of the landform, and creating a series of artificial channels with cut and fill batters which generally follow the contour of the landscape. Within Shepherds Creek, these will be constructed immediately above the proposed TSF, and adjacent to the ELF, and pits to contain these features to existing areas of modification, and to minimise the prominence of these features within the landscape. An additional diversion is required for Rise and Shine creek to pass through the southern edge of Rise and Shine Pit and retain this established water course through this more modified context with localised but enduring effects on natural landscape values.

Additional features include a dirty water diversion channel which will extend from the southern extent of the ELF to the north-west of the ELF, and a seepage collection drain and/or pipes which will extend from the TSF to the process plant to the west of the ELF.

During the startup and mining activity phases of the project, landscape effects are considered **moderate adverse** due to the level of disturbance required, reducing to **low moderate adverse** once established. At closure effects of the diversion channels will remain **low moderate adverse**.

6.5.3.13 Pest Exclusion Areas

To the north and southwest of Shepherds Creek are two proposed Pest Exclusion Areas which will provide for ecological offset and mitigation of ecological effects including lizard and invertebrate habitat. In physical terms, the exclusion zones will require 1.8 metre predator proof fences around the perimeter of each exclusion zone. In experiential terms, this will introduce a linear feature akin to deer fencing and associated changes in land management practices which remain evident along the broader coherent face of the Dunstan Mountains and introduce a **low-moderate** adverse effect in the context of the Site during mining activity. Over time as vegetation establishes within the Pest Exclusion Area, the edges of the exclusion area will become more defined.

6.5.3.14 Thomson Gorge Road realignment – Ardgour Rise

The proposed mining operation will physically modify the existing alignment of Thomson Gorge Road in sections near Rise and Shine and SRX and SRE pits to the extent that Thomson Gorge Road will no longer provide a route over Thomsons Saddle in its current configuration from the outset of the project. This section of road presently skirts alongside areas of Bendigo Historic Reserve to the south and forms part of a broader historic access corridor which extends between a natural low point through the Dunstan Mountains.

Physical effects from the proposed modification and replacement of Thomson Gorge Road will be lower than the scale of the proposed haul roads. The proposed replacement track, Ardgour Rise, will create a like-for-like connection between Ardgour Road, and the Manuhierikia Valley, creating a new and modified feature enabling a different public experience to the north of the Shepherds Creek valley and alternative route to Thomsons saddle. A separate more detailed assessment considering the effects of this alignment has been included in **Appendix 3**.

The alignment of Thomson Gorge Road to the west of Thomsons Saddle currently follows a relatively contained corridor through an accessible valley floor along the true right of Rise and Shine Creek before traversing the spur between Shepherds and Bendigo Creek. In associative terms, realignment of this section of Thomson Gorge Road will modify the established experience traversing a lowered pass that cuts through the Dunstan Mountains. Associations with this physical connection between the upper Mata au and Manuhierikia is also identified by tangata whenua. During mining activity landscape effects of relocating this connection through the Rise and Shine valley will modify associations with historic link through the Site and broader Dunstan Mountains landscape. Access to the Come in Time Battery, and Thomsons Saddle will be maintained, and the road will be reopened as a recreation track post mining activity.

Effects during the startup stage of the project associated with construction works are expected to be no greater than **moderate adverse** reducing to **low-moderate adverse** upon establishment of the road during the main extraction stages. At closure, access through the Dunstan Mountains via Thomson Gorge Road will be reinstated for recreational purposes, while four-wheel-drive access will be maintained by Ardgour Rise. Landscape effects are expected to dissipate to **neutral** over time where this reintroduces opportunities to interact with historic and more recent gold mining activity when passing west of Thomsons Saddle.

6.5.4 Overall effects within the Site on the broader Dunstan Mountains ONL

As outlined above, the Dunstan Mountains ONL provides a coherent and legible backdrop to the eastern Upper Clutha Valley. The ONL extends from the St Bathans Range in the north, to Lake Dunstan in the south and is defined by the Manuherikia valley to the east, and Clutha valley to the west. The landscape is highly expressive of its glacial and tectonic formative processes, containing extensive areas of high-country farmland, native scrubland and tussockland, intricate valley systems with narrow streams and creeks, and high levels of perceived naturalness. The mountains have had associations for both mana whenua and pakeha throughout history, from a traditional travel route through the Rise and Shine Creek catchment, through to gold mining, recreational values, and farming practices. The uninterrupted skyline, and prominent schist tors are a key feature of this landscape, making the mountain range a highly memorable landscape within Central Otago.

The proposed mine is located on the interface between the northern and southern extent of the Dunstan Mountains, defined by a highly legible peneplain and the Rise and Shine valley to the south, and the Shepherds Creek valley to the north. In the context of the Dunstan Mountains, the proposed mine will largely remain contained within the Site and substantially disrupt two of the more modified valley systems within the ONL. The proposed mine, and its ancillary components including the plant, haul roads, and diversion channels, will interrupt the overall coherence of the landform on the western slopes of the Dunstan Mountains, however the overarching natural and open character and skyline above will largely remain. During startup and mining activity phases of the mine, earthworks, transient presence of vehicles, and structures will contrast with the broader high country rural landscape, with modification to the underlying landform, and vegetation patterns which are reflected and valued in other areas of the ONL. On closure, the Rise and Shine and SRX pits will remain open, however rehabilitation to the edges of these elements has been proposed in addition to the removal or rehabilitation of remaining mining infrastructure seen in the context of a broader area of native vegetation restoration.

Overall effects on the Dunstan Mountains ONL are considered **moderate adverse** during startup and mining activity. On closure and following rehabilitation effects will reduce to **low-moderate adverse** as mitigation measures associated with each of the project elements and the surrounding landscape begin to establish.

6.5.5 Summary of Landscape Effects

Overall, the key elements which give rise to landscape effects include the haul roads, Rise and Shine Pit, Come in Time Pit, SRX Pit, and TSF. Overall adverse landscape effects range from **low** to **high** throughout the duration of the project and include elements within which landscape effects are expected to gradually reduce as rehabilitation enabled through landscape mitigation and closure plan is implemented and becomes established. Over time following closure there is potential for mine elements to become assimilated within the broader conservation area which is proposed and gradually reduce the overall potential significance of effect.

Table 2: Summary of Landscape Effects						
	Startup (Year 0 - 3)		Mining activity (Year 3-11)		Closure (Year 11-30)	
	Level of ²⁰ Effect	Nature of Effect ²¹	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Broader Landscape Unit						
Dunstan Mountains ONL	M	Adverse	M	Adverse	LM	Adverse
Site Scale: Project components						
Rise and Shine Pit	MH	Adverse	H	Adverse	H	Adverse
Rise and Shine Underground Mine		Neutral	LM	Adverse	L	Adverse
Western Engineered Landform	MH	Adverse	M	Adverse	LM	Adverse
Come in Time Pit		Neutral	H	Adverse	LM	Adverse
SRX Pit/ELF and SRE Pit		Neutral	MH	Adverse	M	Adverse
Shepherds Engineered Landform	MH	Adverse	H	Adverse	LM	Adverse
Tailings Storage Facility	H	Adverse	MH	Adverse	L	Adverse
Haul Roads	M	Adverse	MH	Adverse	LM	Adverse
Plant Infrastructure	M	Adverse	MH	Adverse	LM	Adverse
Site Workers Camp	LM	Adverse	L	Adverse		Neutral
Quarries, Magazine Storage, and Emulsion Area	M	Adverse	M	Adverse	LM	Adverse
Diversion Channels	M	Adverse	LM	Adverse	LM	Adverse
Pest Exclusion Area	-	-	LM	Adverse		Neutral
Thomson Gorge Road Realignment	M	Adverse	LM	Adverse		Neutral

6.6 Visual Effects

Visual effects are a component of overall amenity and therefore contribute to peoples' appreciation of the pleasantness and aesthetic coherence of a place alongside its cultural and recreational attributes. In short, this aspect of the assessment considers the effects of visual change that the proposed mine would bring to the outlook and views of people who make up the identified viewing audience.

It should be emphasised that a change in a landscape or view does not, of itself, necessarily equate to an adverse visual effect. Similarly, the scale of visual effects is not automatically commensurate with the extent to which a proposal may be visible. Landscape is dynamic and is constantly changing in both subtle and more dramatic transformational ways. These changes are both natural and human induced and subject to visual human experience as part of the landscape. As part of managing landscape change it is therefore important that the potential for visual effects is understood to ameliorate or address this aspect of adverse effects. The aim is

²⁰ Very Low: VL, Low: L, Low-Moderate: LM, Moderate: M, Moderate-High: MH, High: H, Very High: VH.

²¹ Adverse, Neutral, Beneficial.

to maintain or enhance the visual environment through appropriate design outcomes whilst recognising that both the level and nature of visual effects may change over time.

6.6.1 Visual Simulations

To better understand the proposed visual change generated by the proposed mine, a series of visual simulations have been prepared from representative viewpoints and included in **Appendix 6 (Map 1** of the accompanying visual simulations package). These have been generated from ten representative publicly accessible viewpoints within the Upper Clutha valley between Luggate, Tarras, and settlements along the northern toe of the Pisa Range. This includes SH8, SH8A, and SH6. These viewpoints demonstrate the relative visibility of the Site and its relationship with the surrounding landscape. The selection of viewpoints used to prepare visual simulations is generally based on the following criteria:

- *Views which are commonly experienced by the community.*
- *Views obtained from the residential population (dwellings).*
- *An even spread of representative viewpoints within the visual envelope, and around all sides of the site; and*
- *From locations which represent a range of near, middle- and long-distance views.*

Table 3: Visual simulation descriptions

Viewpoint	Distance from Battery Hill	Description of view
VS1: Thomson Gorge Road	5.8 km	This viewpoint is located on a section of Thomson Gorge Road, on the edge of the Site boundary. The likely viewing audience for this viewpoint includes transient views from users of Thomson Gorge Road, and partial, fixed views from residential dwellings on Thomson Gorge Road and Bendigo Terrace. Thomson Gorge Road is an existing public road which passes through the proposed Site. At commencement of the project, Thomson Gorge Road will be closed approximately 600 metres south of this viewpoint at the junction with Matilda Rise. Elements of the proposal which will be visible from this location include the ore stockpile, Come in Time pit, Pest Exclusion Area, topsoil stack adjacent to the Site Workers Camp, and the upper section of the RAS pit. During the startup phase of the project (years 1-3) views of the proposal for users of Thomson Gorge Road, and from residential dwellings on Thomson Gorge Road and Bendigo Terrace will be primarily associated with the topsoil stack formation and quarry to the north of the Site Workers Camp, the construction of the Site Workers Camp, Administration Buildings, and Geology Compound, quarry and construction of the WELF following initial extraction of the RAS pit. During mining activity (year 3 onwards), views of the Come in Time pit, and ore stockpile will be available. From this viewpoint due to its proximity to the Site, views of the broader Dunstan Mountain Range are limited, therefore landscape change will be more evident at a local scale in the context of a working rural landscape. This includes land use change within the Pest Exclusion Areas which will be a prominent feature, defined within the predator proof fence. Predator proof fencing will appear akin to deer fencing anticipated within the rural landscape, however the more evident effect will be the change in character from pasture to native vegetation. At closure, the rehabilitation of the Come in Time pit will be evident and over time naturalise into the foreground of the Dunstan Mountains. Non-mining infrastructure associated with the Site Workers Camp and Ardgour Terrace will be removed.
VS2: Ardgour Road, Lindis Crossing	8.3 km	This viewpoint is located on the south-western extent of Ardgour Road, near the intersection of State Highway 8. The local road provides access to several residential properties and to Thomson Gorge Road. The viewing audience which relates to this viewpoint will include transient views from users of Ardgour Road, and fixed, glimpsed to partial views from adjoining residential properties.

Table 3: Visual simulation descriptions		
Viewpoint	Distance from Battery Hill	Description of view
		From this viewpoint, elements of the proposal which will be visible include Ardgour Rise, the upper eastern wall of Rise and Shine pit, and its associated topsoil stack to the north-east on the slopes of Battery Hill. In the foreground, Come in Time pit, ore stockpile, WELF, and the Pest Exclusion Areas will also be visible. Frontal, transient views will be available when travelling on Ardgour Road and will form a legible transition between the northern and southern extents of the Dunstan Mountains. During startup, construction of Ardgour Rise, RAS pit topsoil stack, and WELF will be evident. The topsoil stack on the northern slopes of Battery Hill will be evident on the skyline. The WELF will be rehabilitated within the startup phase to early operational phase to enable the re-establishment of cushionfield and grass. During the mining activity phase, the Come in Time pit and subsequent ore stockpile will become a highly visible linear feature in the foreground of the Dunstan Mountain Range. As Rise and Shine pit is progressively extracted, the benches on the mid slopes of Battery Hill will become evident but will not encroach on the upper slopes. Establishment of the Pest Exclusion Area will also introduce a highly visible linear feature within the landscape. At closure, rehabilitation measures associated with Come in Time pit will be evident, and the recontouring and re-seeding of the landform will reduce the prominence of this landscape change. The topsoil stack on the upper slopes of Battery Hill will be removed and used to rehabilitate the ELF. The benches associated with the RAS pit will remain evident, although some rehabilitation of the edges of the pit to enable recolonisation of lizards and adjacent native tussock and shrubland.
VS3: Māori Point Road	10.5 km	This viewpoint is located at the southern extent of Māori Point Road, a local gravel road connecting State Highway 8A to State Highway 8. The viewing audience associated with this viewpoint includes transient views for users of Māori Point Road, and fixed, glimpsed views from adjoining private dwellings. From this viewpoint, views will be primarily associated with the upper extent of the RAS pit, topsoil stack on the slopes of Battery Hill, ore stockpile and Come in Time Pit, the Pest Exclusion Areas, ridge of the ELF, and WELF. During the startup phase and into the earlier stages of mining activity, the topsoil stockpile and construction of the WELF to the south-west of the RAS pit will be evident and exposed. During earlier stages of operation, views will be primarily associated with the mining of the RAS pit and Come in Time Pit which will create a benched face on the mid to lower slopes of Battery Hill. Glimpsed views of the ore stockpile and Ardgour Rise will also be available. During later stages of the mining activity, full views of the exposed mountain face associated with the Come in Time pit mining and subsequent ore stockpile will be available as will the predator proof fence and associated change of landcover within the Pest Exclusion Areas. These features will remain prominent within the larger mountain backdrop when travelling on Māori Point Road. In latter stages of mining very glimpsed views of the ELF ridgeline will also occur, slightly breaching the skyline to the north. At closure, rehabilitation associated with the Come in Time pit will be evident, including the recontouring of the valley, reseeded of the landform, and beginning to integrate with the adjacent WELF rehabilitated earlier in the project. The upper reaches of the ELF will equally settle into the backdrop and skyline of the mountain range as

Table 3: Visual simulation descriptions		
Viewpoint	Distance from Battery Hill	Description of view
		vegetation re-establishes on the landform. The RAS pit will remain a legible feature, albeit slightly weathered, and will remain in perpetuity.
VS4: Ardgour Road, Tarras	12.1 km	This viewpoint is located at the northern extent of Ardgour Road near Tarras. The viewing audience associated with this viewpoint includes glimpsed, fixed views from private properties within the Ardgour Valley, and transient views for users of Ardgour Road. From this viewpoint, views of the proposal are largely obscured by intervening landform, and the ridgeline to the north of Shepherds Creek. Therefore, views of the Site are limited during the startup phase, although glimpses of Ardgour Rise, WELF, the topsoil stockpile on Battery Hill and RAS pit will be available. Transient, glimpsed views of the upper benches associated with the RAS pit and Come in Time pits will be available during the mining activity phase. Views of the wider operation however will be largely truncated by the ridgeline to the north of Shepherds Creek. While evident, views of the working RAS pit will be limited from the upper Ardgour Road valley and will not compromise the coherence of the connection between the northern and southern Dunstan Mountains. At closure of the mine, the topsoil stockpile on Battery Hill will be removed from view and rehabilitated. Glimpses of the upper extent of the RAS pit will remain available, and the Come in Time pit will appear rehabilitated to enable integration with the adjacent WELF.
VS5: Jolly Road	15 km	This viewpoint is located on Jolly Road north-west of the Site on the outskirts of Tarras. The viewing audience associated with this viewpoint includes transient views of the proposal for users of Jolly Road and adjoining rural roads and glimpsed to partial views from sparsely located residential dwellings. From this viewpoint views will be of Ardgour Rise, RAS pit, topsoil stockpile on the slopes of Battery Hill, upper slopes of the Come in Time pit and ore stockpile, ELF, WELF, and Pest Exclusion Areas. Views during startup will include the initial extraction of the RAS pit and construction of the WELF and topsoil stockpile on the slopes of Battery Hill. The initial startup phase will consequently disrupt the coherence of the broader natural backdrop below the skyline, including the ridge below Battery Hill. During mining activity the ore stockpile, greater extent of the Rise and Shine pit will become more evident as mining progresses. This will also include the Pest Exclusion Area predator proof fence, and in latter stages of the project, glimpsed views of the ELF. At closure of the mine, rehabilitation associated with the Come in Time pit, including the recontouring of the landform and rehabilitating the existing landcover will ensure this appears integrated within the surrounding lower-mid slopes of the Dunstan Mountains. Similarly, the topsoil stockpile on the northern slopes of Battery Hill will be removed and rehabilitated. Conversely, benching associated with the upper extent of the RAS pit will remain visible in perpetuity. Glimpses of the ELF will begin to integrate into the backdrop of the mountain range at closure.
VS6: State Highway 8A	15 km	This viewpoint is located on State Highway 8A, at the intersection with Māori Point Road. This highway is a popular route between Lake Hawea/Wanaka and Tarras, providing access to the Lindis Pass. The viewing audience associated with this viewpoint includes transient views for users of State Highway 8A and fixed, glimpsed views from adjoining residential dwellings.

Table 3: Visual simulation descriptions		
Viewpoint	Distance from Battery Hill	Description of view
		From this viewpoint, views are primarily associated with the RAS pit with additional views of the ELF, topsoil stockpile on Battery Hill, ore stockpile, Come in Time pit, WELF, Ardour Rise, and the Pest Exclusion Areas. During startup, views of the initial RAS pit extraction, including the formation of the WELF and topsoil stockpile will be evident from this viewpoint. In subsequent years, partial views of the ore stockpile and excavation of Come in Time pit, will become available. Views of the Predator Exclusion Areas will form defined linear features on the lower slopes of the Dunstan Mountains. Within the latter years of extraction, the ELF will become a more legible feature within the Shepherds Creek valley. At closure, the face of the Come in Time pit and ore stockpile will be remediated and integrate into the adjacent landform including the WELF. The ELF will be rehabilitated to enable vegetation growth, softening earthworks and the Battery Hill topsoil stockpile will be removed although the footprint will initially remain evident affecting the coherence and perceived naturalness associated with Battery Hill. This will reduce as vegetation establishes over time on the disturbed ground. The upper RAS pit benches will remain evident in perpetuity from this viewpoint, resulting in permanent effects on the coherence of the Dunstan Mountains backdrop.
VS7: Pukeowhai Drive, Queensberry	17.7 km	This viewpoint is located on Pukeowhai Drive, found within an elevated subdivision near Queensberry. The subdivision contains several large lifestyle blocks overlooking the Upper Clutha Valley which forms the predominant viewing audience for this viewpoint. Views will be fixed and glimpsed to partial for dwellings within the subdivision, while transient views will be available from local roads. Key elements of the proposal that will be visible from this viewpoint include the ELF, RAS pit, Battery Hill topsoil stockpile, Come in Time pit and ore stockpile, haul roads, WELF, and Pest Exclusion Areas. Initial excavation works during startup, including the establishment of the RAS pit, WELF, and Battery Hill topsoil stockpile, will be discernible from this viewpoint, albeit viewed in the context of the broader Dunstan Mountain Range. Subsequent mining activity will also be visible, including the exposed benches of the Come in Time and Rise and Shine pits, ore stockpile and, in later years, the upper reaches of the ELF. The linear character of the proposed Predator Exclusion Areas will also be evident from this viewpoint. Modifications associated with these features will disrupt the coherent backdrop of the Dunstan Mountains, levels of perceived naturalness, and the connection between the peneplain to the south, and defined ridge to the north. At closure of the mine, earthworks associated with the rehabilitation of the WELF, ELF and Come in Time pit will soften as vegetation establishes on the slopes. The exclusion area will remain in perpetuity as a feature on the lower slopes of the Dunstan Mountains to the north of Shepherds Creek. RAS pit will remain a legible feature in perpetuity in the context of the Shepherds Creek catchment.
VS8: State Highway 6	13.2 km	This viewpoint is located on a section of State Highway 6 between the settlements of Queensberry and Mount Pisa. The road is a popular route for commuters between Cromwell, and Wanaka and Hawea, as well as providing a tourist route between the West Coast and Central Otago. The viewing audience therefore associated with this viewpoint is largely associated with transient views for users of State Highway 6. Fixed, glimpsed views are also available for adjoining rural residential properties in proximity of this viewpoint. Key aspects of the proposal that will be visible from this viewpoint will include the ELF, ELF Process Plant, WELF, eastern face of the RAS

Table 3: Visual simulation descriptions

Viewpoint	Distance from Battery Hill	Description of view
		pit, Rise and Shine topsoil stockpile, Come in Time pit, ore stockpile, and Pest Exclusion Areas. During the startup phase of the project, views of initial excavation works and earthworks associated with the RAS pit including the Battery Hill topsoil stockpile on the skyline, haul roads, and WELF will be evident. This also includes views of the TSF embankment construction in the upper reaches of the Shepherds Creek valley. Limited views of earthworks associated with the realignment of Thomson Gorge Road (Ardgour Rise) will be available, albeit introducing a defined track into a landscape with high levels of perceived naturalness. During mining activity, views will largely become associated with the progressive construction of the ELF, operation of the ELF Process Plant, RAS pit – including the pit benches, Come and Time pit and ore stockpile, and the construction of the Pest Exclusion Areas. The Battery Hill topsoil stockpile will remain visible on the skyline. At closure, earthworks associated with the ELF and Come in Time pit will begin to soften and recess into the backdrop of the Dunstan Mountains as vegetation re-establishes. The ELF Process Plant will also be removed. The exclusion zone will remain in perpetuity as a feature on the lower slopes of the Dunstan Mountains to the north of Shepherds Creek. The RAS pit benches will remain legible features although partially curtailed by the WELF.
VS9: State Highway 8, Bendigo	9.9 km	This viewpoint is located on State Highway 8 near the intersection of Bendigo Loop Road, and has mid distance views of the Site, and the local context including the Dunstan Mountains peneplain, and ridgeline to the north. State Highway 8 is a busy road popular with commuters and tourists travelling between Cromwell and Lindis Pass. Therefore the primary viewing audience associated with this viewpoint includes transient views for users of State Highway 8, and fixed glimpsed to partial views for adjoining residential dwellings. Elements of the proposal which will be visible from this viewpoint are primarily associated with the ELF within the Shepherds Creek valley, the Pest Exclusion Area, Rise and Shine topsoil stockpile, and Ardgour Rise. Glimpses of the upper reaches of the Come in Time pit and ELF Process Plant are also available. During the startup phase, views of the proposal will include the construction of the WELF and Battery Hill topsoil stockpile, and realignment of Thomson Gorge Road. In latter stages during mining activity, glimpsed views of the ore stockpile, and benches associated with Come in Time pit, will become evident as well as the operational ELF Process Plant. As overburden is removed from the RAS pit, and Come in Time pit, the ELF will progressively become a more prominent feature within the Shepherds Creek valley. Similarly, the Pest Exclusion Areas will be visible from this viewpoint, introducing a linear element which is clearly evident in this area of landscape. At closure, the ELF will remain evident within the Shepherds Creek valley, however over time will recess into the foreground of the Dunstan Mountains. In addition, the ELF Process Plant will be removed at closure. The Battery Hill topsoil stockpile will be removed and incorporated into the ELF leaving an exposed area of soil initially that will be rehabilitated to enable colonisation by native shrubland and tussockland.
VS10: Mount Pisa Road	14.9 km	This viewpoint is located within the settlement of Mount Pisa, accessed from Mount Pisa Road. The settlement overlooks State Highway 6, the upper reaches of Lake Dunstan, and out towards the backdrop of the Dunstan Mountains. The viewing audience associated with this

Table 3: Visual simulation descriptions		
Viewpoint	Distance from Battery Hill	Description of view
		viewpoint are fixed views from Mount Pisa subdivision, and transient views from associated local roads including Mount Pisa Road. From here, key aspects of the proposal that will be visible in glimpse views including the Pest Exclusion Areas and Come in Time pit, and partial views of the top of ELF. Limited views of the proposal will be available during startup, although glimpses of the Battery Hill topsoil stockpiles will be available. During mining activity, the proposal will remain largely truncated by intervening topography and ridges which surround the southern extent of the Site. At closure, the Battery Hill topsoil stockpile will be removed, and earthworks associated with the ELF and Come in Time pit will soften and recess into the backdrop of the Dunstan Mountains as vegetation re-establishes.

6.6.1.1 Views from residential and private viewpoints

The assessment of visual effects from private views has focused on the identification of dwellings within the surrounding landscape from which views of proposed mining activity may be possible. **Figure 10** shows the locations of existing dwellings within 5 km of the Site. Beyond this distance, while no potential for significant visual effects were identified, the potential for private views from dwellings have been assessed and been grouped together where potential views may occur, as shown on **Figure 11**. In both instances, the potential for visual effects have been assessed based on a theoretical visibility analysis followed by on Site analysis of where areas of earthworks and associated activities would be visible from. No private properties have been visited as part of this assessment. An understanding of potential visibility and consequent visual effects is set out in further detail in **Appendix 4** and summarised below.

From the vicinity of Tarras and its surrounding rural areas (**VS4-VS5**) to the north of the Site within the Upper Clutha Valley (CODC), views of the proposed mining activity are generally limited to glimpse views beyond approximately 5 km. Beyond 5km, views of the proposal are observed in the context of the broader Dunstan Mountains. Views of the proposal will include glimpses of the linear benching associated with the Rise and Shine Pit excavation, and glimpses of the Come in Time Pit set against the backdrop of the Dunstan Mountains peneplain. From here, views of the Site during startup will include excavation of the Rise and Shine Pit, construction of the WELF and Battery Hill topsoil stockpile, and, during mining activity, will include the establishment of the Come in Time pit, and Pest Exclusion Areas, disrupting the coherence of the Dunstan Mountains ONL. Nevertheless, these views will be observed within the local context surrounding the Site including the southern Dunstan Mountains peneplain, and slopes of Cloudy Peak to the north which remain intact and highly legible. On closure the WELF would have been rehabilitated 10 years prior, assimilating into the backdrop of the southern Dunstan Mountains. The topsoil stockpile on Battery Hill will be removed, and the upper slopes of the Rise and Shine Pit shell will remain, including the legible linear benching.

Visual effects associated with the coherence of the Dunstan Mountains will be less evident from the upper Ardgour Road valley (VS4, 12km distant) than the farmland to the north-west of Tarras (VS5, 15km distant) where the permanent disruption to the visual coherence of the Dunstan Mountains will be observed at a distance. Over time, disturbance associated with the WELF, CIT pit, and Battery Hill topsoil stockpile will recede into the broader landscape. Overall, visual effects on properties within the vicinity of Tarras and surrounding rural areas is **moderate adverse** during mining activity, reducing to **low - moderate adverse** on completion of rehabilitation.

Views from Thomson Gorge Road provide closer distance views associated with the toe of the Dunstan Mountains (**VS1**). The ridgeline to the north of the Shepherds Creek valley largely acts to screen available views of the proposal with the exception of the ELF, Come in Time pit, Pest Exclusion Areas, Site Workers Camp topsoil stockpile, and Ardgour Rise. Where visible, this will introduce local linear features that disrupt a localised area within the broader coherent mountain backdrop. Views of the proposed mining activity beyond this will typically introduce no more than partial glimpse views below the skyline. In this context, adverse visual effects identified in this area are no greater than **low moderate adverse**, reducing to **low adverse** on completion of remediation.

From Ardgour Road valley to the north-west of the Site some closer glimpse views of modification contained within Shepherds Creek and Rise and Shine Creek are available (**VS2**). This includes parts of the Rise and Shine and Come in Time Open pit mines alongside the Battery Hill topsoil stockpiles, WELF, and the ELF which are visible in partial views below Battery Hill. Similar albeit more open private views occur from a small number of dwellings on The Bend Terrace and Bendigo Terrace. The proximity of the view will result in a more legible disruption to the backdrop and coherence of the Dunstan Mountains as views are in proximity of the Site boundary. This will result in **moderate-high adverse** and the greatest level of visual effects during mining activity, reducing to no greater than **low moderate adverse** on completion of remediation.

Following mine rehabilitation, Come in Time Pit will gradually recess into the hillside as vegetation re-establishes, while the upper benches associated with Rise and Shine Pit will remain legible at closure and in perpetuity. As the Pest Exclusion Areas become established, the linear prominence of the land use change will become more evident. Further south, private views from dwellings on Lindis Crossing and Bendigo Loop Road (**VS9**) along the true left of the Clutha River enable some partial and glimpse views of the proposed mine, including the benching and plant associated with the ELF, typically resulting in **moderate adverse** effects on the legibility and intactness of the Dunstan Mountains ONL. As this elevated plant is removed and terracing is reassimilated into the surrounding landform, this will further reduce at project completion. Battery Hill will remain legible on the skyline.

Beyond the Clutha River, potential views from dwellings established along the north-east toe of Mount Pisa and surrounds are limited to long distance partial views with some localised **moderate** and **low-moderate adverse** effects during mining activity (**VS10**) on the lower slopes of the Dunstan Mountains, and rural character associated with Ardgour Terrace. From here the proposed mine appears along the lower slopes of the broader South Dunstan Mountains with limited and localised visual effects. Upon closure and remediation, glimpsed views of the ELF and Rise and Shine Pit face associated with the lower slopes of Battery Hill will be available. The ELF will be rehabilitated to encourage the establishment of vegetation on closure, recessing the earthworks into the backdrop of the Dunstan Mountains, although glimpses of the Rise and Shine Pit benches will remain. On closure, views from properties at the north-eastern toe of Mount Pisa are expected to be **low adverse**.

Over longer distances in the vicinity of Queensberry / Luggate (**VS7**) and along terraces following the Clutha River, very long-distance views of the mining activity will appear along the lower slopes of the broader Southern Dunstan Mountains and have no more than **low adverse** effects on the overall coherence and legibility of the Dunstan Mountains ONL during mining activity. This includes elevated views of the Rise and Shine Pit face, Come in Time Pit, Battery Hill topsoil stockpile, WELF and upper slopes of the ELF which will be observed in the context of the broader ONL. At closure, rehabilitation of the Come in Time pit, and removal of the Battery Hill topsoil stockpile will be evident, however will be rehabilitated to enable future establishment of cushionfield and shrubland. The WELF will appear integrated into the final landform which will have been rehabilitated following the startup phase. Similarly, the ridgeline associated with the ELF will appear worked on closure but will be rehabilitated to enable the establishment of similar native vegetation. Benching associated with the Rise and Shine pit however will remain legible albeit at a long distance. Visual effects from Queensberry / Luggate

are therefore considered to gradually reduce from **low adverse** to **very low adverse** on completion.

6.6.1.2 Views from road and State Highway users

Transient views of the proposed mine will be available for road users throughout parts of the Upper Clutha valley from Mount Pisa to Tarras and State Highway 8A to the east of Luggate.

Views from Thomson Gorge Road will be available throughout the life of the project (**VS1**), although the road will be closed during the startup phase in the vicinity of the Site Workers Camp. During the startup phase, views of the Site Workers Camp construction and topsoil stockpile, WELF, and Ardgour Rise will be available. During operation of the mine, limited views of the mine operation will be available from Thomson Gorge Road although glimpse views of the upper Come in Time pit and Rise and Shine pit will also be available. On closure, the road will be reinstated in the form of a recreational track, allowing for open views of the Rise and Shine pit, SRX pit, and rehabilitated features within the Shepherds Creek and Rise and Shine Creek valleys. For users of Thomson Gorge Road, views will be transient when travelling this section of the road due to the proximity to the Site.

The establishment and operation of the mine and its associated infrastructure will result in effects on the coherence and intactness of the Dunstan Mountains ONL, and the rural character of Ardgour Terrace introducing industrial characteristics to a rural landscape. Nevertheless, much of the proposal will be curtailed by the intervening landform to the north of Shepherds Creek. Overall, effects during startup are considered **low-moderate adverse**, increasing to **moderate adverse** during mining activity. The reinstatement of access will provide for open views of some of the project elements, however reinstatement of access is to respond to the existing landscape values associated with mining history, and traditional travel connections through the valley. In this context visual effects on closure of the mine on users of Thomson Gorge Road are considered **neutral** and not necessarily adverse in the context of reinstating a beneficial recreational opportunity.

State Highway 8 (**VS9**) is key travel connection between the Lindis Valley and Cromwell for both local commuters, and tourists and includes views of aspects of the proposed mine over distances beyond approximately 8 kilometres. The primary views from State Highway 8 are contained to the section of highway between the intersection of Bendigo Loop and Lindis Crossing, and between Tarras and Cluden Hill. During the initial stages of the mining activity, mid to long distances views will be available of the construction of the TSF embankment, WELF, Ardgour Rise, and initial excavation of the Rise and Shine pit including the establishment of the Battery Hill topsoil stockpile on the skyline. Within later stages of the mining activity, glimpsed views of the Come in Time pit, will be available, as well as partial views of the ELF and ELF plant and benching will become evident as mining continues. These activities associated with the mine start up and operation phases will begin to erode the coherent backdrop of the Dunstan Mountains and intactness of the skyline, although these views will be transient and oblique when travelling on State Highway 8. On closure, the rehabilitation of the Come in Time pit and ELF will enable the colonisation of native shrubland and cushionfield to assist in recessing these elements into the backdrop of the Dunstan Mountains. Overall visual effects of the proposal from State Highway 8 are considered no greater than **moderate adverse** during mining activity, reducing to **low adverse** at closure.

State Highway 8A (**VS6**) intersects State Highway 8 south-west of Tarras settlement and provides more open views of the Site in the broader context of the Dunstan Mountains. The road is a connection between Tarras, and Hawea and Wanaka settlements and enables transient, frontal to oblique views of the proposal beyond approximately 10 km. Views from the road will be associated with the Rise and Shine Pit, Come in Time Pit, ore stockpile, Battery Hill topsoil stockpile, ELF, WELF, and establishment of the Pest Exclusion Areas. During the startup stages of the project, partial views of the initial Rise and Shine pit excavation, WELF, and Battery Hill topsoils stockpile will result in extensive earthworks which will contrast against the cohesive backdrop of the peneplain to the south of the Site. Over the latter operational stages of

the project, the Come in Time pit, eastern face of the Rise and Shine Pit and Pest Exclusion Areas will form reasonably prominent features on the backdrop of the Dunstan Mountains with the ELF also becoming visible above the ridgeline to the north of Shepherds Creek. Upon closure, Come in Time pit, and the ELF will be rehabilitated to enable the establishment of native vegetation and resemble a recessive landform. The Rise and Shine pit will remain legible with benching remaining in perpetuity, disrupting the coherent connection between the northern and southern extent of the Dunstan Mountains. The topsoil from Battery Hill will be removed to rehabilitate the ELF, therefore reducing visual effects associated with the modification to the lower slopes of Battery Hill. During mining activity, visual effects of the proposed mine on users of State Highway are considered **moderate adverse** reducing to **low adverse** at closure following rehabilitation.

State Highway 6 (**VS8**) extends parallel to the true right of the Mata au Clutha River and provides views through Shepherds Creek towards the Thomsons Saddle beyond distances of approximately 10km. From here, oblique, transient views of the proposal will extend from Queensberry in the north, to Mount Pisa settlement in the south, and will be associated with the startup and mining activity of the ELF, Rise and Shine pit, Come in Time pit, ore stockpile, WELF, and Battery Hill topsoil stockpile, as well as the establishment of the Pest Exclusion Areas. These elements will form a clear modification and erosion of the coherent landscape values associated with the Dunstan Mountains where the flat peneplain to the south meets the rugged northern ranges of the Dunstan Mountains. In addition, this will include a breach of the skyline for the Battery Hill topsoil stockpile. Views of the haul roads, and initial excavation of Rise and Shine pit will be legible during the initial stages of the mining activity. Visual effects of the proposal which are most evident will include excavation of the Come in Time Pit, Rise and Shine pit alongside formation of the WELF, and Shepherds ELF during the main extraction phase. At closure, the rehabilitation associated with the Come in Time pit and ELFs will assist in recessing these elements into the landscape. Visual effects of the exposed benches associated with the eastern face of Rise and Shine Pit will remain, however the Battery Hill topsoil stockpile, and thus effects on the skyline will be removed. Overall visual effects of the proposal for users of State Highway 6 are considered **moderate adverse** at the height of extraction, reducing to **low adverse** at closure.

In addition to the main State Highway connections, there are several local roads within the Upper Clutha basin where views of the proposal can be obtained (**VS5**). Local roads to the north of the Site will have glimpsed, transient views in proximity of Tarras settlement extending to long distance glimpsed to partial views of the ELF, Rise and Shine Pit, Battery Hill topsoil stockpile, WELF, Ardour Rise, Pest Exclusion Areas, and Come in Time pit. Views of these elements of the proposal will become more evident during the mining activity phase of the project as the structures, benching, and other modifications begin to contrast with the coherent backdrop of the broader Dunstan Mountains.

On closure, the Come in Time pit, and ELF will be rehabilitated to enable native vegetation to be established on their new landform, allowing these elements to recess into the broader backdrop of the Dunstan Mountain. Benching will remain in association with the Rise and Shine Pit, and the WELF will have started to stabilise and establish itself against the backdrop of the Dunstan Mountains. Views from local roads in proximity of Lindis Crossing (**VS3**) will be partially curtailed by the ridgeline to the north of Shepherds Creek and The Bend terrace and will be localised to the Bendigo area and southern extent of the Dunstan Mountains. Effects from these local roads are expected to be more prevalent during the mining activity phase of the project as the intactness and coherence of the landscape is affected by the mining of the Rise and Shine Pit, and Come in Time pit, and features such as the Pest Exclusion Areas and ELF become established. Frontal, partial and oblique views of the Site will be available throughout the life of the mine, with visual effects reducing upon rehabilitation of the face of Battery Hill and Come in Time Pit. Overall, effects on local roads during mining activity are expected to be no greater than **moderate adverse**, reducing to **low adverse** on completion of rehabilitation.

Distant views from local roads within the settlements of Queensberry to the north (**VS7**), and Mount Pisa settlement to the south (**VS10**) will provide more elevated views of the Site. Views from these areas provide panoramic views of the Dunstan Mountains and Upper Clutha Valley from Cluden Station to the southern extent of the mountain range near Cromwell. From Queensberry partial views of the Rise and Shine pit, haul roads, Come in Time pit, ELF, and Pest Exclusion Areas will occur during the mining activity phase of the project. Linear benching associated with the pits and ELFs as well as earthworks associated with the haul roads will entail a legible change in vegetation patterns evident in part of this view. These views will be observed within the broader context of the Dunstan Mountains ONL due to the distance from the Site. Views from local roads within Mount Pisa settlement have a similar panoramic outlook, however views of the Site will be partially curtailed by the slopes to the south of the Shepherds Creek and Rise and Shine Creek valleys. Visual effects of the proposal will occur during the mining activity phase of the project including the mining of Come in Time pit, Rise and Shine pit, and construction of the ELF, Pest Exclusion Area, and ore stockpile. Views of these mine element will disrupt the During mining activity, visual effects from properties to the west of the Upper Clutha Valley are considered **low moderate adverse**. Partial, oblique to frontal views of the proposal will be available and centred on a clear landscape change between the northern and southern Dunstan Mountains which can be appreciated from these long-distance views. During mining activity the disruption of the coherent backdrop to the Dunstan Mountains will be evident but will still remain a legible feature within the wider Upper Clutha basin. On closure, these effects will reduce to **low adverse** as rehabilitation is completed.

Overall visual effects from local roads, and State Highways are considered up to **moderate adverse** during mining activity and would effectively reduce to **low adverse** at closure.

6.6.1.3 Views from conservation and recreational areas

Within the context of the Site there are several recreational areas including the Bendigo Scenic Reserve, Bendigo Historic Reserve, Bendigo Conservation Area, Ardgour/North Dunstan hunting block, and Neinei I Kura Conservation Area. Views from conservation areas are largely within the local context of the Site surrounding Cloudy Peak and the peneplain immediately south of the Site.

Views from recreation reserves to the east of the Site will include views from within the Neinei I Kura Conservation Area in proximity of Cloudy Peak. The recreation reserve is primarily a remote hunting block, with transient, long-distance views of the Site available near the summit of Cloudy Peak, including open views of the broader Dunstan Mountains. Key elements of the proposal that will be visible from this viewpoint include parts of the ore stockpile, ELF, Rise and Shine Pit, and SRX and SRE Pits. These transient views will likely occur during the latter stages of mining activity as the ELF becomes more established, the ore stockpile is at its largest, and as the footprint of the Rise and Shine Pit reaches capacity. From this viewpoint, these modifications will temporarily modify the local context of the Shepherds Creek and Rise and Shine Creek catchment but will not significantly disrupt the overall level of perceived naturalness and sense of remoteness associated with the broader context. During the height of mining activity visual effects from the Neinei I Kura Conservation Area are considered **low adverse**, reducing to **very low adverse** on completion.

Views to the south-east are associated within the Ardgour/North Dunstan hunting block which adjoins the Site. The Ardgour/North Dunstan hunting block is located near Thomson Saddle, with views of the proposal primarily associated with the TSF, Thomson Gorge Road realignment (Ardgour Rise), SRX and SRE pits and SRX ELF, and the ELF. Some views will also be available towards the lower extent of the Shepherds Creek valley prior to the ELF being established. Views of the remaining project components will be curtailed either initially by the intervening topography of the surrounding landform, or alternatively curtailed by the ELF on completion. Visual effects on users of the Ardgour/North Dunstan Hunting Block are considered **low-moderate** during mining activity, reducing to **low adverse** on closure. During mining activity, substantial earthworks and construction and mining activity will be visible from the reserve, altering the level of coherence, and perceived naturalness within the Shepherds Creek

valley. This will affect the coherence of the Dunstan Mountains at a local scale where the northern and southern extent of the mountain range meet.

Views from recreational areas to the south-west of the Site will be contained to the north-eastern extent of the Bendigo Conservation Area on the slopes of Mount Moka. The conservation area is a remote hunting block within the upper reaches of the Dunstan Mountains. Glimpsed views of the proposal visible from this area include the TSF, ELF, SRX ELF, Rise and Shine Pit, and SRX and SRE pits. These views will be available from the startup phase, with elements such as the ELF, TSF, and SRX and SRE pits becoming more prominent in latter stages of the mining activity phase of the mine. These works will not significantly detract from the overall level of perceived naturalness associated with the Dunstan Mountains with views extending beyond the Site boundary, and limited opportunities for viewing at the north-eastern extent of the conservation area. Visual effects of the proposal are considered **very low** during mining activity, reducing to **neutral** as rehabilitation is established.

Views to the north-west of the Site will be limited from the Bendigo Scenic Reserve, and Bendigo Historic Reserve. Glimpsed views from the Bendigo Scenic Reserve of the ore stockpile, WELF, and ELF will be available from the Kanuka Loop Track within the Scenic Reserve in latter stages of mining activity when once the ELF is reaching its final elevation and the ore stockpile becomes more prominent. Views from the Bendigo Historic Reserve will be limited to areas in proximity of the Matilda Battery Track and associated four-wheel drive track. These will also include views of ELF, and ore stockpile in latter stages of mining activity. Overall views from this recreational reserve will be limited throughout the life of the mine and will have a limited disruption to the broader views and levels of perceived naturalness available from this conservation area. Visual effects of the proposal on users of the Bendigo Scenic Reserve are considered no greater than **very low adverse**, reducing to **neutral** at closure.

Long distance views from the Pisa Range Conservation Area and surrounds will be available for the duration of the project. Partial views of the Rise and Shine Pit, ELF, WELF, Battery Hill topsoil stockpile, Ardgour Rise, and open views of the Come in Time pit, ore stockpile, and Site Workers Camp will be available during startup, and mining activity. The disrupted transition between the northern and southern Dunstan Mountains will be evident from this viewpoint but will not breach the skyline and compromise the coherence of the overall ONL. Visual effects of the proposal on users of the Pisa Conservation Area and surrounding recreation tracks are considered no greater than **low moderate adverse**, reducing to **low adverse** following rehabilitation.

Overall, visual effects on users of public conservation and recreational areas are considered no greater than **low moderate adverse** during mining activity and reducing to **low adverse** at closure. The greatest visual effect will be experienced by users of the Ardgour/North Dunstan hunting block, with views from other conservation and recreational areas being largely truncated by intervening landform and vegetation.

6.6.1 Summary of Visual Effects

Based on the above analysis, a summary of visual effects which have been identified from surrounding public and private viewpoints is set out below. Despite the scale of the project, the level of adverse visual effects remains relatively limited and avoids the potential for significant adverse visual effects.

Table 4: Summary of identified visual effects							
VS/VP Number	Viewing Audience	Startup (Year 1-3)		Mining activity (Year 4-11)		Closure (Year 25)	
		Level of Visual Effect ²²	Nature of Effect ²³	Level of Visual Effect	Nature of Effect	Level of Visual Effect	Nature of Effect
Views from residential and private viewpoints							
VS4-5	Tarras and surrounds	LM	Adverse	M	Adverse	LM	Adverse
VS1	Ardgour Road North	VL	Adverse	LM	Adverse	L	Adverse
VS2	Ardgour Road Valley (north - west) + Bendigo Terrace	M	Adverse	MH	Adverse	LM	Adverse
VS9	Lindis Crossing and Bendigo Loop Road	L	Adverse	LM	Adverse	L	Adverse
VS10	Mount Pisa and surrounds	LM	Adverse	M	Adverse	L	Adverse
VS7	Queensbury and Luggate	L	Adverse	L	Adverse	VL	Adverse
Views from road and State Highway users							
VS1	Thomson Gorge Road	LM	Adverse	M	Adverse		Neutral
VS9	State Highway 8	LM	Adverse	M	Adverse	L	Adverse
VS6	State Highway 8a	LM	Adverse	M	Adverse	L	Adverse
VS8	State Highway 6	LM	Adverse	M	Adverse	L	Adverse
VS3 & VS5	Local Roads Upper Clutha Basin	LM	Adverse	M	Adverse	L	Adverse
VS7 & VS10	Local Roads Queensbury/ Mount Pisa Settlement	LM	Adverse	M	Adverse	L	Adverse
Views from conservation and recreational areas							
	Neinei I Kura Conservation Area	VL	Adverse	L	Adverse	VL	Adverse
Site Appraisal Photograph M	Ardgour/North Dunstan hunting block	LM	Adverse	LM	Adverse	L	Adverse
	Bendigo Conservation Area	VL	Adverse	VL	Adverse		Neutral

²² Significance of Effects: Very Low, Low, Moderate-Low, Moderate, Moderate-High, High, Very High

²³ Nature of Effect: Adverse, Neutral, Beneficial

Table 4: Summary of identified visual effects							
VS/VP Number	Viewing Audience	Startup (Year 1-3)		Mining activity (Year 4-11)		Closure (Year 25)	
		Level of Visual Effect ²²	Nature of Effect ²³	Level of Visual Effect	Nature of Effect	Level of Visual Effect	Nature of Effect
Site Context Photograph 1	Bendigo Scenic Reserve	VL	Adverse	VL	Adverse		Neutral
Site Context Photograph 11	Pisa Conservation Area and surrounds	L	Adverse	LM	Adverse	L	Adverse

6.7 Recommended Mitigation Measures

In considering the nature of the project and the anticipated change to the receiving environment, there are a number of measures which have been developed to help avoid, remedy or mitigate the assessed landscape and visual effects. Such measures are included as part of the project and have been considered in this assessment of landscape and visual effects in terms of effects during operation as reflected in the **Landscape Mitigation Plan** and residual effects as reflected in the **Landscape Closure Plan** included in **Appendix 6**.

To address potential adverse effects, this assessment has adopted an integrated effects management strategy that means in most cases the ecological mitigation and the landscape mitigation planting take a similar form and in the same key locations, or locations which link to one another. Ecology is integrated with landscape to provide a more continuous connection of vegetation and freshwater environments, which will benefit biodiversity throughout the proposed project footprint whilst also providing benefit from a landscape and visual perspective.

In summary, mitigation measures for this project have been developed in two ways:

- Measures that intrinsically comprise part of the development design through an iterative process;
- Specific Mine Rehabilitation Actions designed to reduce adverse effects of the final development proposals including rehabilitation of mine elements and substantial areas of ecological mitigation set out within a separate **Landscape and Ecological Rehabilitation Plan**.

The Landscape and Ecological Rehabilitation Plan also encompasses anticipated ecological mitigation planting as set out in the separate assessments of ecological effects. To ensure the certainty of these measures, it is recommended that landscape rehabilitation including ongoing management actions form conditions of consent.

7.0 Part B: Natural Character Effects (bed and margins of streams)

7.1 Introduction

The assessment of natural character considers the physical impacts on the active bed and margins of existing streams. This assessment has been undertaken by assessing the abiotic, biotic, and experiential characteristics of the waterways within the Site in conjunction with the *Bendigo Ophir Gold Mine Aquatic Assessment of Effects*²⁴. This has also been informed by the assessment inputs from an aquatic ecologist relating to the active bed and margins of identified waterbodies where relevant. In general terms, effects on natural character consider changes in existing condition, across relevant attributes:

Natural Character Effects: Derived from changes in physical condition and characteristics of waterbodies encompassing their elements, patterns and process and how these are experienced.

The streams and creeks affected by this proposal have not been identified as outstanding waterbodies within the Draft Otago Regional Land and Water Plan.

7.1.1 Natural Character Effects

The assessment of natural character considers any changes in levels of modification and associated condition specific to lakes, rivers, wetlands and their margins. In essence, this assessment is considered in terms of changes between existing and post development levels of natural character. This has been informed by the assessment of aquatic and terrestrial ecological values along the margins of identified waterbodies where relevant.

The assessment of the natural character effects of the proposed mine has been considered in relation to the existing natural characteristics and qualities outlined above and at each stage of the project. The natural character assessment draws on abiotic, biotic and experiential attributes which relate to Shepherds Creek, and Rise and Shine Creek and their tributaries. A seven-point scale from very high to very low was used to rate the level of natural character.

7.1.2 Mitigation, Offsetting, Compensation and Integrated Effects Management

To address potential adverse effects, this assessment has adopted an integrated effects management strategy that means in most cases the ecological mitigation and the landscape mitigation planting take a similar form and in the same key locations, or locations which link to one another in response to the landscape's recognised values.

7.2 Existing natural character

7.2.1 Natural character of Shepherds Creek, including Jean Creek

Shepherds Creek is the larger of the two catchments, comprising several ephemeral, intermittent, and perennial streams (**Figure 9**). Flows within the creek are influenced both from

²⁴ Bendigo Ophir Aquatic Assessment of Effects, Water Ways Consulting, 2025.

several springs throughout the catchment, and rainfall. The headwaters of the creek are located immediately west of Thomsons Saddle and are separated by a narrow ridgeline forming two tributaries.

The upper headwaters are characterised by sand and gravels, with a gentle gradient and narrow form. The headwaters of Shepherds Creek meet the confluence of Jean Creek, an intermittent stream, approximately 3.5 kilometres downstream. Jean Creek has a similar character to the upper headwaters of Shepherds Creek, characterised by a narrow active bed, although being intermittent is more vegetated. The gentle reaches, including those in the upper reaches of the catchment, are dominated by run habitat²⁵ with sections of riffles and pool sections²⁶.

A narrow gorge is present at the mid-point of Shepherds Creek which is characterised by a rocky active bed, waterfalls, boulders, and pools. Unlike the upper reaches, the active bed is primarily characterised by cobbles, before reaching the lower valley floor characterised by an alluvial outwash. The creek becomes gentle in habit and characterised by sand and gravels similar to the upper reaches but remains narrow within the context of the broader valley. Modification to the active bed is in the form of a now broken dam structure, although a small pond remains upstream of the dam.

To the west of the catchment beyond the foothills of the Dunstan Mountains, the stream becomes ephemeral with surface water passing typically into the ground. The upstream sections are still legible and associated with grazing. The stream path is therefore evident during periods of high rainfall. Downstream however, evidence of the stream course has been removed and replaced with farming activity, including pasture.

Vegetation varies throughout the catchment. The upper reaches are characterised by grey scrub including native species such as matagouri, and coprosmas, and exotic species such as rosehip briar, and pasture grasses. In areas which remain more damp in habit, *Carex spp.* and *Juncus spp.* can be observed. Macrophyte species are limited, although watercress has been observed, and erosion is limited to areas where shrubs have shaded aspects of the stream.

Within the gorge section of the creek, the grey scrub becomes more prominent before reaching the valley floor. Due to the broad character of the valley floor, the margins have been modified to accommodate pasture for grazing purposes and vegetation is therefore largely modified. This becomes more evident beyond the Dunstan Mountains where irrigated pasture becomes more prominent.

No fish have been found throughout the catchment and this is expected to be due to the creek terminating at the base of the valley.

The Shepherds Creek valley is largely inaccessible to the public, although it can be observed from Thomson Gorge Road near the headwaters of the catchment. The upper reaches of the catchment have a high sense of remoteness and isolation although the presence of human modification in the form of pastoral grazing remains evident. The lower reaches become more modified and less accessible, contained within Ardgour Station.

While the natural character varies across the catchment, Shepherds Creek and its tributaries have a **moderate** level of natural character overall.

7.2.2 Natural character of Rise and Shine Creek

Rise and Shine Creek is located immediately south of Shepherds Creek and is a tributary of Clearwater and Bendigo Creek (beyond the Site boundary). The RAS creek is characterised by

²⁵ Water is deep, has fast flowing water, and a uniform flow.

²⁶ Bendigo Ophir Aquatic Assessment of Effects, Water Ways Consulting, 2024.

four main components being the steep tributaries to the true left of the creek towards Mount Moka, the upper valley floor, the lower valley floor, and gorge²⁷.

The headwaters to the true left of the creek are fed by several springs which provide a permanent flow throughout the year. These creeks are steep and narrow in habit and become gentler in gradient towards the valley floor. The active bed of these streams comprises fine mud, sand and gravels within the upper reaches, transitioning to boulders within the gorge.

The valley floor has a broader character in comparison to the adjacent Shepherds Creek. This is largely due to the accumulation of sedimentation resulting from historic gold workings within the valley during the Otago gold rush of the 1860s up until the 1940s. This has created a broader active bed of the creek, with several wetland areas and pools present. The active bed largely comprises mud, gravels, and sand, and downstream, a dam and pond are present which is accessed by stock.

At the base of the valley (and edge of the Site boundary) is a gorge which is characterised by boulders, pools, and riffles, not present within the upper catchment.

Vegetation is not dissimilar to the Shepherds Creek catchment, although the presence of stock is more evident. The upper reaches to the true left of the creek are characterised by grey scrub, including matagouri, and coprosma, transitioning into predominantly modified tussock grassland in the lower reaches. Clusters of matagouri, coprosma, rosehip briar, and wetland species such as *Juncus spp*, and *Carex spp* are still present however in shaded areas, and areas of the creek difficult to access by stock.

Vegetation within the gorge to the north-west of the Rise and Shine Creek valley (upstream of the confluence with Clearwater Creek) becomes dense and difficult to access. Vegetation present includes dense matagouri and grey scrub. Shading from these large species has resulted in an absence of riparian vegetation.

The Rise and Shine Creek is accessible from Thomsons Gorge Road and is a prominent feature when travelling between Bendigo and the Thomson Gorge Saddle. The road is a popular four-wheel-drive route and resembles a traditional travel route for mana whenua between Central Otago and settlements on the east coast. Although human modification and stock grazing is evident, the valley still retains a sense of remoteness and isolation.

The Rise and Shine Creek and its tributaries have a **low-moderate** level of natural character overall, with areas of higher natural character encountered in the upper reaches.

7.3 Natural character effects

The proposed mine will result in a range of natural character effects on Shepherds Creek, Rise and Shine Creek, and their tributaries. These effects have been assessed at each stage of the project (i.e., start up, operation, closure) as effects on these catchments will change throughout the project. Startup of the proposal will largely affect the Shepherds Creek catchment. Modification to the creek will begin in the lower reaches of the catchment with the establishment of the process plant. The margins of the creek will be excavated and levelled to accommodate the footprint of the process plant. During mining activity, the active bed and margins of the stream will be channelised from the headwaters of the Shepherds Creek valley to south-east of the Administration buildings. Upstream, adjacent to the top of the ELF a sediment pond and seepage collection sump will be established to capture and hold runoff from the ELF, to settle sediment, before this is released downstream.

Parts of the upper reaches of the catchment will experience the most modification resulting from the TSF. The TSF progressively stores tailings from the process plant in the valley over the life of the mine. The TSF will be secured by an approximately 100-metre high, engineered dam wall

²⁷ Bendigo Ophir Aquatic Assessment of Effects, Water Ways Consulting, 2024.

that will span approximately 440 metres across the valley. The progressive construction of the Shepherds ELF will equally modify the natural flow of Shepherds Creek, namely near its confluence with the Jean Creek to the gorge.

Given the modification to the active bed within the upper extent of the catchment, a fresh water diversion channel will be constructed into the hill side to the north of the proposed TSF and adjacent Shepherds ELF. The channel will commence below Ardgour Conservation Area and extend along the true right of Shepherds Creek, north of the Rise and Shine pit. Similar diversion channels will be constructed on the south side of the TSF and within the Jean Creek catchment to divert freshwater around the Shepherds ELF. This will be diverted across the TSF Dam via a culvert. The channels will divert unaffected runoff from the catchments around the TSF and Shepherds ELF into Shepherds Creek.

During the excavation of the Rise and Shine pit, the ephemeral stream within Ferret Gully will be mined. The Rise and Shine pit will form a pit lake up to an RL of 470 masl comprising groundwater, while runoff will be diverted by safety bunds.

Compared to Shepherds Creek, modification to the lower reaches of Rise and Shine Creek will be more localised, where proposed mining elements intersect with this existing watercourse along the floor of Rise and Shine Valley. Excavation of the Rise and Shine pit will be mined in shells, and intersect the Rise and Shine Creek gorge in later years of mining activity. Consequently, a diversion channel will be constructed across one of the benches level with the creek bed to continue flow into Clearwater beyond the Site.

As the Rise and Shine pit continues to be mined, the active bed and margins to the north-west of the Rise and Shine Creek will be consumed within the pit area. In later years of the mining activity, SRX and SRE pits will be mined, and the SRX ELF formed, further modifying part of the natural course of the Rise and Shine headwaters on the northern slopes of Mount Moka. The subsequent pit and SRX ELF will obstruct the original course of the active bed. Three diversion channels are proposed on the northern slopes of Mount Moka around the SRX and SRE East Pits and SRX ELF. On completion, the eastern, and part of the central diversion channel will remain, while the western and part of the central diversion channel will be opened into the pit. The SRX pit will also form a pit lake with an average RL of 755 masl.

During mining activity groundwater collected within the Rise and Shine, Come in Time, and SRX pits, and the Underground Mine will be pumped to the TSF. This will occur for the duration of mining until closure.

On completion of mining, the constructed diversion channels will remain in perpetuity and continue to divert freshwater from the upper reaches of the Shepherds Creek catchment. This will remain permanently modified, albeit naturalised by vegetation proposed within the margins and broader context of the TSF and ELF. At closure, three wetlands are proposed within the Shepherds Creek catchment. The first, a 6ha wetland to the north-west of the TSF comprising 2ha of permanently wet vegetation (at least 500mm) and 4ha of ephemeral wetland. Two 0.5ha wetland are proposed within the lower Shepherds Creek catchment, one adjacent to the Plant Site which will be removed at closure, and the second to the north of the Site Workers Camp within an existing incised gully. The existing take within the lower Shepherds Creek valley will be relinquished to enable a wetland formation to the north of the Site Workers Camp which currently remains dry for the majority of the year.

If required, a water treatment facility will be constructed within the process plant footprint and will treat seepage from the TSF and ELF during decommissioning and closure. This will be replaced by a passive water treatment system if required beyond the closure of the mine.

7.3.1 Summary of Natural Character Effects

7.3.1.1 Shepherds Creek and tributaries

Shepherds Creek and its tributaries will experience the greatest natural character effects in comparison to the Rise and Shine Creek catchment. The upper reaches of the catchment will become highly modified by the presence of the Shepherds ELF, TSF, and freshwater diversion channels, consequently modifying the natural hydrological processes of the catchment. The lower reaches will be modified by the proposed sediment pond and seepage collection sump at the toe of the Shepherds ELF, permanent freshwater diversion, and process plant in the lower reaches. Mitigation is included as part of the proposal to reduce the severity of some of these effects. This includes the capping and rehabilitation of the TSF, and formation of three constructed wetlands within the footprint of the process plant, although the creek itself will remain channelised in perpetuity.

As outlined above Shepherds Creek and its tributaries have a moderate level of natural character. Overall, effects on the natural character of Shepherds Creek and its tributaries are considered **moderate-high adverse**, during startup and mining activity. On closure, this will reduce to **moderate adverse** effects as the tailing storage facility is rehabilitated, the process plant infrastructure is removed, and the constructed wetlands are established.

7.3.1.2 Rise and Shine Creek and Tributaries

Rise and Shine Creek and its tributaries will largely remain intact until the latter in the operational stage of the mining activity. Effects will be primarily associated with the excavation of the Rise and Shine pit within the creek bed, and construction of several diversion channels to maintain the upstream flows to Clearwater Creek, and to divert water around the SRX pit, SRE pit, and SRX ELF.

Rise and Shine Creek and its tributaries have an existing **low-moderate** level of natural character. Overall effects on the Rise and Shine Creek and its tributaries are considered **neutral** during startup, increasing to **moderate adverse** at the height of mining activity as diversions separate water from active mining activity. Effects will likely reduce to **low moderate adverse** on completion as diversions are removed. While much of the upper reaches of the valley floor (active bed and margins) will remain intact throughout the project, artificial features such as the SRX pit lakes, and diversion structures will modify the natural path of the upper reaches of the Rise and Shine catchment.

Based on the description above, a summary of natural character effects on identified waterbodies is set out below:

Table 1: Summary of Natural Character Effects							
	Existing Natural Character	Stage	Description of Change	Summary of Effect	Significance of effect ²⁸	Nature of Effect ²⁹	Natural Character Rating
Shepherds Creek and tributaries	Moderate	Startup	Construction of process plant including channelisation within area of disturbance. Construction of sediment pond,	Geomorphology of the existing stream will become highly modified. Existing hydrological and fluvial processes will be almost completely impeded.	MH	Adverse	Low

²⁸ Very Low: VL, Low: L, Low-Moderate: LM, Moderate: M, Moderate-High: MH, High: H, Very High: VH.

²⁹ Adverse, Neutral, Beneficial.

Table 1: Summary of Natural Character Effects

	Existing Natural Character	Stage	Description of Change	Summary of Effect	Significance of effect ²⁸	Nature of Effect ²⁹	Natural Character Rating
			and seepage collection sump. Construction of TSF and diversion channel. Begin construction of ELF within Jean Creek and Shepherds Creek. Begin excavation of RAS pit including Ferret Gully. Vegetation removal, including matagouri and grey scrub. Stockpiling of topsoil. Construction of diversion channels within the Shepherds Creek catchment.	Flow changes and levels will be impacted by human induced modification causing irregular flows and levels. Native vegetation within the margins will be depleted.			
		Mining activity	TSF fills to 687masl in the upper reaches of the catchment. ELF and freshwater and dirty water diversion channels are completed. RAS pit is completed. Underground mine established. Groundwater from the Rise and Shine and Come in Time pits, and Underground mine to be pumped to the TSF.	Geomorphology of the stream will remain highly modified and artificially formed. Hydrological and formative processes will remain almost entirely impeded in modified channels. Flow and levels will remain irregular and highly modified. Vegetation within the margins to the true right will begin to re-establish.	MH	Adverse	Low
		Closure	TSF at capacity 687 masl and capped and rehabilitated. Process plant, silt pond, and seepage	Geomorphology of the stream will remain highly modified and artificially formed. Hydrological and formative processes will	M	Adverse	Low

Table 1: Summary of Natural Character Effects							
	Existing Natural Character	Stage	Description of Change	Summary of Effect	Significance of effect ²⁸	Nature of Effect ²⁹	Natural Character Rating
			collection sump removed. Construction and operation of water treatment facility, and constructed wetlands. RAS pit lake formed.	remain naturalised in modified channels including accommodation of low flows. Flow and levels will remain irregular and highly modified, including where these interact with a Water Treatment Plant. Vegetation within the margins and constructed wetlands to the true right will begin to re-establish.			
Rise and Shine Creek and tributaries	Low - moderate	Startup	No activity proposed within catchment during implementation.	-		Neutral	Low Moderate
		Mining activity	SRX and SRE excavated including gradual creation of SRX ELF. SRE backfilled. Rise and Shine pit mined. Construction of diversion channel within the gorge, and upper slopes of Mount Moka.	Geomorphology of the tributaries above SRX becomes highly modified and engineered. Active bed within the base of the valley remains largely intact, with the exception of the short section in proximity of RAS pit. Hydrological and fluvial processes are modified within the upper reaches although the main active bed remains relatively untouched. Modifications to flows and levels within the upper reaches will result in modifications to the flows within the active bed below. Native vegetation within the margins of the upper tributaries will be entirely depleted in proximity of the SRX pit and diversion channels.	M	Adverse	Low
		Closure	SRX pit lake formed. Diversion channels partially decommissioned	Parts of the active bed of the upper Rise and Shine Creek will remain permanently modified with freshwater from	LM	Adverse	Low

Table 1: Summary of Natural Character Effects							
	Existing Natural Character	Stage	Description of Change	Summary of Effect	Significance of effect ²⁸	Nature of Effect ²⁹	Natural Character Rating
			on upper slopes of Mount Moka. SRX ELF and RAS diversion channel to remain.	seepages released back into SRX pit. Hydrological and fluvial processes permanently altered including additional engineered structures and diversion channels and pit lake. Water quality expected to undergo passive treatment to remain within accepted limits. Margins beginning to regenerate with native vegetation from being retired from grazing. Habitat quality within the active bed remains largely depleted. Human modification and influence of historic and ongoing mining will endure.			

8.0 Summary and Conclusion

The proposed Bendigo Ophir Gold Mine will result in substantial modification to the Rise and Shine Creek, Shepherds Creek within the Dunstan Mountains ONL. The proposal will include the construction of a site workers camp, haul roads, and plant infrastructure; three open pits, of which two will remain open on closure; and permanent features such as three ELF, diversion channels, and a single TSF. Progressive rehabilitation including the Pest Exclusion Areas, will also occur in conjunction with mining activity.

During the proposed mining activity, the proposal will affect the coherent backdrop of the Dunstan Mountains ONL within a legible transition between identified northern and southern landscape character areas alongside modification to the formative processes and underlying landform within the Site. In summary, landscape effects at the broad scale in the context of the Dunstan Mountains ONL remain relatively localised in the context of the broader sequence of legible mountains with no more than **moderate adverse** landscape effects. Where evident, the more substantial impacts of mining will remain relatively well contained and will not significantly detract from overall values associated with the Dunstan Mountains ONL.

At a Site scale, the RAS pit will give rise to **high adverse** effects throughout the life of the project with similar albeit relatively more visually contained permanent **moderate-high adverse** effects resulting from the SRX Mine. The location of these mines is such that the extent of disruption will remain relatively localised below the skyline and reduces the potential for broader scale landscape effects. In addition to permanent effects, the Shepherds ELF, CIT pit and TSF will give rise to temporary **high adverse** landscape effects during the startup and mining operations which subsequently reduce following rehabilitation as representative land cover is reinstated in these areas. The remaining project elements will cause additional adverse effects throughout the duration of operational phases of the project which will similarly be gradually reduced.

Visual effects are primarily associated with the Rise and Shine and CIT pits, WELF, Shepherds ELF, soil stockpiles and haul roads, with views most apparent from elevated areas to the west of the Upper Clutha valley and mid to long distance views from Lindis Crossing, The Bend and Bendigo Terrace, and the rural landscape surrounding Tarras. Visual effects from public viewpoints including local roads, State Highways and conservation areas are largely considered no greater than **moderate adverse** including views from Thomson Gorge Road in close proximity of the road to the Site Workers Camp, Geology Workshop, and Administration buildings and mining elements as these become visible. Views from private viewpoints and dwellings are identified between **moderate high adverse** during mining activity, reducing to **low-moderate adverse** at closure.

Natural character effects will include effects on Shepherds Creek and Rise and Shine Creek and their tributaries. Effects of the proposal will be largely contained to the Shepherds Creek catchment with the construction of the TSF, ELF, diversion channels, and plant infrastructure, while the Rise and Shine Creek will include the Srex Pit and engineered landform, and southern extent of the Rise and Shine Pit. Natural character effects on the Shepherds Creek catchment are considered **moderate high adverse** during the proposed mining activity reducing the overall level of natural character of the creek from **moderate** to **low**. Natural character effects of the Rise and Shine Creek are considered **moderate adverse** during mining activity, reducing the overall level of natural character of the creek from **low moderate** to **low**.

Once established, mining activity will remain embedded within a broader mosaic of rehabilitated native vegetation and habitats alongside maintaining enduring recreation access west of Thomson Saddle. Despite the scale of the project, the potential for long-term significant adverse landscape and visual effects will remain relatively localised and support broader ecological enhancement that assists with assimilating mining activity within the landscape's broader conservation framework and recognised ONL values.

Appendix 1: Method Statement

This assessment method statement is consistent with the methodology (high-level system of concepts, principles, and approaches) of 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022. The assessment provides separate chapters to discuss landscape, visual and natural character effects where relevant, but is referred to throughout as a Landscape Effects Assessment in accordance with these Guidelines. Specifically, the assessment of effects has examined the following:

- The existing landscape;
- The nature of effect;
- The level of effect; and
- The significance of effect.

The Existing Landscape

The first step of assessment entails examining the existing landscape in which potential effects may occur. This aspect of the assessment describes and interprets the specific landscape character and values which may be impacted by the proposal alongside its natural character where relevant as set out further below. The existing landscape is assessed at a scale(s) commensurate with the potential nature of effects. It includes an understanding of the visual catchment and viewing audience relating to the proposal including key representative public views. This aspect of the assessment entails both desk-top review (including drawing upon area-based landscape assessments where available) and field work/site surveys to examine and describe the specific factors and interplay of relevant attributes or dimensions, as follows:

Physical – relevant natural and human features and processes;

Perceptual – direct human sensory experience and its broader interpretation; and

Associative – intangible meanings and associations that influence how places are perceived.

Engagement with tāngata whenua

As part of the analysis of the existing landscape, the assessment seeks to identify relevant mana whenua values (where possible) and describe the nature and extent of engagement, together with any relevant sources informing an understanding of the existing landscape from a Te Ao Māori perspective.

Statutory and Non-Statutory Provisions

The relevant provisions facilitating change also influence the consequent nature and level of effects. Relevant provisions encompass objectives and policies drawn from a broader analysis of the statutory context and which may anticipate change and certain outcomes for identified landscape values.

The Nature of Effect

The nature of effect assesses the outcome of the proposal within the landscape. The nature of effect is considered in terms of whether effects are positive (beneficial) or negative (adverse) in the context within which they occur. Neutral effects may also occur where landscape or visual change is benign.

It should be emphasised that a change in a landscape (or view of a landscape) does not, of itself, necessarily constitute an adverse landscape effect. Landscapes are dynamic and are constantly changing in both subtle and more dramatic transformational ways; these changes are both natural and human induced. What is important when assessing and managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate adverse

effects. The aim is to maintain or enhance the environment through appropriate design outcomes, recognising that both the nature and level of effects may change over time.

The Level of Effect

Where the nature of effect is assessed as ‘**adverse**’, the assessment quantifies the level (degree or magnitude) of adverse effect. The level of effect has not been quantified where the nature of effect is neutral or beneficial. Assessing the level of effect entails professional judgement based on expertise and experience provided with explanations and reasons. The identified level of adverse natural character, landscape and visual effects adopts a universal seven-point scale from **very low** to **very high** consistent with Te Tangi a te Manu Guidelines and reproduced below.

VERY LOW	LOW	LOW-MOD	MODERATE	MOD-HIGH	HIGH	VERY HIGH
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Landscape Effects

A landscape effect relates to the change on a landscape’s character and its inherent values and in the context of what change can be anticipated in that landscape in relation to relevant zoning and policy. The level of effect is influenced by the size or spatial scale, geographical extent, duration and reversibility of landscape change on the characteristics and values within the specific context in which they occur.

Visual Effects

Visual effects are a subset of landscape effects. They are consequence of changes to landscape values as experienced in views. To assess where visual effects of the proposal may occur requires an identification of the area from where the proposal may be visible from, and the specific viewing audience(s) affected. Visual effects are assessed with respect to landscape character and values. This can be influenced by several factors such as distance, orientation of the view, duration, extent of view occupied, screening and backdrop, as well as the potential change that could be anticipated in the view as a result of zone / policy provisions of relevant statutory plans.

Natural Character Effects

Natural Character, under the RMA, specifically relates to ‘*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*’. Therefore, the assessment of natural character effects only involves examining the proposed changes to natural elements, patterns and process which may occur in relevant landscape / seascape contexts.

As with assessing landscape effects, the first step when assessing natural character effects involves identifying the relevant physical and experiential characteristics and qualities which occur and may be affected by a proposal at a commensurate scale. This can be supported through the input of technical disciplines such as geomorphology, hydrology, marine, freshwater, and terrestrial ecology as well as input from tāngata whenua. An understanding of natural character considers the level of naturalness and essentially reflects the current condition of the environment assessed in relation to the seven-point scale. A higher level of natural character means the waterbody and/or margin is less modified and vice versa.

A natural character effect is a change to the current condition of parts of the environment where natural character occurs. Change can be negative or positive. The resultant natural character effect is influenced by the existing level of naturalness within which change is proposed; a greater level of effect will generally occur when the proposal reduces the naturalness of a less modified environment. In short, the process of assessing natural character effects can be summarised as follows:

Identify the characteristics and qualities which contribute to natural character within a relevant context and defined spatial scale(s), including the existing level of naturalness;
Describe the changes to identified characteristics and qualities and the consequent level of natural character anticipated (post proposal); and
Determine the overall level of effect based on the consequence of change.



The Significance of Effects

Decision makers assessing resource consent applications must evaluate if the effect on individuals or the environment is less than minor³⁰ or if an adverse effect on the environment is no more than minor³¹. For non-complying activities, consent can only be granted if the s104D 'gateway test' is satisfied, ensuring adverse effects are minor or align with planning objectives. In these situations, the assessment may be required to translate the level of effect in terms of RMA terminology.

This assessment has adopted the following scale applied to relevant RMA circumstances³² (refer to diagram below), acknowledging low and very low adverse effects generally equate to 'less than minor' and high / very high effects generally equate to significant³³.



³⁰ RMA, Section 95E

³¹ RMA, Section 95E

³² Seven-point level of effect scale. Source: Te tangi a te Manu, Pg. 15

³³ The term 'significant adverse effects' applies to specific RMA situations, including the consideration of alternatives for Notices of Requirement and AEEs, as well as assessing natural character effects under the NZ Coastal Policy Statement.

Appendix 2: Statutory Context

The following statutory planning documents have been reviewed as part of this assessment:

- The National Policy Statement for Freshwater Management 2020 (“NPSFM”);
- The Otago Regional Policy Statement 2019 (“RPS”);
- The Proposed Otago Regional Policy Statement 2021 (“Proposed RPS”);
- The Regional Plan: Water for Otago (“Otago Water Plan”); and
- The Central Otago District Plan (“District Plan”).

NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT

The key relevant objectives and policies from the NPSFM are:

Policy 6: There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.

Policy 7: The loss of river extent and values is avoided to the extent practicable.

Policy 8: The significant values of outstanding water bodies are protected.

OTAGO REGIONAL POLICY STATEMENT 2019

The key relevant objectives and policies are set out in Part B of the RPS and are set out below:

Objective 3.1 – The values (including intrinsic values) of ecosystems and natural resources are recognised and maintained, or enhanced where degraded.

Policy 3.1.1 Fresh water

Safeguard the life-supporting capacity of fresh water and manage fresh water to:

- (a) *Maintain good quality water and enhance water quality where it is degraded, including for:*
 - i. *Important recreation values, including contact recreation; and,*
 - ii. *Existing drinking and stock water supplies;*
- (b) *Maintain or enhance aquatic:*
 - i. *Ecosystem health;*
 - ii. *indigenous habitats; and,*
 - iii. *Indigenous species and their migratory patterns.*
- (c) *Avoid aquifer compaction and seawater intrusion;*
- (d) *Maintain or enhance, as far as practicable:*
 - i. *Natural functioning of rivers, lakes, and wetlands, their riparian margins, and aquifers;*
 - ii. *Coastal values supported by fresh water;*
 - iii. *The habitat of trout and salmon unless detrimental to indigenous biological diversity; and*
 - iv. *Amenity and landscape values of rivers, lakes, and wetlands;*
- (e) *Control the adverse effects of pest species, prevent their introduction and reduce their spread;*
- (f) *Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion; and,*
- (g) *Avoid, remedy or mitigate adverse effects on existing infrastructure that is reliant on fresh water.*

Policy 3.1.2 Beds of rivers, lakes, wetlands, and their margins

Manage the beds of rivers, lakes, wetlands, their margins, and riparian vegetation to:

- (a) *Safeguard the life supporting capacity of fresh water;*
- (b) *Maintain good quality water, or enhance it where it has been degraded;*
- (c) *Maintain or enhance bank stability;*
- (d) *Maintain or enhance ecosystem health and indigenous biological diversity;*
- (e) *Maintain or enhance, as far as practicable:*
 - i. *Their natural functioning and character; and*

- ii. Amenity values;
- (f) Control the adverse effects of pest species, prevent their introduction and reduce their spread; and,
- (g) Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion.

Policy 3.1.11 Natural features, landscapes, and seascapes

Recognise the values of natural features, landscapes and seascapes are derived from the biophysical, sensory and associative attributes in Schedule 3.

Policy 3.1.13 Environmental Enhancement

Encourage, facilitate and support activities that contribute to the resilience and enhancement of the natural environment, by where applicable:

- (a) Improving water quality and quantity;
- (b) Protecting or restoring habitat for indigenous species;
- (c) Regenerating indigenous species;
- (d) Mitigating natural hazards;
- (e) Protecting or restoring wetlands;
- (f) Improving the health and resilience of:
 - i. Ecosystems supporting indigenous biological diversity;
 - ii. Important ecosystem services, including pollination;
- (g) Improving access to rivers, lakes, wetlands and their margins, and the coast;
- (h) Buffering or linking ecosystems, habitats and areas of significance that contribute to ecological corridors;
- (i) Controlling pest species.

Objective 3.2 – Otago’s significant and highly-valued natural resources are identified and protected, or enhanced where degraded.

Policy 3.2.3 Identifying outstanding natural features, landscapes and seascapes

Identify areas and values of outstanding natural features, landscapes and seascapes, using the attributes in Schedule 3.

Policy 3.2.4 Managing outstanding natural features, landscapes and seascapes

Protect, enhance or restore outstanding natural features, landscapes and seascapes, by all of the following:

- a) *In the coastal environment, avoiding adverse effects on the values (even if those values are not themselves outstanding) that contribute to the natural feature, landscape or seascape being outstanding;*
- b) *Beyond the coastal environment, maintaining the values (even if those values are not themselves outstanding) that contribute to the natural feature, landscape or seascape being outstanding;*
- c) *Avoiding, remedying or mitigating other adverse effects;*
- d) *Encouraging enhancement of those areas and values that contribute to the significance of the natural feature, landscape or seascape.*

Policy 3.2.5 Identifying highly valued natural features, landscapes and seascapes

Identify natural features, landscapes and seascapes, which are highly valued for their contribution to the amenity or quality of the environment, but which are not outstanding, using the attributes in Schedule 3.

Policy 3.2.6 Managing highly valued natural features, landscapes and seascapes

Maintain or enhance highly valued natural features, landscapes and seascapes by all of the following:

- (a) *Avoiding significant adverse effects on those values that contribute to the high value of the natural feature, landscape or seascape;*
- (b) *Avoiding, remedying or mitigating other adverse effects;*
- (c) *Encouraging enhancement of those values that contribute to the high value of the natural feature, landscape or seascape.*

Policy 3.2.13 Identifying outstanding freshwater bodies

Identify freshwater bodies where one or more of the following significant values are outstanding:

- (a) *Naturalness;*
- (b) *Amenity or landscape values;*
- (c) *Kāi Tahu cultural values;*
- (d) *Recreational values;*
- (e) *Ecological values;*
- (f) *Hydrological values.*

Policy 3.2.14 Managing outstanding freshwater bodies

Protect outstanding freshwater bodies by all of the following:

- (a) *Maintaining the values that contribute to the water body being outstanding;*
- (b) *Avoiding, remedying or mitigating other adverse effects on the water body;*
- (c) *Controlling the adverse effects of pest species, preventing their introduction and reducing their spread;*
- (d) *Encouraging enhancement of those values that contribute to the water body being outstanding.*

Policy 3.2.15 Identifying the significant values of wetlands

Identify the significant values of wetlands, having regard to all of the following:

- (a) *Degree of naturalness;*
- (b) *Amenity or landscape values;*
- (c) *Kāi Tahu cultural values;*
- (d) *Recreational values;*
- (e) *Ecological function and values;*
- (f) *Hydrological function and values;*
- (g) *Geomorphological features and values.*

Policy 3.2.16 Managing the values of wetlands

Protect the function and values of wetlands by all of the following:

- (a) *Maintaining the significant values of wetlands;*
- (b) *Avoiding, remedying or mitigating other adverse effects;*
- (c) *Controlling the adverse effects of pest species, preventing their introduction and reducing their spread;*
- (d) *Encouraging enhancement that contributes to the values of the wetland;*
- (e) *Encouraging the rehabilitation of degraded wetlands.*

Policy 5.3.5 Tourism and outdoor recreation

Recognise the social and economic value of some forms of outdoor recreation and tourism having access to, and being located within, outstanding natural features and landscapes.

Objective 5.4 – Adverse effects of using and enjoying Otago’s natural and physical resources are minimised

Policy 5.4.8 Adverse effects from mineral and petroleum exploration, extraction and processing

Manage adverse effects from the exploration, extraction and processing of minerals and petroleum, by:

- a) *Giving preference to avoiding their location in all of the following:*
 - i. *Areas of significant indigenous vegetation and significant habitats of indigenous fauna in the coastal environment;*
 - ii. *Outstanding natural character in the coastal environment;*
 - iii. *Outstanding natural features and natural landscapes, including seascapes, in the coastal environment;*
 - iv. *Areas of significant indigenous vegetation and significant habitats of indigenous fauna beyond the coastal environment;*
 - v. *Outstanding natural character in areas beyond the coastal environment;*
 - vi. *Outstanding natural features and landscapes beyond the coastal environment;*
 - vii. *Outstanding water bodies or wetlands;*
 - viii. *Places or areas containing historic heritage of regional or national significance;*
 - ix. *Areas subject to significant natural hazard risk;*
- b) *Where it is not practicable to avoid locating in the areas listed in a) above because of the functional needs of that activity:*
 - i. *Avoid adverse effects on the values that contribute to the significant or outstanding nature of a) i-iii;*
 - ii. *Avoid, remedy or mitigate, as necessary, adverse effects on values in order to maintain the outstanding or significant nature of a) iv-viii;*
 - iii. *Consider first biological diversity offsetting, and then biological diversity compensation, if adverse effects described in b) ii. on indigenous biological diversity cannot be practicably remedied or mitigated;*
 - iv. *Minimise any increase in natural hazard risk through mitigation measures;*
 - v. *Consider environmental compensation if adverse effects described in b) ii, other than on indigenous biological diversity, cannot practically be avoided, remedied or mitigated;*
- ba) *Avoid significant adverse effects on natural character in all other areas of the coastal environment;*
- c) *Avoiding adverse effects on the health and safety of the community;*
- e) *Avoiding, remedying, or mitigating adverse effects on other values including highly valued natural features, landscapes and seascapes in order to maintain their high values;*
- f) *Considering biological diversity offsetting or compensating for residual adverse effects on other values;*
- g) *Reducing unavoidable adverse effects by:*
 - i. *Staging development for longer term activities; and*
 - ii. *Progressively rehabilitating the site, where possible;*
- h) *Applying a precautionary approach (including adaptive management where appropriate) to assessing the effects of the activity, where there is scientific uncertainty, and potentially significant or irreversible adverse effects.*

PROPOSED OTAGO REGIONAL POLICY STATEMENT 2021

The key relevant objectives and policies are contained under the Land and Freshwater and the Natural Features and Landscapes chapters of the Proposed RPS. These are set out as follows³⁴.

³⁴ Note – these objectives and policies are from the proposed Otago Regional Policy Statement 2021, with the Hearing Panel Recommendations incorporated. These are subject to appeal, and may change as a result.

Land and Freshwater Chapter

Objective LF–FW–O8 – Fresh water

In Otago's water bodies and their catchments:

- 1) *the significant and outstanding values of Otago's outstanding water bodies are identified and protected.*

Objective LF–FW–O9 – Natural wetlands

Otago's wetlands are protected from inappropriate subdivision, use and development and, where degraded, restoration is promoted so that:

- 1) *mahika kai and other mana whenua values are sustained and enhanced now and for future generations,*
- 2) *there is no net decrease, and preferably an increase, in the extent and diversity of wetland indigenous ecosystem types and habitats, and*
- 3) *there is no reduction and, where degraded, there is an improvement in wetland ecosystem health, hydrological functioning, amenity values, extent or water quality, and*
- 4) *their flood attenuation and water storage capacity is maintained or improved.*

Objective LF–FW–O10 – Natural character

The natural character of wetlands, lakes and rivers and their margins is preserved and protected from inappropriate subdivision, use and development.

Policy LF–FW–P10A – Managing wetlands

Otago's wetlands are managed:

- 1) *in the coastal environment in accordance with the NZCPS in addition to (2) and (3) below,*
- 2) *by applying clause 3.22(1) to (3) of the NPSFM to all wetlands, and*
- 3) *to improve ecosystem health, hydrological functioning and extent of wetlands that have been degraded or lost by promoting:*
 - iii. *an increase in the extent and condition of habitat for indigenous species*
 - iv. *the restoration of hydrological processes*
 - v. *control of pest species and vegetation clearance, and*
 - vi. *the exclusion of stock, except where stock grazing is used to enhance wetland values.*

Policy LF–FW–P13 – Preserving natural character and instream values

Preserve the natural character and instream values of lakes and rivers and the natural character of their beds and margins by:

- 1) *avoiding the loss of values or extent of a river, unless:*
 - a) *there is a functional need for the activity in that location, and*
 - b) *the effects of the activity are managed by applying the effects management hierarchy (in relation to natural inland wetlands and rivers)*
- 2) *not granting resource consent for activities in (1) unless the consent authority is satisfied that:*
 - a) *the application demonstrates how each step of the effects management hierarchy (in relation to natural inland wetlands and rivers) will be applied to the loss of values or extent of the river, and*
 - b) *any consent is granted subject to conditions that apply the effects management hierarchy (in relation to natural inland wetlands and rivers) in respect of any loss of values or extent of the river*
 - c) *if aquatic offsetting or aquatic compensation is applied, the applicant has complied with principles 1 to 6 in Appendix 6 and 7 of the NPSFM, and has had regard to the remaining principles in Appendix 6 and 7 of the NPSFM, as appropriate, and*

- d) *if aquatic offsetting or aquatic compensation is applied, any consent granted is subject to conditions that will ensure that the offspring or compensation will be maintained and managed over time to achieve the conservation outcomes.*
- 3) *establishing environmental flow and level regimes and water quality standards that support the health and well-being of the water body,*
- 4) *to the extent practicable, sustaining the form and function of a water body that reflects its natural behaviours,*
- 5) *recognising and implementing the restrictions in Water Conservation Orders,*
- 6) *preventing the impounding or control of the level of Lake Wanaka,*
- 7) *preventing modification that would permanently reduce the braided character of a river,*
- 8) *controlling the use of water and land that would adversely affect the natural character of the water body, and*
- 9) *maintaining or enhancing the values of riparian margins to support habitat and biodiversity, reduce contaminant loss to water bodies and support natural flow behaviour.*

Policy LF–FW–P14 – Restoring natural character and instream values

Where the natural character or instream values of lakes and rivers or the natural character of their margins has been reduced or lost, promote actions that, where practicable:

- 1) *restore a form and function that reflect the natural behaviours of the water body,*
- 2) *improve water quality or quantity where it is degraded,*
- 3) *increase the presence, resilience and abundance of indigenous flora and fauna, including by providing for fish passage within river systems, and where necessary and appropriate, creating fish barriers to prevent incursions from undesirable species,*
- 4) *improve water body margins by naturalising bank contours and establishing indigenous vegetation and habitat, and*
- 5) *restore natural connectivity between and within water systems.*

Natural Features and Landscapes Chapter

Objective NFL–O1 – Outstanding natural features and landscapes

The areas and values of Otago’s outstanding natural features and landscapes are identified, and the use and development of Otago’s natural and physical resources results in the protection of them from inappropriate subdivision, use and development.

Policy NFL-P1 – Identification

Identify the areas and values of outstanding natural features and landscapes in accordance with Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

Policy NFL–P2 – Protection of outstanding natural features and landscapes

Protect outstanding natural features and landscapes from inappropriate subdivision, use and development by:

- 1) *avoiding exceeding the landscape capacity of the natural feature or landscape,*
- 2) *maintaining the values that contribute to the natural feature or landscape being considered outstanding, even if those values are not themselves outstanding,*
- 3) *avoiding, remedying or mitigating other adverse effects, and*
- 4) *managing the adverse effects of infrastructure on the values of outstanding natural features and landscapes in accordance with EIT-INF-P13.*

REGIONAL PLAN: WATER FOR OTAGO

The key relevant objectives and policies are contained within natural and human use values of lakes and rivers, water quantity and the beds and margins of lake and rivers chapters of the Regional Water Plan. These are set out below.

Chapter 5 – Natural and Human Use Values of Lakes and Rivers

Objective 5.3.1 – To maintain or enhance the natural and human use values, identified in Schedules 1A, 1B and 1C, that are supported by Otago’s lakes and rivers

Objective 5.3.3 - To protect the natural character of Otago’s lakes and rivers and their margins from inappropriate subdivision, use or development.

Objective 5.3.4 - To maintain or enhance the amenity values associated with Otago’s lakes and rivers and their margins.

Policy 5.4.2 - In the management of any activity involving surface water, groundwater or the bed or margin of any lake or river, to give priority to avoiding, in preference to remedying or mitigating:

- 1) *Adverse effects on:*
 - a) *Natural values identified in Schedule 1A;*
 - b) *Water supply values identified in Schedule 1B;*
 - c) *Registered historic places identified in Schedule 1C, or archaeological sites in, on, under or over the bed or margin of a lake or river;*
 - d) *Spiritual and cultural beliefs, values and uses of significance to Kai Tahu identified in Schedule 1D;*
 - e) *The natural character of any lake or river, or its margins;*
 - f) *Amenity values supported by any water body; and*
- 2) *Causing or exacerbating flooding, erosion, land instability, sedimentation or property damage.*

Policy 5.4.2A - The loss of river extent and values is avoided, unless the council is satisfied:

- (a) *That there is a functional need for the activity in that location; and*
- (b) *The effects of the activity are managed by applying the effects management hierarchy.*

Policy 5.4.8 - To have particular regard to the following features of lakes and rivers, and their margins, when considering adverse effects on their natural character:

- a) *The topography, including the setting and bed form of the lake or river;*
- b) *The natural flow characteristics of the river;*
- c) *The natural water level of the lake and its fluctuation;*
- d) *The natural water colour and clarity in the lake or river;*
- e) *The ecology of the lake or river and its margins; and*
- f) *The extent of use or development within the catchment, including the extent to which that use and development has influenced matters (a) to (e) above.*

Policy 5.4.9 - To have particular regard to the following qualities or characteristics of lakes and rivers, and their margins, when considering adverse effects on amenity values:

- a) *Aesthetic values associated with the lake or river; and*
- b) *Recreational opportunities provided by the lake or river, or its margins.*

Chapter 6 – Water Quantity

Objective 6.3.1 - To retain flows in rivers sufficient to maintain their life-supporting capacity for aquatic ecosystems, and their natural character.

Chapter 8 – The Beds and Margins of Lakes and Rivers

Policy 8.6.1 - In managing the disturbance of the bed or margin of any lake or river, to have regard to any adverse effect on:

- a) *The spawning requirements of indigenous fauna, and trout or salmon;*
- b) *Bed and bank stability;*
- c) *Water quality;*
- d) *Amenity values caused by any reduction in water clarity; and*
- e) *Downstream users.*

Policy 8.7.1 - To promote the creation, retention and enhancement of appropriate riparian vegetation where it will:

- a) *Maintain or enhance water quality, through the interception of non-point source contamination from adjacent land;*
- b) *Enhance the aquatic ecosystems within a water body, and the habitat for flora and fauna on the margins;*
- c) *Maintain or enhance the natural character of lakes and rivers and their margins;*
- d) *Maintain or enhance amenity values;*
- e) *Avoid, remedy or mitigate the adverse effects arising from flooding or erosion;*
- f) *Be unlikely to have a significant adverse effect on desirable species already present, or adjacent to, and downstream from, that riparian vegetation;*
- g) *Be unlikely to restrict existing public access along the beds and margins of Otago's lakes and rivers;*
- h) *Be unlikely to have a significant adverse effect on the heritage value of any site, building, place or area;*
- i) *Be unlikely to impose any significant operational constraints on existing network utilities; or*
- j) *Enhance mahika kai values.*

CENTRAL OTAGO DISTRICT PLAN

The BOGP area is located within the Rural Resource Area under the District Plan and within the Dunstan Mountains which are identified as an outstanding natural landscape. The key relevant objectives and policies of the District Plan are located within the Rural Resource Area chapter and the infrastructure, energy and utilities chapter. These are set out below.

Section 4 – Rural Resource Area

4.3.2 Objective – Outstanding Natural Landscapes and Outstanding Natural Features, and Land in the Upper Manorburn / Lake Onslow Landscape Management Area

To protect the District's outstanding natural landscapes and outstanding natural features, and land in the Upper Manorburn/Lake Onslow Landscape Management Area (including landforms) from the adverse effects of inappropriate subdivision, use and development.

4.3.3 Objective - Landscape and Amenity Values

To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment, and to maintain the open natural character of the hills and ranges.

4.3.6 Objective - Margins of Water bodies

To preserve the natural character of the District's water bodies and their margins.

4.4.1 Policy - Outstanding Natural Landscapes and Outstanding Natural Features and Land in the Upper Manorburn/Lake Onslow Landscape Management Area

To recognise the District's outstanding natural landscapes and outstanding natural features and land in the Upper Manorburn/Lake Onslow Landscape Management Area which:

- a) Are unique to the district, region or New Zealand; or*
- b) Are representative of a particular landform or land cover occurring in the Central Otago District or of the collective characteristics and features which give the District its particular character; or*
- c) Represent areas of cultural or historic significance in the district, region or New Zealand; or*
- d) Contain visually or scientifically outstanding geological features; or*
- e) Have characteristics of cultural, historical and spiritual value that are significant to Kai Tahu ki Otago;*
- f) Have high natural character values and high landscape quality that can be distinguished from the general landscapes of the Central Otago District and provide protection for them from inappropriate subdivision, use and development.*

4.4.2 Policy – Landscape and Amenity Values

To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through:

- a) The design and location of structures and works, particularly in respect of the open natural character of hills and ranges, skylines, prominent places and natural features,*
- b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties,*
- c) The ability to adequately dispose of effluent on site,*
- d) Controlling the generation of noise in back country areas,*
- e) The location of tree planting, particularly in respect of landscape values, natural features and ecological values,*
- f) Controlling the spread of wilding trees.*
- g) Encouraging the location and design of buildings to maintain the open natural character of hills and ranges without compromising the landscape and amenity values of prominent hillsides and terraces.*
- h) Strongly discouraging buildings in the Rural Resource Area of the Wooing Tree Overlay Area to ensure a vineyard or treed park-like character with an absence of built form.*

4.4.4 Policy - Riparian Margins

To manage the effects of the use, development or protection of land within riparian margins of water bodies (including wetlands) to ensure that the natural character and amenity of water bodies and their margins are preserved, by, as far as practicable:

- a) Maintaining bank stability,*
- b) Protecting, and where appropriate, enhancing riparian and instream habitat quality,*
- c) Maintaining and enhancing riparian vegetation,*
- d) Maintaining water quality,*
- e) Maintaining and enhancing public access to and along the lakes and rivers,*
- f) Reducing the incidence and severity of flooding where this is achievable, and*

- g) *Maintaining and enhancing the safety and efficiency of navigation on the adjacent water body where this is relevant while recognising that some activities need to locate within riparian margins to operate efficiently.*

4.4.8 Policy - Adverse Effects on the Amenity Values of Neighbouring Properties

To ensure that the effects associated with some activities including (but not limited to):

- a) *Noise (including noise associated with traffic generation, night time operations), and vibration,*
- b) *The generation of a high level of traffic, in particular heavy vehicles,*
- c) *Glare, particularly from building finish,*
- d) *A reduction in visual amenity due to excessive signage and the storage of goods or waste products on the site,*
- e) *The generation of odour, dusts, wastes and hazardous substances, and*
- f) *The use and/or storage of hazardous goods or substances*
- a) *do not significantly adversely affect the amenity values and privacy of neighbouring properties or the safe and efficient operation of the roading network.*

4.4.10 Policy – Rural Subdivision and Development

To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies or mitigates adverse effects on:

- a) *The open space, landscape and natural character amenity values of the rural environment in particular the hills and ranges,*
- b) *The natural character and values of the District's wetlands, lakes, rivers and their margins,*
- c) *The production and amenity values of neighbouring properties,*
- d) *The safety and efficiency of the roading network,*
- e) *The loss of soils with special qualities,*
- f) *The ecological values of significant indigenous vegetation and significant habitats of indigenous fauna,*
- g) *The heritage and cultural values of the District,*
- h) *The water quality of the District's surface and groundwater resources, and*
- i) *Public access to or along the rivers and lakes of the District, particularly through the use of minimum (and average) allotment sizes.*

4.4.14 Policy - Back Country Amenity Values

To ensure that activities avoid, remedy or mitigate adverse effects on the open space, landscape, historic, natural character, natural quiet and amenity values of the quality and range of recreational opportunities available in, the District's back country and/or remote areas.

Section 13 – Infrastructure, Energy and Utilities

13.3.1 Objective - Transportation Network

To enable the safe and efficient operation and development of the transportation network while ensuring that amenity values and environmental quality is maintained or enhanced.

13.3.2 Objective - Utilities

To enable the efficient operation and development of utilities including the transmission network while ensuring that effects on amenity, heritage, landscape values and public safety are avoided, remedied or mitigated.

13.3.4 Objective – Outstanding Natural Landscapes and Outstanding Natural Features, and Land in the Upper Manorburn/Lake Onslow Landscape Management Plan

To protect the District's outstanding natural landscapes and outstanding natural features, and land in the Upper Manorburn/Lake Onslow Landscape Management Area (including landforms) from the adverse effects of inappropriate subdivision, use and development.

13.3.5 Objective – Landscape and Amenity Values

To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment.

13.4.3 Policy – Public Works and Network Utilities

To enable the development and operation of public works and network utilities including the transmission network that are sited or designed in such a way that amenity, heritage and landscape values are not significantly adversely affected.

13.4.4 Policy - Development of Utilities

To ensure that the design, location and operation of utilities including the transmission network, having regard to specific locational and operational efficiency requirements, recognises and provides for the following matters, where relevant:

- a) The avoidance, remedying or mitigation of the adverse effects of noise, vibration, lightspill and glare on the environment.*
- b) The avoidance, remedying or mitigation of adverse effects on landscape values.*
- c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna and statutorily managed sports fish and game, water bodies and their margins.*
- d) The avoidance, remedying or mitigation of any significant increase in risk to the safety of the public.*
- e) The maintenance of the efficient operation of other utilities and infrastructure.*
- f) The protection of the integrity of significant heritage values.*
- g) The protection of the integrity of sites of importance to Kai Tahu ki Otago.*

13.4.5 Policy - Utility Corridors and Co-siting

To reduce the impact that utilities including the transmission network have on the landscape values of the District by promoting and encouraging the co-siting of utilities and the location of utilities in "corridors" where this is possible and practicable having regard to the operational and commercial efficiencies of the utility concerned.

13.4.10 Policy – Outstanding Natural Landscapes and Outstanding Natural Features and Land in the Upper Manorburn/Lake Onslow Landscape Management Area

To recognise the District's outstanding natural landscapes and outstanding natural features and land in the Upper Manorburn/Lake Onslow Landscape Management Area which:

- a) Are unique to the district, region or New Zealand; or*
- b) Are representative of a particular landform or land cover occurring in the Central Otago District or of the collective characteristics and features which give the District it's particular character; or*
- c) Represent areas of cultural or historic significance in the district, region or New Zealand; or*
- d) Contain visually or scientifically outstanding geological features; or*
- e) Have characteristics of cultural, historical and spiritual value that are significant to Kai Tahu ki Otago;*
- f) Have high natural character values and high landscape quality that can be distinguished from the general landscapes of the Central Otago District and provide protection for them from inappropriate subdivision, use and development.*

Appendix 3: Landscape Effects of Ardgour Rise

Appendix 4: Summary Table of the Nature and Level of Visual Effects

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
Individual properties within 5 kilometres										
1	218 Thomson Gorge Road	2km	Startup	Site Workers Camp, Site Workers Camp topsoil stockpile, Geology Compound, Administration Buildings, RAS pit, WELF	Partial	Rear/ Oblique	Fixed	Moderate	Adverse	Dwelling is located to the north-west of the Site Workers Camp accessed from Thomson Gorge Road. Partial views to the south-east of the dwelling may be available of the Site Workers Camp, Geology Compound, and Administration buildings, as well as mine elements such as the WELF, CIT pit, and upper benches associated with the RAS pit.
			Mining Activity	Site Workers Camp topsoil stockpile, Geology Compound, Administration Buildings, RAS pit, CIT pit, WELF,	Partial	Rear/ Oblique	Fixed	Moderate High	Adverse	During startup, visual impacts on this viewing audience are likely to be influenced by the construction and operation of the Site Workers Camp, as well as transient presence of machinery, vehicles and earthworks associated with the formation of the WELF and early stages of the RAS pit. During mining activity visual effects will be associated with the decommissioning of the Site Workers Camp, and formation of the CIT pit.

³⁵ Startup: Year 0-3. Project startup and development. Construction of initial infrastructure and preparation works. Mining activity: Year 3-11. Main extraction period. All components of the proposal will be operational during this stage of the project. Closure: Year 11-30. Project closure and rehabilitation following completion of extraction.

³⁶ Aspects of the proposal that are visible

³⁷ Extent of visibility: Full, Partial, Small Amount, Negligible

³⁸ Orientation of Views: Frontal, Oblique, Rear

³⁹ Significance of Effects: Very Low, Low, Moderate-Low, Moderate, Moderate-High, High, Very High

⁴⁰ Nature of Effect: Adverse, Neutral, Beneficial

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				Pest Exclusion Area.						At completion visual effects will be primarily associated with the rehabilitated WELF and CIT pit. The Site Workers Camp will be removed at closure.
			Completion	WELF, RAS pit	Partial/ Glimpsed	Rear/ Oblique	Fixed	Low Moderate	Adverse	
2	76C Ardgour Road, Bendigo, Cromwell	2.8km	Startup	Site Workers Camp, Site Workers Camp topsoil stockpile, Geology Compound, Administration Buildings, RAS pit, WELF, Battery Hill topsoil stockpile	Partial	Oblique	Fixed	Moderate	Adverse	Dwelling located on Bendigo Terrace and appears to be orientated north away from the Site. Partial views looking southeast towards the Site may be available below the summit of Battery Hill which is visible along the skyline. During startup, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the pre-strip of RAS pit, and establishment of the Site Workers Camp and WELF. The Battery Hill topsoil stockpile will be evident on the skyline.
			Mining activity	Site Workers Camp topsoil stockpile, Geology Compound, Administration Buildings, WELF, CIT pit, RAS pit, Pest Exclusion Area.	Partial	Oblique	Fixed	Moderate – High	Adverse	During mining activity, the visual impacts will continue to be influenced by views of RAS and CIT pits and temporary stockpiles which will be partially visible beyond intervening landforms and disrupt the coherence of the adjoining mountain backdrop. Visual changes in relation to the Pest Exclusion Area will be associated with predator proof fence and land use changes. At completion, topsoil stockpiles will be removed to backfill CIT pit with landform recontoured and land cover reinstated. Exclusion Zone and RAS pit will remain visible from this viewing audience.
			Completion	Pest Exclusion Area , RAS pit, WELF	Partial	Oblique	Fixed	Moderate	Adverse	
3		2.8km	Startup		Negligible	Rear, oblique	Fixed	Low	Adverse	Dwelling located on the northeastern foothills of Bendigo Terrace. Primary views face north away from the Site. Oblique rear views southeast towards the Site are contained by

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	102 Thomson Gorge Road, Tarras, Cromwell		Mining activity	Pest Exclusion Area	Small Amount	Rear, oblique	Fixed	Low	Adverse	landform and within established planting which encloses the backyard and the dwelling.
			Completion	Pest Exclusion Area	Small Amount	Rear, oblique	Fixed	Very Low	Adverse	During startup, no project components are likely to be visible from this visual audience. During mining activity, predator proof fence installation along the boundary of the Pest Exclusion Area. At completion, potential glimpsed partial views of the linear form of the Pest Exclusion Area may remain available through gaps between vegetation.
4	68 Thomson Gorge Road, Tarras, Cromwell	2.9km	Startup		Negligible	Rear, oblique	Fixed	-	Neutral	Dwelling located on the northeastern foothills of Bendigo Terrace. Primary views face northwest away from the Site. Oblique rear views southeast towards the Site are screened by elevated landform of Bendigo Terrace and established vegetation surrounding the dwelling.
					Negligible	Rear, oblique	Fixed	-	Neutral	
			Completion		Negligible	Rear, oblique	Fixed	-	Neutral	
5	60 Thomson Gorge Road, Tarras, Cromwell	2.9km	Startup		Negligible	Rear, oblique	Fixed	-	Neutral	Visitor accommodation located on the northeastern foothills of Bendigo Terrace. Primary views face northwest away from the Site. Oblique rear views southeast towards the Site are screened by elevated landform of Bendigo Terrace.
			Mining activity		Negligible	Rear, oblique	Fixed	-	Neutral	
			Completion		Negligible	Rear, oblique	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
6	69 Thomson Gorge Road, Tarras, Cromwell	3.1km	Startup	WELF, Battery Hill Topsoil Stockpile, Ardgour Rise.	Partial	Rear, oblique	Fixed	Low	Adverse	Dwelling located on the valley floor between Bendigo Terrace and The Bend Terrace. Views southeast towards the Site are largely contained within established vegetation surrounding the dwelling.
			Mining activity	Pest Exclusion Area, Battery Hill Topsoil stockpile, CIT pit, Ardgour Rise.	Partial	Rear, oblique	Fixed	Low	Adverse	During startup, a partial view of the change in landform resulting from the Battery Hill topsoil stockpile will potentially be visible. Views of the formation of the WELF will also be available. During mining activity, the predator proof fence installation along the boundary of the Pest Exclusion Area will also be visible and result in a localised linear disruption along a broader coherent mountain backdrop, and glimpses of CIT pit may be available.
			Completion	Pest Exclusion Area, WELF	Partial	Rear, oblique	Fixed	Low	Adverse	At completion, the Battery Hill topsoil stockpile will be removed. Potential glimpsed partial views of the Pest Exclusion Area will be available through gaps between vegetation, and views of the WELF will remain in perpetuity.
7	58 Thomson Gorge Road, Tarras, Cromwell	3.1km	Startup		Negligible	-	Fixed	-	Neutral	Dwelling located on the northeastern foothills of Bendigo Terrace. Views looking southeast towards proposed development within the Site are screened by the elevated and intervening landform of Bendigo Terrace.
			Mining activity		Negligible	-	Fixed	-	Neutral	
			Completion		Negligible	-	Fixed	-	Neutral	
8	6 Thomson Gorge Road, Tarras, Cromwell	3.6km	Startup	Ardgour Rise	Small Amount	Rear, oblique	Fixed	Very Low	Adverse	Dwelling located on the valley floor between Bendigo Terrace and The Bend Terrace.
			Mining activity	Ardgour Rise, Pest Exclusion Area	Small Amount	Rear, oblique	Fixed	Very Low	Adverse	Views looking southeast towards the Site are largely screened by the elevated landform of Bendigo Terrace. During the startup phase views of the construction of Ardgour Rise will be

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion	Ardgour Rise, Pest Exclusion Area	Small Amount	Rear, oblique	Fixed	Very Low	Adverse	available. During mining activity, glimpsed views of the Predator Exclusion Area will be available.
9	269 Ardgour Road, Tarras, Cromwell	3.7km	Startup	Battery Hill Topsoil Stockpile, WELF, Ardgour Rise.	Partial	Rear, oblique	Fixed	Low Moderate	Adverse	Dwelling located on the valley floor between Bendigo Terrace and The Bend Terrace. Views looking southeast towards the Site includes views of the WELF, Ardgour Rise, and Battery Hill topsoil stockpile. During mining activity, the establishment of the Predator Exclusion Zone will be visible. At completion, the Battery Hill topsoil stockpile will be removed, and views of the WELF and Predator Exclusion Area will remain.
			Mining activity	Battery Hill Topsoil Stockpile, WELF, Ardgour Rise, Predator Exclusion Area.	Partial	Rear, oblique	Fixed	Low	Adverse	
			Completion	Exclusion Zone	Partial	Rear, oblique	Fixed	Low	Adverse	
10	235 Ardgour Road, Tarras, Cromwell	3.9km	Startup	Battery Hill topsoil stockpile, WELF	Small Amount	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between Bendigo Terrace and The Bend Terrace. Views looking southeast towards the proposed mine are largely screened by the elevated landform of Bendigo Terrace, as well as the ridge to the north of Shepherds Creek. During the startup phase, views of the Site will be associated with the construction of the WELF, Ardgour Rise, and Battery Hill topsoil stockpiles. During mining activity, the establishment of the Predator Exclusion Area will be visible. At closure views of the WELF, Ardgour Rise, and Predator Exclusion Area will remain, however the Battery Hill topsoil stockpile will be removed.
			Mining activity	Battery Hill topsoil stockpile, WELF, Predator Exclusion Area.	Partial	Rear	Fixed	Low	Adverse	
			Completion	Battery Hill topsoil stockpile, WELF	Partial	Rear	Fixed	Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
11	213 Ardgour Road, Tarras, Cromwell	4.1km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, WELF.	Small Amount	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between Bendigo Terrace and The Bend Terrace. Views looking southeast towards the proposed mine are largely screened by the elevated landform of Bendigo Terrace, and the ridgeline to the north of Shepherds Creek.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, WELF, Predator Exclusion Area.	Partial	Rear	Fixed	Low	Adverse	During the startup phase, views of the WELF and Battery Hill topsoil stockpile formation will be evident, as well as earthworks associated with the north-western extent of Ardgour Rise.
			Completion	Ardgour Rise, WELF, Predator Exclusion Area.	Partial	Rear	Fixed	Very Low	Adverse	During mining activity, views of the Predator Exclusion Area will be evident. At completion, the topsoil stockpile will be removed, and views of the WELF and Predator Exclusion Area will remain.
12	333 Ardgour Road, Tarras, Cromwell	4km	Startup	WELF, Ardgour Rise, Site Workers Camp topsoil stockpile	Small Amount	Rear	Fixed	Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views during the startup phase include views of the construction Ardgour Rise, WELF, and Site Workers Camp topsoil stockpile. During operation and at closure views will extend to the Predator Exclusion Area.
			Mining activity	Exclusion Zone, Top Soil 2	Partial	Rear	Fixed	Low	Adverse	
			Completion	Exclusion Zone	Partial	Rear	Fixed	Low	Adverse	
13	360 Ardgour Road, Tarras, Cromwell	3.77km	Startup	Ardgour Rise, WELF	Partial	Rear/oblique	Fixed	Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Mining activity	Ardgour Rise, WELF, Predator Exclusion Area	Partial	Rear/ oblique	Fixed	Low	Adverse	Views orientated towards the proposed mine are associated with Ardgour Rise, and WELF during the startup phase, and the Pest Exclusion Area during operation of the mine. At closure views of each of these project elements will remain.
			Completion	Ardgour Rise, WELF, Predator Exclusion Area	Partial	Rear/ oblique	Fixed	Low	Adverse	
14	458 Ardgour Road, Tarras, Cromwell	4.1km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, Emulsion yard	Small Amount	Rear/ oblique	Fixed	Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views of the proposal will be limited from this dwelling. Nevertheless, views of the Ardgour Rise construction, Battery Hill stockpile and Emulsion Yard. During operation, the views of the Predator Exclusion Area will become available, and these views will remain in perpetuity. At closure the topsoil stockpile and Emulsion Area will be removed.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, Emulsion yard, Predator Exclusion Area	Partial	Rear/ oblique	Fixed	Low Moderate	Adverse	
			Completion	Ardgour Rise, Predator Exclusion Area	Partial	Rear/ oblique	Fixed	Low	Adverse	
15	477 Ardgour Road, Tarras, Cromwell	4.4km	Startup	Ardgour Rise, Battery Hill topsoil stockpiles.	Small Amount	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains and surrounded by established vegetation within the property. Views during the startup phase will include glimpses of the construction of Ardgour Rise and the Battery Hill topsoil stockpile. During operation this will extend to views of the
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpiles,	Small Amount	Rear	Fixed	Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				Predator Exclusion Area						Predator Exclusion Area. At closure views will be associated with the Predator Exclusion Area and Ardgour Rise and the Battery Hill topsoil stockpile is removed.
			Completion	Ardgour Rise, Predator Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
16	502 Ardgour Road, Tarras, Cromwell	4.4km	Startup		Negligible	Rear / oblique	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are screened by intervening landform and intervening vegetation with possible exception of glimpse views of Predator Exclusion Area.
			Mining activity	Predator Exclusion Area	Negligible	Rear / oblique	Fixed	Very Low	Adverse	
			Completion	Predator Exclusion Area	Negligible	Rear / oblique	Fixed	Very Low	Adverse	
17	524 Ardgour Road, Tarras, Cromwell	4.6km	Startup		Negligible	Rear	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are screened by intervening landform.
			Mining activity		Negligible	Rear	Fixed	-	Neutral	
			Completion		Negligible	Rear	Fixed	-	Neutral	
18	522 Ardgour Road, Tarras, Cromwell	4.4km	Startup		Negligible	Rear	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are screened by intervening landform.
			Mining activity		Negligible	Rear	Fixed	-	Neutral	
			Completion		Negligible	Rear	Fixed	-	Neutral	
19		4.6km	Startup		Negligible	Rear	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	522A Ardgour Road, Tarras, Cromwell		Mining activity		Negligible	Rear	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are screened by intervening landform.
			Completion		Negligible	Rear	Fixed	-	Neutral	
20	525 Ardgour Road, Tarras	4.7km	Startup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
21	541 Ardgour Road, Tarras	4.8km	Startup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
22	546 Ardgour Road, Tarras	4.8km	Startup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
23	560 Ardgour Road, Tarras	4.8km	Startup		Negligible	Rear	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are screened by intervening landform.
			Mining activity		Negligible	Rear	Fixed	-	Neutral	
			Completion		Negligible	Rear	Fixed	-	Neutral	
24	553 Ardgour Road, Tarras	5km	Startup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
25	553B Ardgour Road, Tarras	5.1km	Startup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
26	634 Ardgour Road, Tarras	4.9km	Startup		Negligible	Rear	Fixed	-	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Views looking south towards the proposed mine are largely screened by intervening landform. Glimpsed views of the Predator Exclusion Area during mining activity and on completion will potentially be available.
			Mining activity	Predator Exclusion Area	Small Amount	Rear	Fixed		Adverse	
			Completion	Predator Exclusion Area	Small Amount	Rear	Fixed		Adverse	
27	632 Ardgour Road, Tarras	5.4km	StartupStartup	Battery Hill topsoil stockpile	Negligible	Rear	Fixed		Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed views of the Battery Hill topsoil stockpile may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Mining activity	Battery Hill topsoil stockpile, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
			Completion	Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
28	664 Ardgour Road, Tarras	5.6km	Startup	Battery Hill topsoil stockpile, Ardgour Rise	Small Amount	Rear	Fixed	Very Low	Neutral	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains.
			Mining activity	Battery Hill topsoil stockpile, Ardgour Rise, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	Glimpsed views of the Battery Hill topsoil stockpile and Ardgour Rise construction may be available during the startup phase. These views will extend to glimpsed views of the Pest Exclusion Area during mining activity, and at closure.
			Completion	Ardgour Rise, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
29	681 Ardgour Road, Tarras	5.9km	Startup	Battery Hill topsoil stockpile, Ardgour Rise, haul roads	Small Amount	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains.
			Mining activity	Battery Hill topsoil stockpile, Ardgour Rise,	Small Amount	Rear	Fixed	Low	Adverse	Glimpsed views of the construction of Ardgour Rise, and topsoil stockpiles during the startup phase of the project may be available from this viewpoint, although filtered by intervening vegetation and landform. This includes views of the earlier stage haul roads before the RAS pit is excavated

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				haul roads, Pest Exclusion Area						within the startup phase, and earlier years of mining activity. Views of the Predator Exclusion Area will become apparent during mining operation and will continue at closure.
			Completion	Ardgour Rise, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
30	723 Ardgour Road, Tarras	6.3km	Startup	Battery Hill topsoil stockpile, Ardgour Rise, haul roads	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the valley floor between The Bend Terrace and Dunstan Mountains. Glimpsed, long distance views of the construction of Ardgour Rise, and topsoil stockpiles during the startup phase of the project may be available from this viewpoint, although filtered by intervening vegetation and landform. This includes views of the earlier stage haul roads before the RAS pit is excavated within the startup phase, and earlier years of mining activity. Views of the Predator Exclusion Area will become apparent during mining operation and will continue at closure.
			Mining activity	Battery Hill topsoil stockpile, Ardgour Rise, haul roads, Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
			Completion	Ardgour Rise, Pest Exclusion Area	Negligible	Rear	Fixed	Very Low	Adverse	
31	30 Ruffell Road, Tarras	6.5km	Startup	Ardgour Rise, haul roads	Negligible	Rear	Fixed	Very Low	Adverse	Dwelling located on the foothills of the Dunstan Mountains. Views looking south towards the Site are largely screened by intervening foothills of the lower Dunstan Mountains. Views during the startup phase will be glimpsed at most, and of the construction of Ardgour Rise, and initial haul roads. The Pest
			Mining activity	Ardgour Rise, haul roads, Pest Exclusion Area.	Small Amount	Rear	Fixed	Very Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion	Ardgour Rise, Pest Exclusion Area.	Small Amount	Rear	Fixed	Very Low	Adverse	Exclusion Area will become evident during mining operation, and views of this area will remain in perpetuity.
32	2280 Tarras-Cromwell Road (SH 8)	6km	Startup	Ardgour Rise, haul roads, WELF, RAS pit, Battery Hill topsoil stockpiles	Partial	Rear	Fixed	Low – Moderate	Adverse	Dwelling located on The Bend Terrace. Views looking southeast towards the Site are partially screened by slightly elevated landform of the terrace. During startup, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated the construction of the RAS, WELF, Ardgour Rise, and Battery Hill top soil stockpiles.
			Mining activity	Ardgour Rise, haul roads, WELF, RAS pit, Battery Hill topsoil stockpiles, CIT Pit, ELF, Pest Exclusion Areas.	Partial	Rear	Fixed	Moderate	Adverse	During mining activity, views of the ELF, Battery Hill topsoil stockpiles, excavation of RAS pit and CIT, and establishment of the Pest Exclusion Area. Haul roads will gradually become more contained to the Shepherds Creek valley as the RAS pit is extracted in later years of mining activity.
			Completion	Ardgour Rise, WELF, CIT Pit, ELF, Pest Exclusion Areas.	Partial	Rear	Fixed	Low-Moderate	Adverse	At completion, the Battery Hill top soil stockpiles will be removed with landform recontoured and land cover reinstated. The Pest Exclusion Areas, and rehabilitated ELF, CIT pit, and WELF will remain visible from this viewing audience.
33	67 Bowman Road, Tarras	7km	Startup	Ardgour Rise, Battery Hill topsoil stockpiles, WELF, RAS pit, Site Workers Camp topsoil stockpile, Emulsion Area,	Partial	Rear	Fixed	Low	Adverse	Dwelling located on the river terrace to the west of State Highway 8. Views looking southeast towards the Site are likely screened by established vegetation to the southeast of the property. During the startup phase, views of the initial extraction of RAS pit, and construction of the Battery Hill topsoil stockpile, WELF,

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				Site Workers Camp quarry, haul roads.						Ardgour Rise, Site Workers Camp topsoil stockpile, Emulsion Area, and quarry.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpiles, WELF, RAS pit, CIT Pit, Site Workers Camp topsoil stockpile, Emulsion Area, Site Workers Camp quarry, haul roads, Pest Exclusion Area, ELF.	Partial	Rear	Fixed	Low	Adverse	During mining activity, views of the Site may extend to the CIT pit, construction of the ELF, and further extraction of the RAS pit including haul roads. The two Predator Exclusion Areas will also likely be available from this viewpoint.
			Completion	Ardgour Rise, WELF, Pest Exclusion Area, ELF.	Partial	Rear	Fixed	Low	Adverse	At closure, views of the Predator Exclusion Areas will continue, as well as views of the rehabilitated CIT pit, WELF, and upper slopes of the ELF. The Site Workers Camp and Battery Hill topsoil stockpiles will be removed.
34	165 Bowman Road, Tarras	6.4km	Startup		Negligible	Rear, oblique	Fixed	-	Neutral	Dwelling located at a lower elevation on river plains to the west of State Highway 8. Views looking southeast towards the Site are screened by elevated landform to the east to southeast of the dwelling, as well as vegetation within the property.
			Mining activity		Negligible	Rear, oblique	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion		Negligible	Rear, oblique	Fixed	-	Neutral	
35	2226 Tarras-Cromwell Road (SH 8)	5.8km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, haul roads.	Partial	Rear, oblique	Fixed	Low	Adverse	Dwelling located to the southwest of The Bend Terrace. Views looking southeast towards the Site are partially screened by slightly elevated landform immediately east of the dwelling, as well as vegetation within the property. During startup, the visual impacts on this viewing audience are likely to be influenced by glimpses of machinery and vehicle movements and earthworks associated with the construction of the WELF, RAS pit extraction, haul roads, and Battery Hill topsoil stockpiles.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, haul roads, Pest Exclusion Areas, CIT pit, ELF.	Partial	Rear, oblique	Fixed	Low - Moderate	Adverse	During mining activity, excavation of RAS and CIT pits, and the construction of Pest Exclusion Area will be the primary visual changes. Upper slopes of the CIT pit is likely to be visible. Only small amount of ELF is likely to be visible.
			Completion	Ardgour Rise, WELF, Pest Exclusion Areas, ELF.	Partial	Rear, oblique	Fixed	Low	Adverse	At completion, the Battery Hill topsoil stockpile will be removed. The CIT landform will be recontoured and views of the Pest Exclusion Area will remain.
36	2182 Tarras-Cromwell Road (SH 8)	5.5km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, Emulsion Area, Site Workers Camp topsoil stockpile, RAS pit, haul roads, WELF	Partial	Rear/ oblique	Fixed	Low	Adverse	Dwelling located in the valley between The Bend Terrace and Bendigo Terrace. Views looking southeast towards the Site are partially screened by intervening landform and vegetation within the property. During startup, the visual impacts on this viewing audience are likely to be influenced by the large machinery, vehicle movements and earthworks associated with the construction of the WELF, RAS pit extraction, haul roads, and Battery Hill

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Mining activity	Ardgour Rise Battery Hill topsoil stockpile, Emulsion Area, Site Workers Camp topsoil stockpile, RAS pit, haul roads, WELF, CIT pit, Pest Exclusion Area	Partial	Rear/oblique	Fixed	Low - Moderate	Adverse	topsoil stockpiles, Ardgour Rise, and Site Workers Camp topsoil stockpile. During mining activity, excavation of RAS and CIT pits, and the construction of Pest Exclusion Area will be the primary visual changes. The upper slopes of the CIT pit are likely to be visible. At completion, the Battery Hill and Site Workers Camp topsoil stockpiles will be removed. In addition the Emulsion yard will also be removed. The CIT landform will be recontoured and views of the Pest Exclusion Area will remain.
			Completion	Ardgour Rise WELF, Pest Exclusion Area	Partial	Rear/oblique	Fixed	Low	Adverse	
37	5 Maori Point Road, Tarras	6.44km	Startup		Negligible	Rear/oblique	Fixed	-	Neutral	Dwelling located at a lower elevation on river plains to the west of State Highway 8. Views looking southeast towards the proposed mine are screened by elevated landform.
			Mining activity		Negligible	Rear/oblique	Fixed		Neutral	
			Completion		Negligible	Rear/oblique	Fixed	-	Neutral	
38	2093 Tarras-Cromwell Road (SH 8)	6km	Startup		Negligible	Rear/oblique	Fixed	-	Neutral	Dwelling located at a lower elevation on river plains to the west of State Highway 8. Views looking southeast towards the proposed mine are screened by elevated landform of Bendigo Terrace.
			Mining activity		Negligible	Rear/oblique	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion		Negligible	Rear/oblique	Fixed	-	Neutral	
39	2047 Tarras-Cromwell Road (SH 8)	6.2km	Startup		Negligible	Rear/oblique	Fixed	-	Neutral	Dwelling located at a lower elevation on river plains to the west of State Highway 8. Views looking southeast towards the proposed mine are screened by elevated landform of Bendigo Terrace.
			Mining activity		Negligible	Rear/oblique	Fixed	-	Neutral	
			Completion		Negligible	Rear/oblique	Fixed	-	Neutral	
40	2059 Tarras-Cromwell Road (SH 8)	5.84km	Startup		Negligible	Rear/oblique	Fixed	-	Neutral	Dwelling located at a lower elevation on river plains to the west of State Highway 8. Views looking southeast towards the proposed mine are screened by elevated landform of Bendigo Terrace.
			Mining activity		Negligible	Rear/oblique	Fixed	-	Neutral	
			Completion		Negligible	Rear/oblique	Fixed	-	Neutral	
41	76A Ardgour Road, Bendigo, Cromwell	4.3km	Startup	Emulsion Area, Ardgour Rise, Site Workers Camp, Site Workers Camp topsoil stockpile, RAS pit, Battery Hill topsoil stockpile,	Partial	Rear/oblique	Fixed	Moderate	Adverse	Dwelling located on elevated landform of Bendigo Terrace. Open partial views looking southeast towards the Site are available. During startup, views of the Site Workers Camp, Emulsion Area, Site Workers Camp topsoil stockpile, Battery Hill topsoil stockpile, WELF, and RAS pre strip will be available in addition to vehicle and machinery movements.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				WELF, haul roads.						During mining activity, the visual impacts will continue to be influenced by machinery, vehicle movements and mining associated with RAS and CIT pits. Benching associated with the operational use of the ELF will likely be evident, as well the progressive changing in haul road locations and construction of the Pest Exclusion Areas. At closure, the temporary mine elements such as topsoil stockpiles, and Site Workers Camp (Geology Compound and Administration Buildings) will be removed. Views of the upper reaches of the ELF, RAS pit, and the rehabilitated face of the CIT pit and WELF will remain in perpetuity in addition to the Pest Exclusion Areas.
			Mining activity	Emulsion Area, Ardgour Rise, Site Workers Camp, Site Workers Camp topsoil stockpile, RAS pit, Battery Hill topsoil stockpile, WELF, haul roads, Pest Exclusion Areas, CIT pit, ELF	Partial	Rear/oblique	Fixed	Moderate - High	Adverse	
			Completion	Ardgour Rise, RAS pit, WELF, haul roads, Pest Exclusion Areas, ELF	Partial	Rear/oblique	Fixed	Moderate	Adverse	
42	76B Ardgour Road, Bendigo, Cromwell	4.2km	Startup	Emulsion Area, Ardgour Rise, Site Workers Camp, Site Workers Camp topsoil stockpile, RAS pit, Battery Hill topsoil stockpile,	Partial	Rear/oblique	Fixed	Moderate	Adverse	Dwelling located on elevated landform of Bendigo Terrace. Open partial views looking southeast towards the Site are available. During startup, views of the Site Workers Camp, Emulsion Area, Site Workers Camp topsoil stockpile, Battery Hill topsoil stockpile, WELF, and RAS pre strip will be available in addition to vehicle and machinery movements.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
				WELF, haul roads.						During mining activity, the visual impacts will continue to be influenced by machinery, vehicle movements and mining associated with RAS and CIT pits. Benching associated with the operational use of the ELF will likely be evident, as well the progressive changing in haul road locations and construction of the Pest Exclusion Areas. At closure, the temporary mine elements such as topsoil stockpiles, and Site Workers Camp (Geology Compound and Administration Buildings) will be removed. Views of the upper reaches of the ELF, RAS pit, and the rehabilitated face of the CIT pit and WELF will remain in perpetuity in addition to the Pest Exclusion Areas.
			Mining activity	Emulsion Area, Ardgour Rise, Site Workers Camp, Site Workers Camp topsoil stockpile, RAS pit, Battery Hill topsoil stockpile, WELF, haul roads, Pest Exclusion Areas, CIT pit, ELF	Partial	Rear/oblique	Fixed	Moderate - High	Adverse	
			Completion	Ardgour Rise, RAS pit, WELF, haul roads, Pest Exclusion Areas, ELF	Partial	Rear/oblique	Fixed	Moderate	Adverse	
43	1878 Tarras-Cromwell Road, Bendigo	5.7km	Startup		Negligible	Rear	Fixed	-	Neutral	Dwelling located at a lower elevation to the west of Bendigo Terrace. Views looking southeast towards the proposed mine are screened by Bendigo Terrace.
			Mining activity		Negligible	Rear	Fixed	-	Neutral	
			Completion		Negligible	Rear	Fixed	-	Neutral	
44	599 Bendigo Loop Road, Bendigo	5km	Startup		Negligible	Rear	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Mining activity		Negligible	Rear	Fixed	-	Neutral	Dwelling located at a lower elevation to the west of Bendigo Terrace. Views looking southeast towards the proposed mine are screened by Bendigo Terrace.
			Completion		Negligible	Rear	Fixed	-	Neutral	
45	445 Bendigo Loop Road, Bendigo, Cromwell	4.3km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Folding Hill Wine Company) located to the southwest of Bendigo Terrace. Views looking east and southeast towards the proposed mine are screened by intervening landform.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
46	370 Bendigo Loop Road, Bendigo, Cromwell	3.9km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Mondillo Vineyards Limited) located to the southwest of Bendigo Terrace. Views looking east and southeast towards the mine are screened by intervening landform.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
47	345 Bendigo Loop Road, Bendigo, Cromwell	4.1km	Startup		Negligible	Oblique	Fixed	-	Neutral	Dwelling located to the southwest of Bendigo Terrace. Views looking east towards the Site are screened by intervening landform.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
48	335 Bendigo Loop Road, Bendigo, Cromwell	4.1km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Peregrine Wines Bendigo Loop Rd) located to the southwest of Bendigo Terrace. Views looking east towards the proposed mine are screened by intervening landform.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
49	198 Bendigo Loop Road, Bendigo	4.7km	Startup	WELF	Negligible	Oblique	Fixed	Very Low	Adverse	Vineyard (Quartz Reef Vineyard) located to the southwest of Bendigo Terrace. Views looking east towards the proposed mine are largely screened by intervening landform. Views of the construction of the WELF and its establishment during mining operation and at closure will be likely be evident.
			Mining activity	WELF	Negligible	Oblique	Fixed	Very Low	Adverse	
			Completion	WELF	Negligible	Oblique	Fixed	Very Low	Adverse	
50	150 Bendigo Loop Road, Bendigo, Cromwell	4.3km	Startup	Site Workers Camp (including offices and Geology Compound), Site Workers Camp topsoil stockpile, Emulsion Area.	Small Amount	Oblique	Fixed	-	Neutral	Vineyard (The Canyon at Tarras Vineyards) located on the foothills of the Dunstan Mountains. Glimpsed views are primarily associated with the construction and operation of the Site Workers Camp (including the Geology Compound and Site offices), the Site Workers Camp topsoil stockpile, and Emulsion Area during startup and mining activity. These elements will be removed at closure and returned to farmland.
			Mining activity	Site offices and Geology Compound, Site Workers Camp topsoil stockpile, Emulsion Area.	Small Amount	Oblique	Fixed	Very Low	Adverse	
			Completion	-	Negligible	Oblique	Fixed		Neutral	
51A	140 Bendigo Loop Road	5.5km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Charcoal Gully Vineyard) located at an elevated location on the foothills of the Dunstan Mountains. Views looking east towards the proposed mine are screened by intervening landform of the Dunstan Mountains.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion		Negligible	Oblique	Fixed	-	Neutral	
51B	140 Bendigo Loop Road	5.6km	Startup	Site Workers Camp topsoil stockpile, Emulsion Area.	Negligible	Oblique	Fixed	Very Low	Adverse	Dwelling located at an elevated location on the foothills of the Dunstan Mountains. Glimpsed views are primarily associated with the construction and operation of the Site Workers Camp topsoil stockpile, and Emulsion Area during startup and mining activity. These elements will be removed at closure and returned to farmland.
			Mining activity	Site Workers Camp topsoil stockpile, Emulsion Area.	Negligible	Oblique	Fixed	Very Low	Adverse	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
52	140A Bendigo Loop Road	5.7km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Van der Mark Vineyard) located at an elevated location on the foothills of the Dunstan Mountains. Views looking east towards the proposed mine are screened by intervening landform of the Dunstan Mountains.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
53	138C Bendigo Loop Road	6.4km	Startup	Site Workers Camp topsoil stockpile, Emulsion Area.	Small Amount	Oblique	Fixed	Very Low	Adverse	Vineyard located at an elevated location on the foothills of the Dunstan Mountains. Views looking east towards the proposed mine are screened by intervening landform of the Dunstan Mountains. Glimpsed views are primarily associated with the construction and operation of the Site Workers Camp topsoil stockpile, and Emulsion Area during startup and mining activity. These elements will be removed at closure and returned to farmland.
			Mining activity	Site Workers Camp topsoil stockpile, Emulsion Area.	Small Amount	Oblique	Fixed	Very Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion		Negligible	Oblique	Fixed	-	Neutral	
54	136 Bendigo Loop Road	6.2km	Startup	Site Workers Camp topsoil stockpile, Emulsion Area.	Small Amount	Oblique	Fixed	Very Low	Adverse	Dwelling located at an elevated location on the foothills of the Dunstan Mountains. Views looking east towards the proposed mine are largely screened by intervening landform of the Dunstan Mountains.
			Mining activity	Site Workers Camp topsoil stockpile, Emulsion Area, Pest Exclusion Area.	Small Amount	Oblique	Fixed	Very Low	Adverse	Glimpsed views are primarily associated with the construction and operation of the Site Workers Camp topsoil stockpile, and Emulsion Area during startup and mining activity. These elements will be removed at closure and returned to farmland.
			Completion	Pest Exclusion Area	Negligible	Oblique	Fixed	Very Low	Adverse	Additional glimpsed views of the Pest Exclusion Areas will be available during mining operation and after closure.
55	130 Bendigo Loop Road	6km	Startup		Negligible	Oblique	Fixed	-	Neutral	Vineyard (Gibbston Valley Winery Bendigo West Vineyard) located at the base of Dunstan Mountains on Bendigo Loop Road. Views looking east towards the proposed mine are screened by intervening landform of the mountain.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
Viewing area beyond 5km										
A	Residents on Ruffell Road Specific properties include:	6.6-6.9km	Startup	Ardgour Rise, Site Workers Camp, WELF, Emulsion Area, Site Workers Camp	Partial – Negligible	Rear	Fixed	Very Low	Adverse	This viewing area is located on an elevated ridge of Dunstan Mountains foothills. Views during start-up will be largely associated with the Site Workers Camp and additional non-mining infrastructure on

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	91, 102, 138, 162, 175, 202, 220, 221 Ruffell Road Visitor accommodation: 170 Ruffell Road			topsoil stockpile, quarry.						Ardgour Terrace. Views of the WELF construction and rehabilitation will also be available. These views will extent to the Pest Exclusion Area during mining operation.
			Mining activity	Ardgour Rise, Site Workers Camp, WELF, Emulsion Area, Site Workers Camp topsoil stockpile, quarry, Pest Exclusion Area.	Partial – Negligible	Rear	Fixed	Low	Adverse	At closure, views of the rehabilitated WELF, Ardgour Rise, and Pest Exclusion Area will remain.
			Completion	Ardgour Rise, Pest Exclusion Area, WELF.	Partial – Negligible	Rear	Fixed	Very Low	Adverse	
B	Residents on Ardgour Road Specific properties include: 769, 779, 856, 1087 Ardgour Road Visitor accommodation: 1061 Ardgour Road	6.8-9.3km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, RAS pit, haul roads, WELF	Negligible	Rear	Fixed	Very Low	Adverse	This viewing group is located on the valley floor between The Bend Terrace and the Dunstan Mountains. During startup glimpsed views of Ardgour Rise, the Battery Hill topsoil stockpile, initial RAS pit extraction and haul roads, WELF construction is likely to be available. These views will extend to the Pest Exclusion Area for properties to the south of this viewing area.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, RAS pit, haul roads, WELF, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	At closure, views of Ardgour Rise, the WELF and Pest Exclusion Area are likely to remain.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
			Completion	Ardgour Rise, WELF, Pest Exclusion Area	Small Amount	Rear	Fixed	Very Low	Adverse	
C	Dwellings on Cemetery Road and north Ardgour Road Specific properties include: 1, 7, 9, 11, 60 Cemetery Road, 1161, 1186, 1194, 1198, 1200, 1235 Ardgour Road and Tarras Cemetery	9.9-10.5km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, RAS pit, haul roads	Negligible	Rear	Fixed	Very Low	Adverse	This viewing group is located to the northeast of The Bend Terrace near the intersection of Cemetery Road and Ardgour Road. For the majority of properties, views will be curtailed by intervening landform. Glimpses of Ardgour Rise, Battery Hill topsoil stockpile, RAS pit, and the haul roads may be available from 1161 although negligible.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, RAS pit, haul roads	Negligible	Rear	Fixed	Very Low	Adverse	
			Completion	Ardgour Rise	Negligible	Rear	Fixed	Very Low	Adverse	
D	Tarras settlement Specific properties include: 2750, 2752, 2792, 2798, 2812, 2816, 2818, 2820 Tarras-Cromwell Road	9-9.5km	Startup		Negligible	Rear	Fixed	-	Neutral	This viewing group is located to the north of The Bend Terrace. Views looking south towards the proposed mine are screened by the elevated landform of The Bend Terrace.
			Mining activity		Negligible	Rear	Fixed	-	Neutral	
			Completion		Negligible	Rear	Fixed	-	Neutral	
E	Residents to the north of Tarras settlement Specific properties include: 2948	10.1-15.8km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, haul roads	Partial	Rear	Fixed	Very Low	Adverse	This viewing group is located to the north of Tarras settlement. Long distance elevated views will be available from this viewing audience for several of the mine elements. During startup views of the construction of Ardgour Rise, Battery Hill

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	Tarras-Cromwell Road, 3025 Lindis Pass-Tarras Road; 136, 154, 154A, 156 Munro Lane; 345, 605, 637 Deep Creek Road; 240 Phillips Road Public: 27 Church Lane (St Thomas Anglican Church)		Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, haul roads	Partial	Rear	Fixed	Very Low	Adverse	topsoil stockpile, formation of the WELF, and the pre strip of RAS pit will likely be available from these properties. In more elevated areas, views of the Site Workers Camp and associated non-mining infrastructure may be available. During mining activity views additional views will extend to the formation of the Pest Exclusion Area.
			Completion	Pest Exclusion Area, RAS pit, WELF	Partial	Rear	Fixed	Very Low	Adverse	At closure, views of the Pest Exclusion Area, WELF and glimpses of the RAS pit will remain.
F	Residents to the north and northeast of State Highway 8A Specific properties include: 1603, 1791 Bells Lane; 185, 414, 425, 507 Jolly Road; 38 Colling Road	9.8-12.9km	Startup	Ardgour Rise, RAS pit, Battery Hill topsoil stockpile, WELF	Partial - Small Amount	Rear	Fixed	Low - Moderate	Adverse	This viewing group is located to the north and northeast of State Highway 8A. Some long-distance views looking southeast towards the Site are largely screened by elevated landform and established vegetation within some properties and will be more limited.
			Mining activity	Ardgour Rise, RAS pit, Battery Hill topsoil stockpile, WELF, CIT pit, ELF	Partial - Small Amount	Rear	Fixed	Moderate	Adverse	During startup, the visual impacts on this viewing group are likely to be influenced by large machinery and earthworks associated with the construction of the WELF, Battery Hill topsoil stockpiles, haul roads, and pre-strip of the RAS pit.
			Completion	Ardgour Rise, RAS pit, WELF, ELF	Partial - Small Amount	Rear	Fixed	Low-Moderate	Adverse	During mining activity, the construction of ELF and excavation of RAS and CIT will become visible in addition to the formation of the Pest Exclusion Area. At completion, elements of the proposal which will remain include views of the ELF, WELF, and RAS pit.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
G	Residents to the east of Maori Point Road Specific properties include: 234, 316 Maori Point Road; 1750, 1758 Bells Lane	8-9.4km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit	Partial – Small Amount	Rear	Fixed	Low-Moderate	Adverse	This viewing group is located to the east of Māori Point Road on an elevated terrace along the Clutha River. Views looking southeast towards the Site are partially screened by elevated landform of The Bend Terrace, as well as vegetation within some of the properties and will be more limited.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, CIT pit, ELF	Partial – Small Amount	Rear	Fixed	Moderate	Adverse	During startup, views will be largely associated with the construction and formation of Ardgour Rise, the Battery Hill topsoil stockpile, pre strip of RAS pit, and WELF. During mining activity this will extend to the excavation of the CIT pit and the establishment of the Pest Exclusion Area and ELF.
			Completion	Ardgour Rise, WELF, RAS pit, ELF.	Partial – Small Amount	Rear	Fixed	Low - Moderate	Adverse	At closure, views of the upper reaches of the RAS pit, WELF, Pest Exclusion Area, and ELF.
H	Residents west of Maori Point Road Specific properties include: 233, 35, 3971, 411A, 411B, 411D, 413, 411, 455 Maori Point Road; 86 Bowman Road; 33 Polson Terrace; 1290, 1304, 1322, 1362 Luggate-Tarras Road	7.6-12.8km	Startup	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit	Partial – Small Amount	Rear	Fixed	Low	Adverse	This viewing area is located on the Clutha River terrace to the west of Māori Point Road. Some views looking southeast are partially screened by intervening elevated landforms with views typically focussed to the north and towards the Clutha River. Vegetation within some properties assists in screening views towards the proposed mine.
			Mining activity	Ardgour Rise, Battery Hill topsoil stockpile, WELF, RAS pit, CIT pit, ELF	Partial – Small Amount	Rear	Fixed	Low - Moderate	Adverse	During startup, views will be largely associated with the construction and formation of the Battery Hill topsoil stockpile, pre strip of RAS pit, and WELF. During mining activity this will extend to the excavation of the CIT pit and the establishment of the Pest Exclusion Areas and ELF.
			Completion	Ardgour Rise, WELF, RAS pit, ELF.	Partial – Small Amount	Rear	Fixed	Low - Moderate	Adverse	At closure, views of the upper reaches of the RAS pit, WELF, Pest Exclusion Area, and ELF.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
I	Residents Specific properties include: 92, 97, 100, 111A, 111B, 118, 136, 139, 145 Oliver Road	6.5-6.9km	Startup	Battery Hill topsoil stockpile, haul roads, RAS, WELF	Small amount	Rear/oblique	Fixed	Very Low	Adverse	This viewing group is located on the Clutha River terrace to the west of State Highway 8. Views are largely screened by the elevated landform of Bendigo Terrace with views of mining activity concealed below the summit of Battery Hill from some dwellings. During startup, the visual impacts on this viewing area are likely to include large machinery and earthworks associated with the construction of the Battery Hill topsoil stockpile, initial haul roads, WELF, and pre strip of the RAS pit. During mining operation, the benches associated with the RAS pit will be concealed from view. At closure, views of the WELF will remain.
			Mining activity	Battery Hill topsoil stockpile, RAS, WELF	Small amount	Rear/oblique	Fixed	Low	Adverse	
			Completion	RAS, WELF	Small amount	Rear/oblique	Fixed	Low	Adverse	
J	Dwellings on the foothills of the Dunstan Mountains to the south of Bendigo Loop Road Specific properties include: 134, 134A Bendigo Loop Road; 1390 Tarras-Cromwell Road	6.6-7.4km	Startup		Negligible	Oblique	Fixed	-	Neutral	This viewing group is located at elevated locations on the foothills of the Dunstan Mountains, except 1390 Tarras-Cromwell Road which are located at a lower elevation. The majority of this viewing group are private vineyards. Most of the views looking east to northeast towards the proposed mine are screened by intervening landform of the Dunstan Mountains.
			Mining activity		Negligible	Oblique	Fixed	-	Neutral	
			Completion		Negligible	Oblique	Fixed	-	Neutral	
K	Dwellings accessed from State Highway 8	6.4-7km	Startup	Battery Hill topsoil stockpile, haul roads, WELF	Partial / Small Amount	Oblique	Fixed	Low	Adverse	This viewing area is located on the plains to the west of Bendigo Terrace and along State Highway where this passes near the Clutha River. Views looking east to southeast towards the proposed mine are largely screened by

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	Specific properties include: 1460, 1580, 1587, 1619, 1811, 1813 Tarras-Cromwell Road		Mining activity	Battery Hill topsoil stockpile, haul roads, WELF, ELF, Pest Exclusion Area	Partial/ Small Amount	Oblique	Fixed	Low Moderate	Adverse	intervening landform to the south, while more open views of the lower Shepherds Creek become available to the north of this viewing audience. During start up, views will include the construction of the Battery Hill topsoil stockpile and WELF, as well as the pre strip of the RAS pit and initial haul roads. During mining activity this will extend to the construction of the ELF, including the Plant on the ELF to the north of this viewing audience, Pest Exclusion Area, and CIT pit. At closure, views which will remain include views of the ELF, Pest Exclusion Area, and WELF, all of which will be rehabilitated.
			Completion	WELF, ELF, Pest Exclusion Area	Partial/ Small Amount	Oblique	Fixed	Low	Adverse	
L	Dwellings at Lowburn Valley, Specific properties include: 61 Hibern Lane; 1005, 1037 Luggate-Cromwell Road	13-16.9km	Startup	Ardgour Rise	Negligible	Oblique	Fixed	Very Low	Adverse	This viewing area is located at elevated locations on the foothills of Mount Pisa to the west of State Highway 6. The majority of the long distance views looking northeast towards the Site are screened by intervening landform of the Dunstan Mountains with the exception of very long distance views of the Pest Exclusion Area and Ardgour Rise which will be difficult to discern.
			Mining activity	Ardgour Rise, Pest Exclusion Area	Negligible	Oblique	Fixed	Very Low	Adverse	
			Completion	Ardgour Rise, Pest Exclusion Area	Negligible	Oblique	Fixed	Very Low	Adverse	
M	Dwellings on the river terrace on the	8.1-11.6km	Startup	Site Workers Camp topsoil stockpile, WELF	Small Amount	Oblique	Fixed	Very Low	Adverse	This viewing area is located at a generally flat topography on the Clutha River terrace.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	true right of Clutha River Specific properties include: 1133, 1166, 1183, 1308, 1338, 1401, 1427 Luggate-Cromwell Road; 20B, 20C, 68, 82, 110, 112, 178, 190 Gilmore Road; 7, 13, 17, 29, 42A, 44 Mount Pisa Road; 13, 90, 92, 97, 124 Rush Lane		Mining activity	Site Workers Camp topsoil stockpile, WELF, ELF, Pest Exclusion Area, CIT pit	Partial/Small Amount	Oblique	Fixed	Very Low	Adverse	During start up glimpsed views of the WELF, and Battery Hill topsoil stockpile, Site Workers Camp topsoil stockpile, and Ardgour Rise will be available. During mining activity these views will extend to glimpses of the CIT pit which will be rehabilitated at closure, construction of the ELF and Pest Exclusion Area. Views of the WELF, ELF, Pest Exclusion Area, and Ardgour Rise will remain in perpetuity.
			Completion	WELF, ELF, Pest Exclusion Area	Partial/Small Amount	Oblique	Fixed	Very Low	Adverse	
N	Dwellings on MacMillan Lane, Copper Lane and west Mount Pisa Road and Specific properties include: 1, 11, 12, 30, 37, 39 MacMillan Lane; 17, 41, 60 Cooper Lane; 240, 255, 273 Mount Pisa Road	11.2-12.2km	Startup	Site Workers Camp topsoil stockpile, WELF	Small Amount	Small Amount	Oblique	Fixed	Very Low	This viewing area is located at elevated locations on the foothills of Mount Pisa to the west of State Highway 6. Long distance and limited views of the proposed mine will be visible on account of the intervening landform of the Dunstan Mountains which predominantly screens available views. During start up glimpsed views of the WELF, and Battery Hill topsoil stockpile, Site Workers Camp topsoil stockpile, and Ardgour Rise will be available. During mining activity these views will extend to glimpses of the CIT pit which will be rehabilitated at closure, and Pest Exclusion Area. Views of the WELF, Pest Exclusion Area, and Ardgour Rise will remain in perpetuity.
			Mining activity	Site Workers Camp topsoil stockpile, WELF, ELF, Pest Exclusion Area, CIT pit	Partial/Small Amount	Partial/Small Amount	Oblique	Fixed	Very Low	
			Completion	WELF, ELF, Pest Exclusion Area	Partial/Small Amount	Partial/Small Amount	Oblique	Fixed	Very Low	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
O	Dwellings at Locharburn and Lochlea Specific properties include: 1570, 1575, 1599, 1620, 1622, 1764, 1765, 1767, 1773, 1775, 1971, 1997 Luggate-Cromwell Road	8.5-9.3km	Startup	Ardgour Rise, RAS pit, haul roads, WELF, Battery Hill topsoil stockpiles	Partial	Rear/ Oblique	Fixed	Low Moderate	Adverse	This viewing area is located on an elevated terrace at the base of Mount Pisa. Long distance partial views looking east to southeast towards parts of the proposed mine are available, albeit some views are screened by existing vegetation within the properties.
			Mining activity	Ardgour Rise, RAS pit, haul roads, WELF, Battery Hill topsoil stockpiles, CIT pit, ELF, Pest Exclusion Area	Partial	Rear/ Oblique	Fixed	Moderate	Adverse	During startup, the visual impacts are likely to be influenced by large machinery, vehicle movements and earthworks associated with the construction of Ardgour Rise, RAS, haul roads WELF, and Battery Hill topsoil stockpiles. During mining activity, large machinery and earthworks associated with excavation of the RAS and CIT pits, and construction of the ELF (including the operation of the ELF plant) is likely to be legible. Establishment of the Pest Exclusion Areas will also be evident.
			Completion	Ardgour Rise, RAS pit, WELF, ELF, Pest Exclusion Area	Partial	Rear/ Oblique	Fixed	Low-Moderate	Adverse	At closure views of the upper RAS benching, WELF, ELF, and Ardgour Rise will remain
P	Dwellings at south Queensberry Specific properties include: 2183, 2331, 2407, 2410, 2437, 2554, 2609, 2609A Luggate-Cromwell Road; 2, 42, 42D, 66, 68, 84,	9.7-11.4km	Startup	RAS pit, Ardgour Rise, Battery Hill topsoil stockpile, WELF	Partial	Rear/ Oblique	Fixed	Low	Adverse	This viewing area is located on the river terrace at the base of Mount Pisa. Long distance views looking southeast towards parts of the proposed mine are available, albeit with intervening landform and vegetation often foreshortening available views.
			Mining activity	RAS pit, Ardgour Rise, Battery Hill topsoil stockpile, WELF, ELF, CIT pit	Partial	Rear/ Oblique	Fixed	Low-Moderate	Adverse	During startup, views of large machinery, vehicle movements and earthworks associated with the construction of the RAS pre strip, Ardgour Rise, Battery Hill topsoil stockpiles, and WELF.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	100, 120, 140 Gladsmuir Road Visitor accommodation: 2567 Luggate-Cromwell Road		Completion	WELF, ELF, RAS pit, Pest Exclusion Area, Ardgour Rise.	Partial	Rear/ Oblique	Fixed	Low	Adverse	During mining activity, earthworks associated with the construction of ELF, excavation of RAS and CIT pits, and establishment of the Pest Exclusion Area will also be visible. At completion, elements of the proposal which will remain include the WELF, ELF, Ardgour Rise upper benches of RAS pit and Pest Exclusion Area.
Q	Dwellings in central Queensberry Specific properties include: 33, 94, 131, 142 Edward Lane; 45 Isabella Lane; 8, 9, 21, 22 Akanaw Lane; 20, 45, 48, 61, 79, 93, 120, 125, 160, 162, 164, 177 Wailana Heights Drive; 6, 11, 49 Catalina Way; 4, 5, 25, 26, 43, 44 Briar Wood Lane; 8, 15, 15A, 16, 16A, 16B, 16C Estrella Heights Lane; 5, 44, 171, 246, 247, 260, 276, 300 Pukekowhai Drive; 41, 51, 71 Westreca Ridge	12-15.3km	Startup	RAS pit, Ardgour Rise, Battery Hill topsoil stockpile, WELF	Partial – Negligible	Rear/ Oblique	Fixed	Low	Adverse	This viewing area is located at a higher elevation on the foothills of Mount Pisa. Long distance views looking southeast towards parts of the proposed mine are available, albeit with some intervening landform and vegetation screening some views towards the Site.
			Mining activity	RAS pit, Ardgour Rise, Battery Hill topsoil stockpile, WELF, ELF, CIT pit	Partial – Negligible	Rear/ Oblique	Fixed	Low	Adverse	During startup, views of large machinery, vehicle movements and earthworks associated with the construction of the RAS pre strip, Ardgour Rise, Battery Hill topsoil stockpiles, and WELF.
			Completion	WELF, ELF, RAS pit, Pest Exclusion Area, Ardgour Rise.	Partial – Negligible	Rear/ Oblique	Fixed	Low	Adverse	During mining activity, earthworks associated with the construction of ELF, excavation of RAS and CIT pits, and establishment of the Pest Exclusion Area will also be visible. At completion, elements of the proposal which will remain include the WELF, ELF, Ardgour Rise upper benches of RAS pit and Pest Exclusion Area.

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	Lane; 47, 56, 57, 86, 99, 122 Kaituki Ridge Lane; 2821 Luggate-Cromwell Road; 132 Willowbank Road									
R	Dwellings in Poison Creek valley Specific properties include: 55A, 55B, 69, 70, 78 Nursery Road; 105 Pukekowhai Drive; 2 Poison Creek Road Visitor accommodation: 118 Pukekowhai Drive (Queensbury Cottage)	14.6-15.2km	Startup		Negligible	Frontal, oblique	Fixed	-	Neutral	This viewing group is located in the valley between Mount Pisa and hill to the west of State Highway 6. No views towards the Site are available due to intervening landform and vegetation.
			Mining activity		Negligible	Frontal, oblique	Fixed	-	Neutral	
			Completion		Negligible	Frontal, oblique	Fixed	-	Neutral	
S	Residents on Riverview Road and south Poison Creek Road Specific properties include: 45, 56, 63, 70, 73, 86, 98 Riverview Road;	14.3-15.5km	Startup	Battery Hill topsoil stockpile, RAS pit, haul roads	Small Amount – Negligible	Rear	Fixed	Very Low	Adverse	This viewing area is located at a higher elevation on the foothills of Mount Pisa. Long distance views looking southeast towards the Site are available, albeit with intervening landform and vegetation often screening views towards the Site, with views typically focused to the east and north.
			Mining activity	Battery Hill topsoil stockpile, RAS pit, haul	Small Amount – Negligible	Rear	Fixed	Very Low	Adverse	During startup and mining activity, large machinery and earthworks associated with the construction of the Battery Hill topsoil stockpile RAS, CIT, Pest Exclusion Area, and ELF will be

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	71, 81, 83A, 83B Poison Creek Road; Luggate-Cromwell Road (LOT 3DP 563257)			roads, Pest Exclusion Area						discernible in long distance views. At completion, the RAS, ELF and Pest Exclusion Area will remain visible in very distance views.
			Completion	ELF, Pest Exclusion Area	Small Amount – Negligible	Rear	Fixed	Very Low	Adverse	
T	Dwellings at north Queensberry and west of State Highway 6 Specific properties include: 6, 29, 38, 90, 124, 128A, 130, 130A Willowbank Road; 33, 68, 97, 98, 109, 118, 118A, 118B, 127, 144, 170, 172, 174, 175, 176 Queensberry Terrace; 22, 23, 40, 51, 70, 141, 162, 173, 178 Fay Lane; 11, 29, 41, 55 Totara Place; 2, 12, 23, 27A, 27B Miharo Lane; 13, 60, 62, 71, 110, 129, 142, 168, 168B, 174, 189, 210, 232, 240, 296, 346, 347 Pukerangi Drive; 25	15.7-18.8km	Startup	Battery Hill topsoil stockpile, WELF, RAS pit, haul roads	Partial – Negligible	Rear	Fixed	Low-Moderate to Very Low	Adverse	This viewing area is located at a higher elevation on the foothills of Mount Pisa. Long distance views looking southeast towards the Site are available, albeit with intervening landform and vegetation often screening views towards the Site, with views typically focused to the east and north.
			Mining activity	Battery Hill topsoil stockpile, WELF, RAS pit, CIT pit, haul roads, Pest Exclusion Area	Partial – Negligible	Rear	Fixed	Low-Moderate to Very Low	Adverse	During startup and mining activity, large machinery and earthworks associated with the construction of the Battery Hill topsoil stockpile, RAS, CIT, Pest Exclusion Area, and ELF may be detected in long distance views. At completion, the upper benches of the RAS pit, ELF and Predator Exclusion Area will remain visible in very distance views.
			Completion	Battery Hill topsoil stockpile, WELF, RAS pit, Pest Exclusion Area	Partial – Negligible	Rear	Fixed	Low to Very Low	Adverse	

Ref.	Viewing Audience	Minimum Distance to Views (approx.)	Stage ³⁵	Area Proposed Development is Visible ³⁶	Extent of Visibility ³⁷	Orientation of Views ³⁸	Transient / Fixed	Potential Level of Effect ³⁹	Potential Nature of Effect ⁴⁰	Notes
	Mahana Lane; 24 Kotahi Drive; 13, 24, 33 Puninga Lane; 3473 Luggate-Cromwell Road; Kotahi Drive (LOT 17 DP 492816)									
U	Dwellings at Clutha River valley Specific properties include: 42, 43A, 43D, 43E, 43F, 43G, 54, 63, 79, 85 River Ridge Road; 3168, 3204, 3360, 3364, 3396 Luggate-Cromwell Road; 736, 738, 738A, 929, 981 Luggate-Tarras Road	15.7-19.3km	Startup	Battery Hill topsoil stockpile, WELF	Partial	Rear	Fixed	Very Low	Adverse	This viewing area is located along the Clutha River valley between Pisa Range and Lindis Peak. Long distance views looking southeast towards the Site are available, albeit more typically concealed by vegetation within properties and intervening landform. Where visible, the visual impacts on this viewing group are likely to be reasonably difficult to see in the context of the lower slopes of the larger Dunstan Mountains backdrop. This will include views of the Battery Hill topsoil stockpile, WELF, ELF, and Pest Exclusion Area.
			Mining activity	Battery Hill topsoil stockpile, WELF, Pest Exclusion Area, ELF.	Partial	Rear	Fixed	Very Low	Adverse	
			Completion	WELF, Pest Exclusion Area, ELF.	Partial	Rear	Fixed	Very Low	Adverse	

^[11] Locations where Proposed Development is Visible: RAS pit, CIT pit, Shrek pit, ELF, TSF, Exclusion Zone, Top Soil stockpiles, Processing Plant

^[12] Extent of Visibility: Full, Partial, Small Amount, Negligible

^[13] Orientation of Views: Frontal, Oblique, Rear

^[14] Level of Effects: Very Low, Low, Low-Moderate, Moderate, Moderate-High, High, Very High

^[15] Nature of Effect: Adverse, Neutral, Beneficial

Appendix 5: Graphic Supplement

BENDIGO-OPHIR MINING PROJECT

GRAPHIC SUPPLEMENT

8 AUGUST 2025



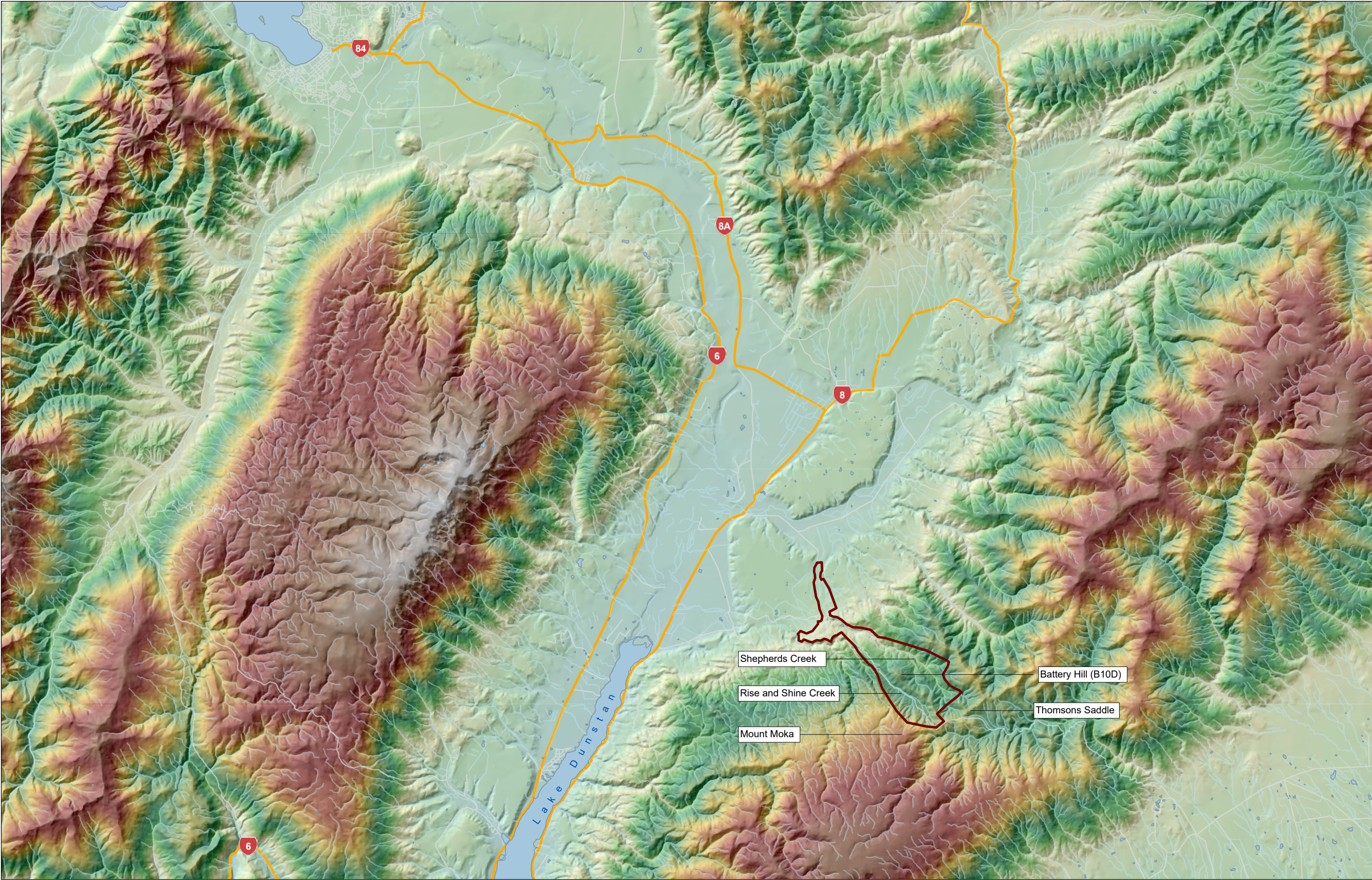
Bendigo-Ophir Mining Project

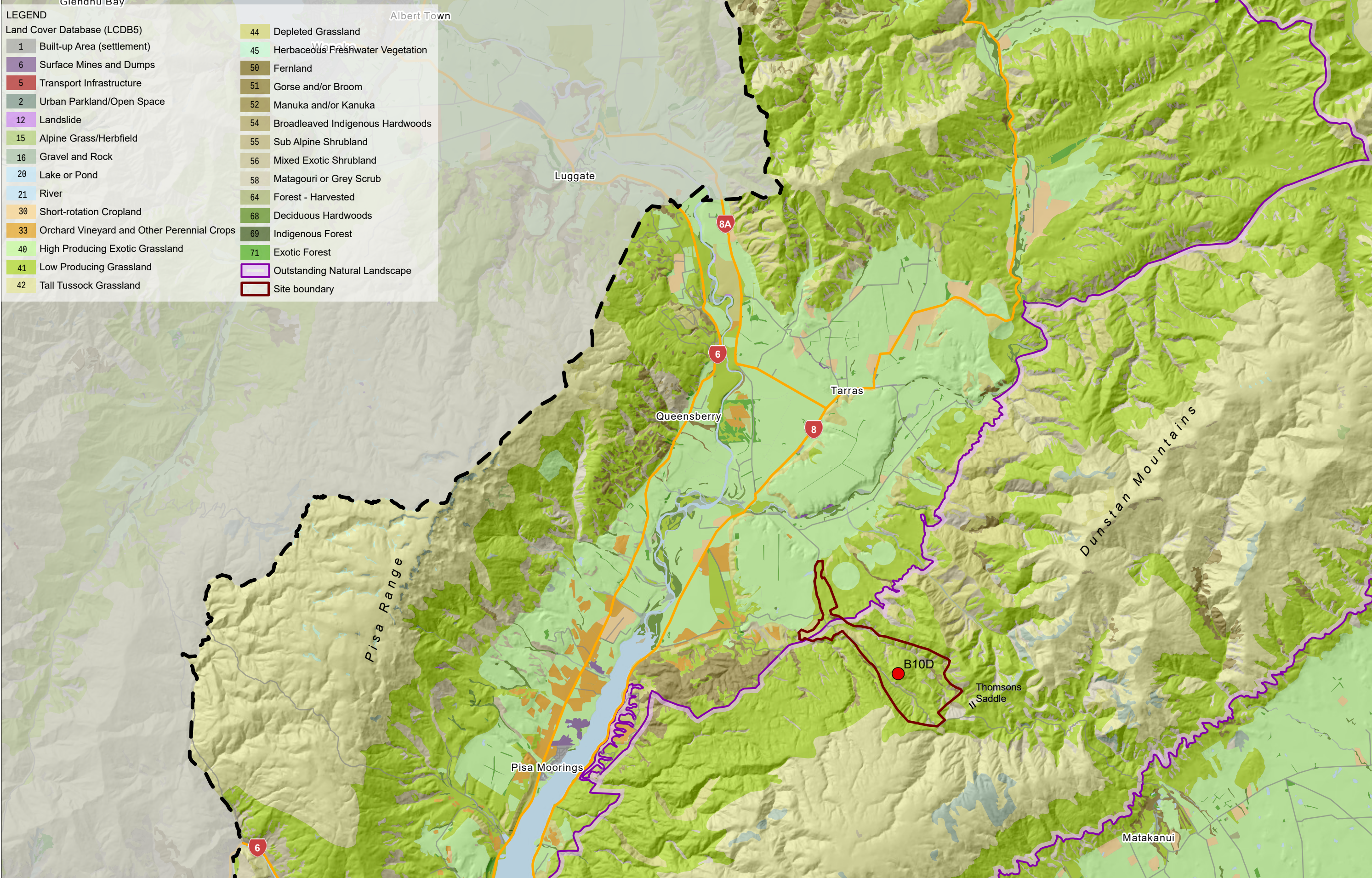


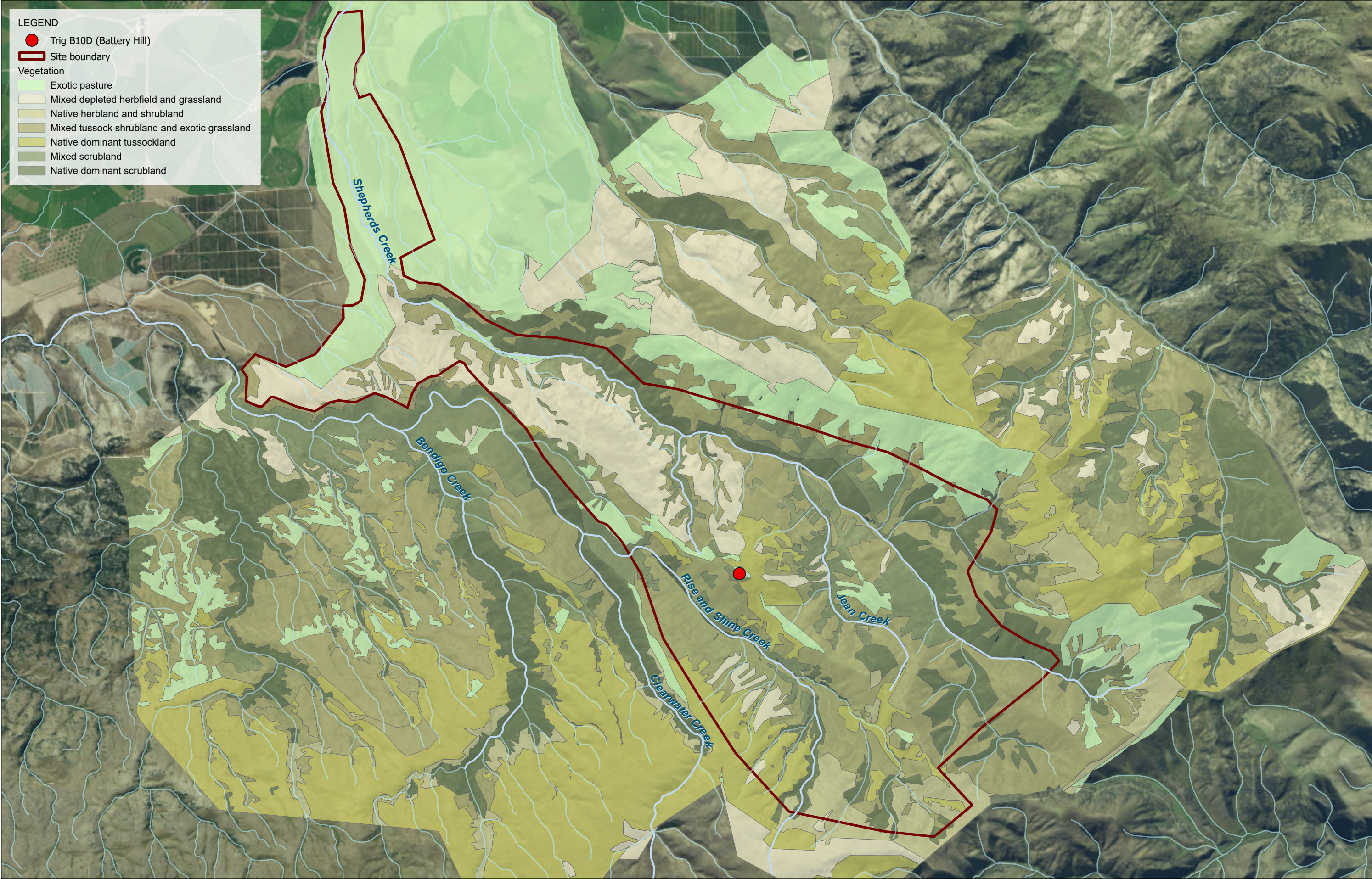
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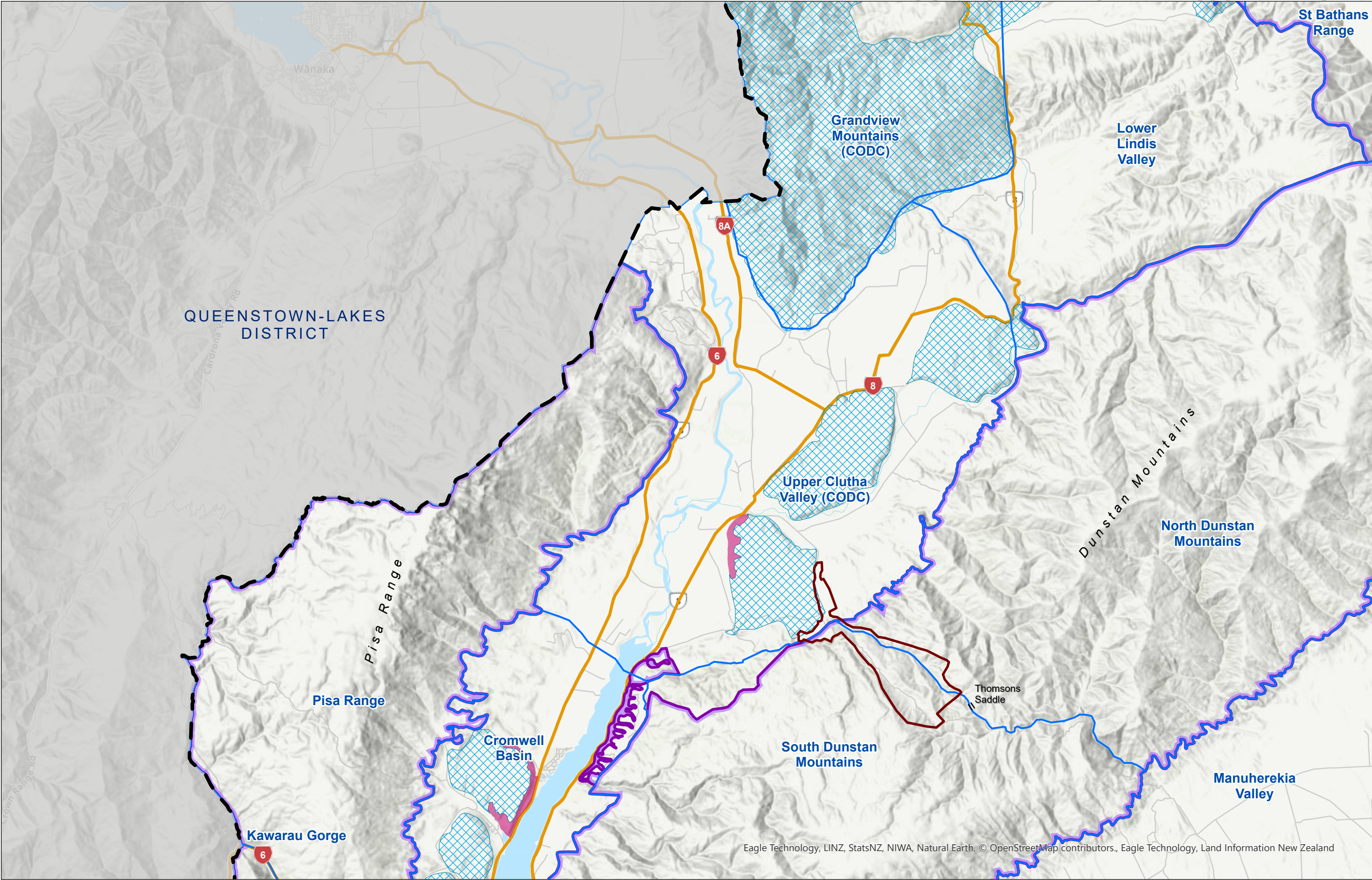
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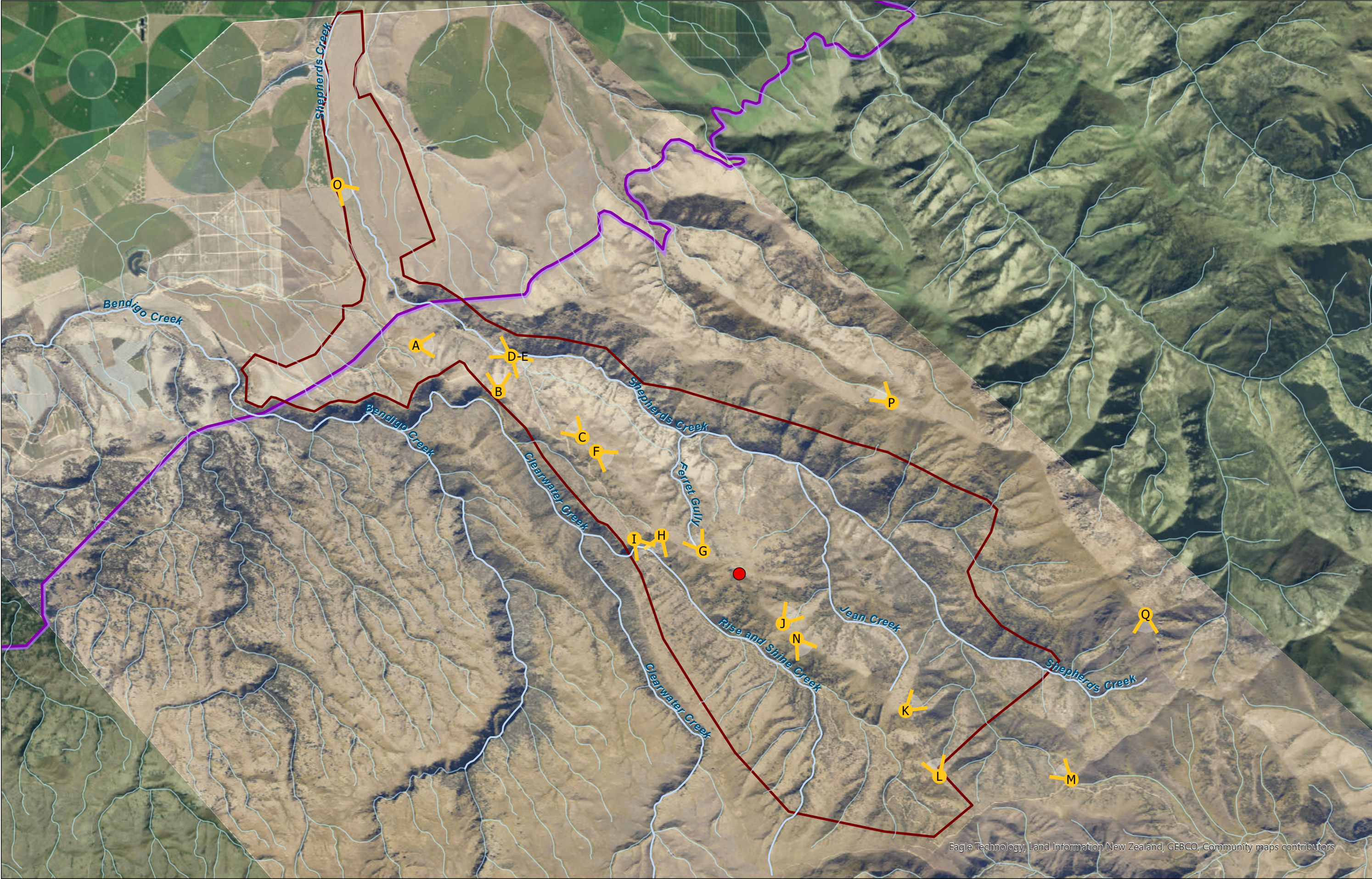




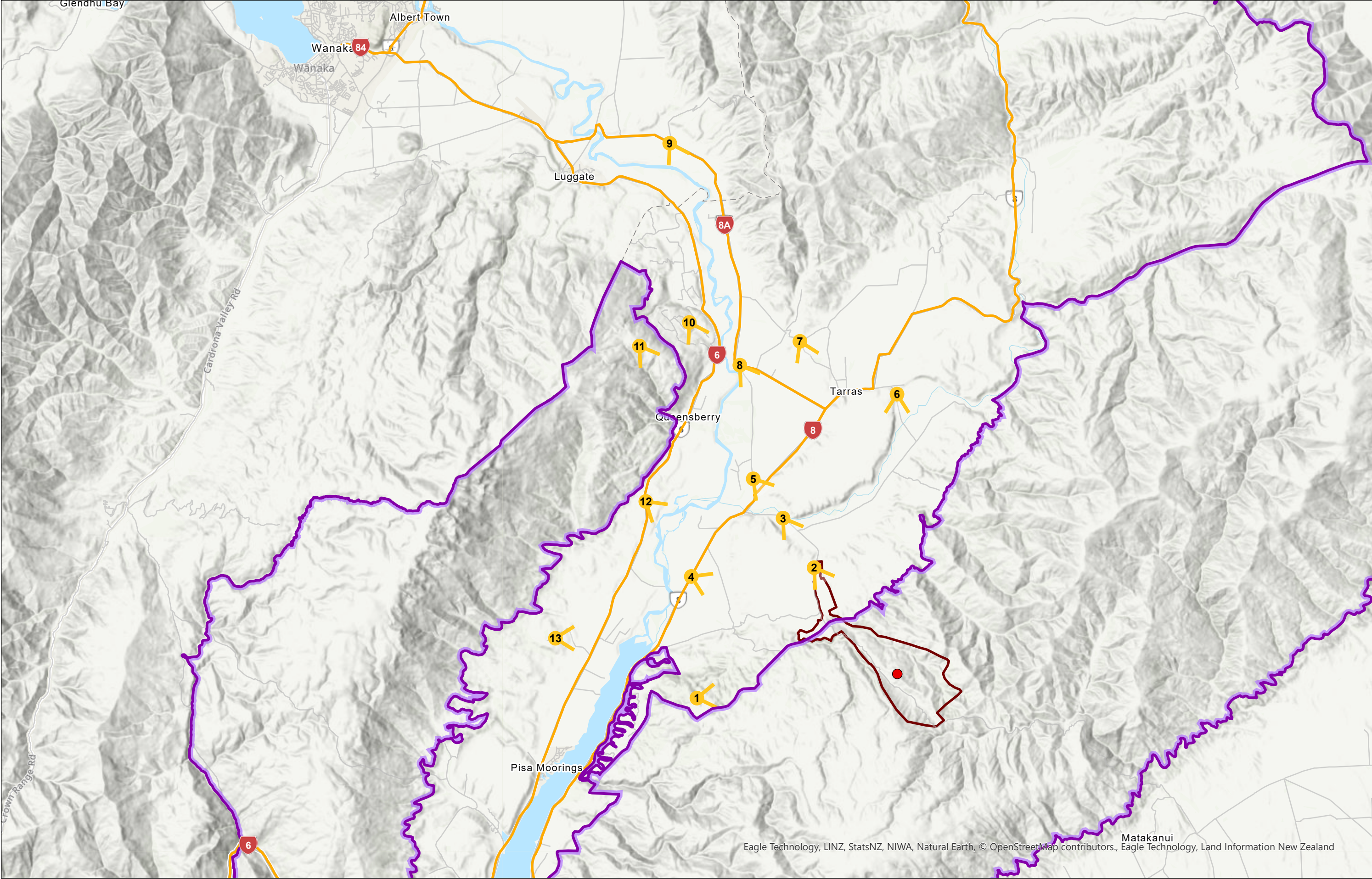


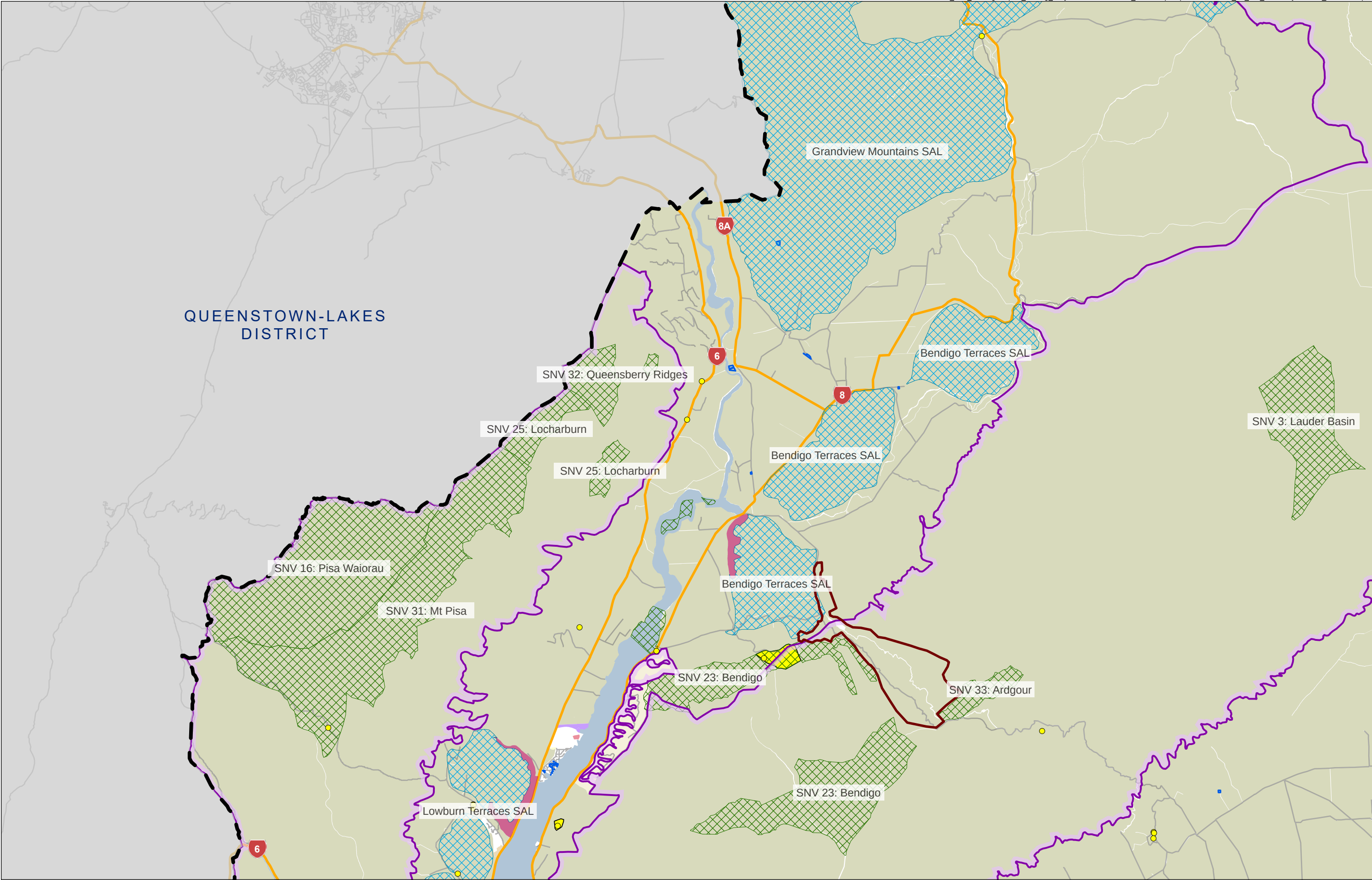


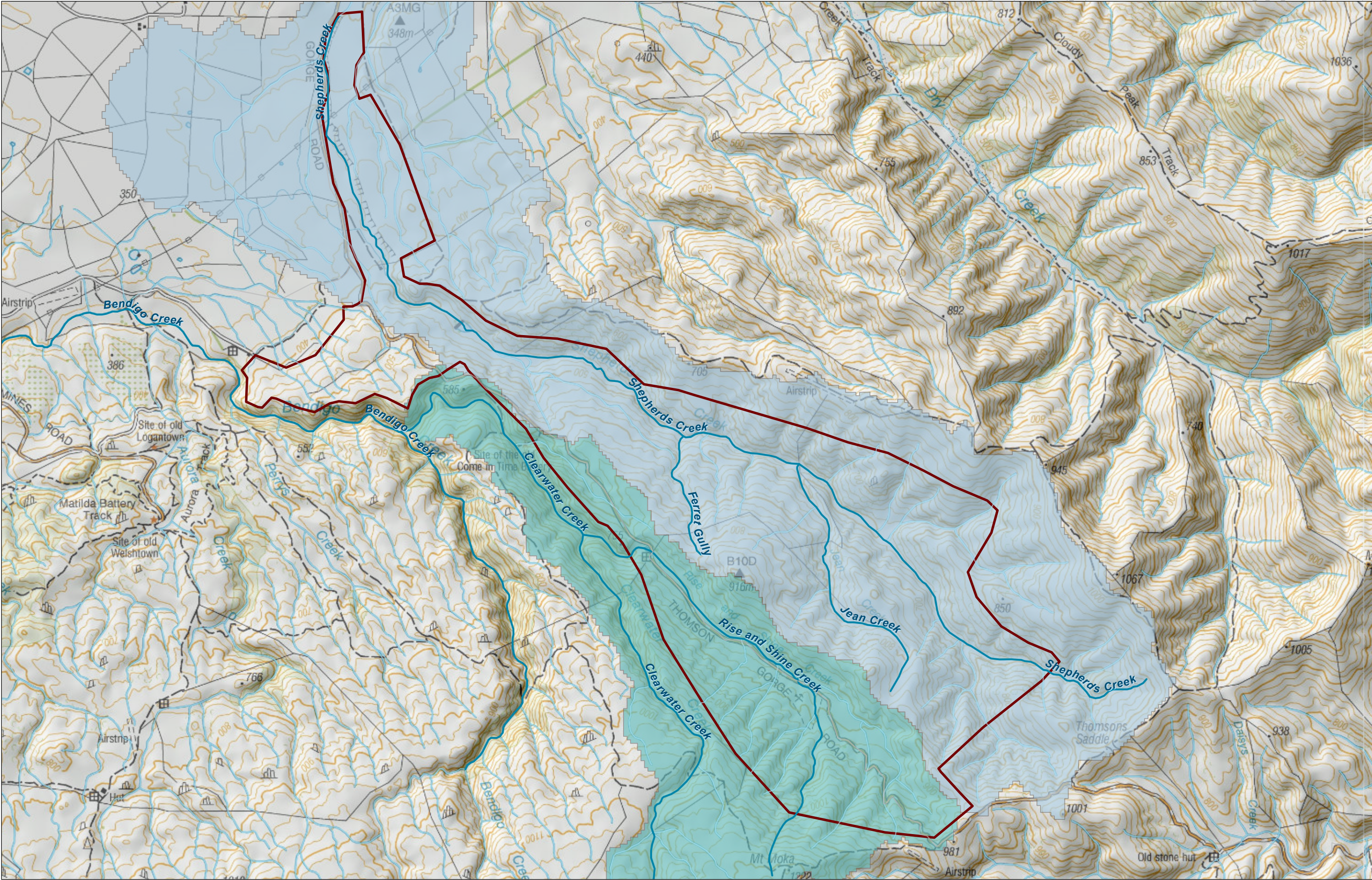


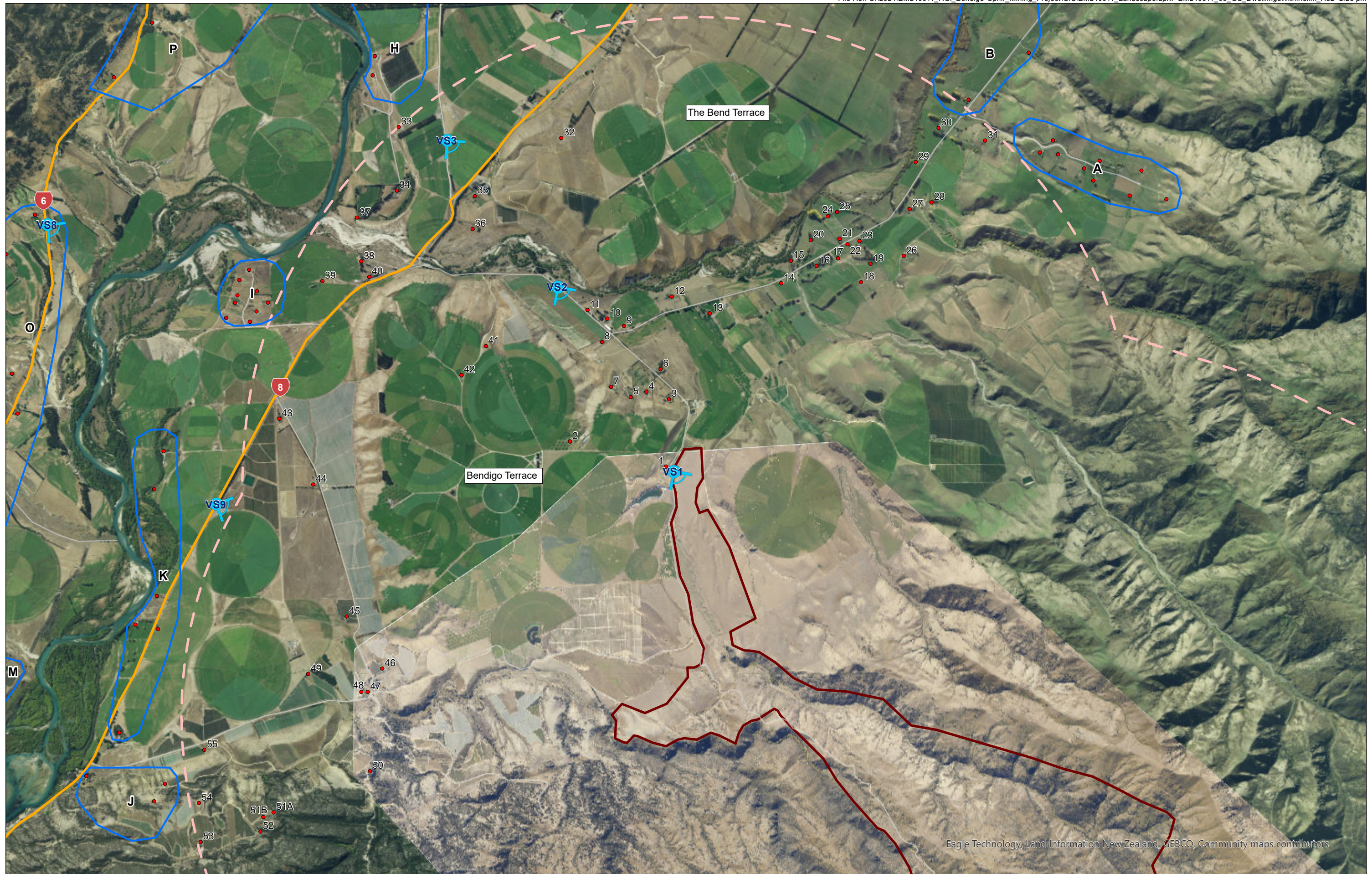


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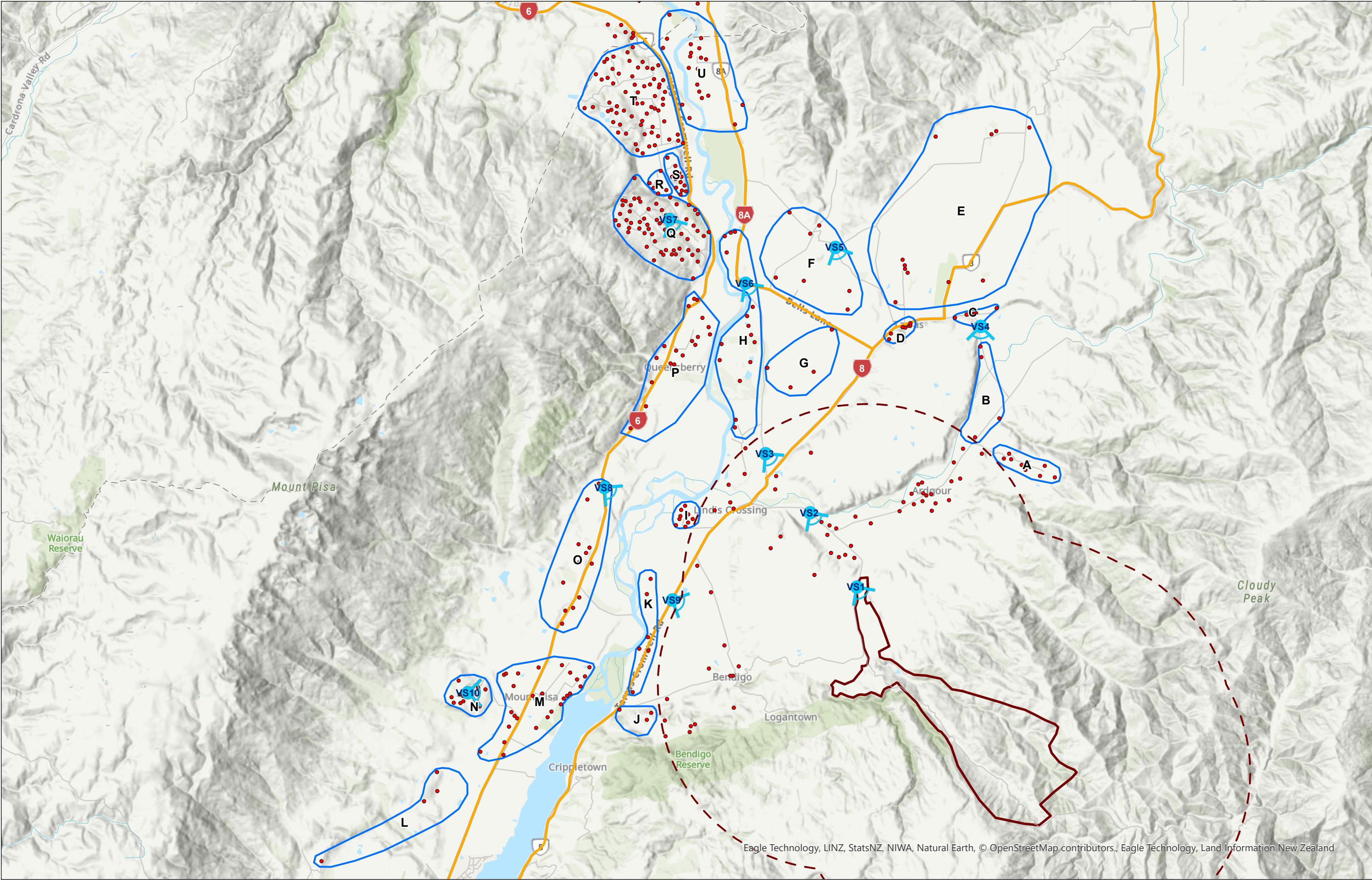


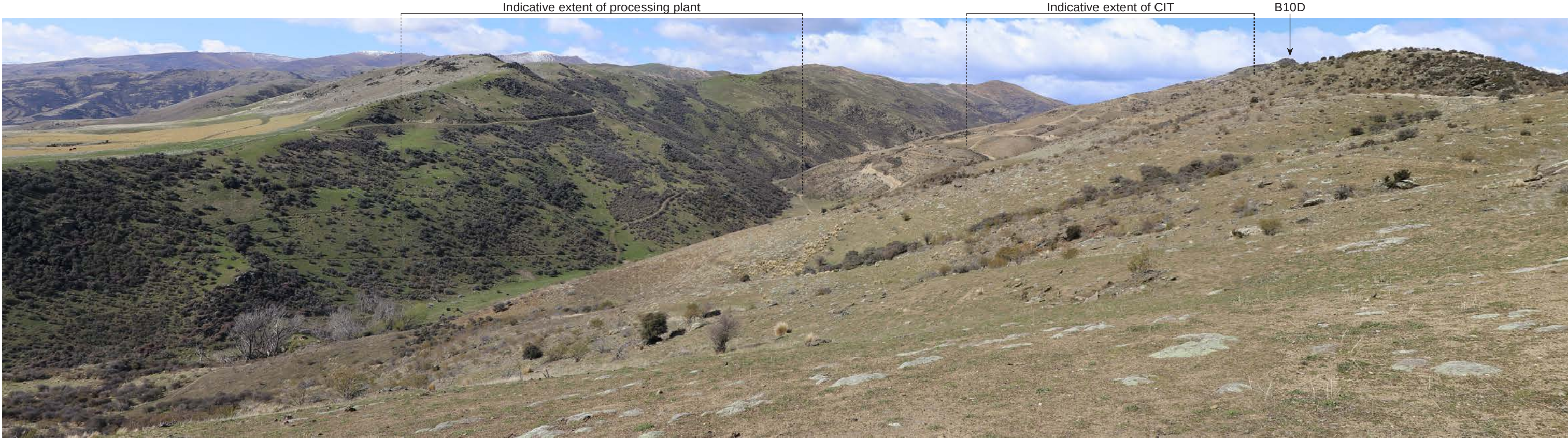






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Site Appraisal Photograph A: View from existing Thompson Gorge Road, looking in an easterly direction towards the proposed CIT pit and proccssing plant.



Site Appraisal Photograph B: View from existing Thompson Gorge Road, looking in a northerly direction over Shepherds Creek.



Site Appraisal Photograph C: View from existing Thompson Gorge Road, looking in a northwesterly direction over Shepherds Creek.



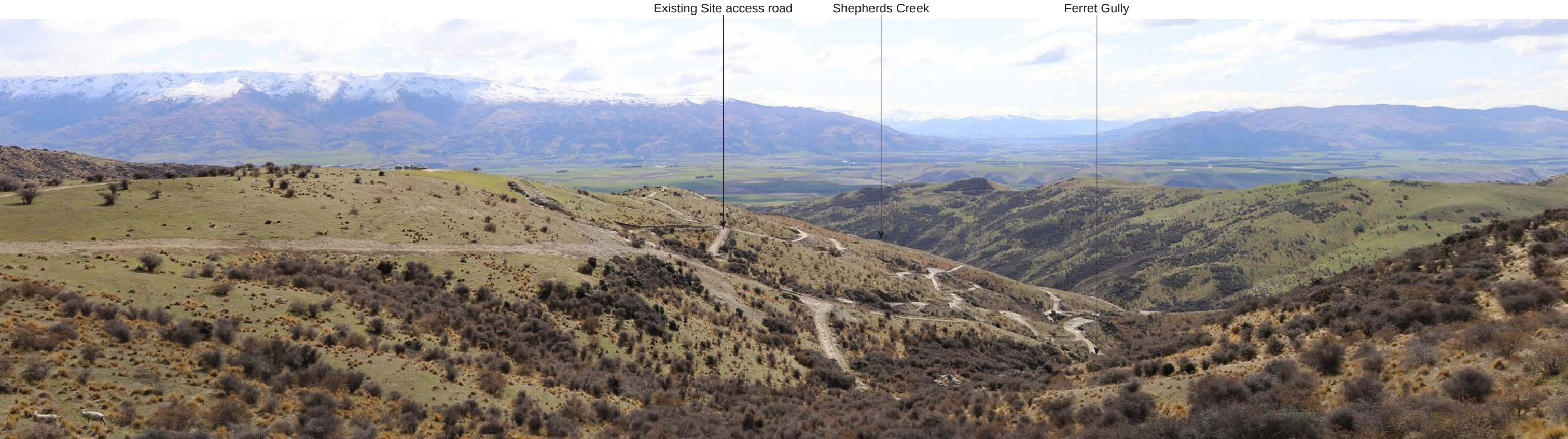
Site Appraisal Photograph D: View from Shepherds Creek, looking in a southeasterly direction into Rise and Shine Valley.



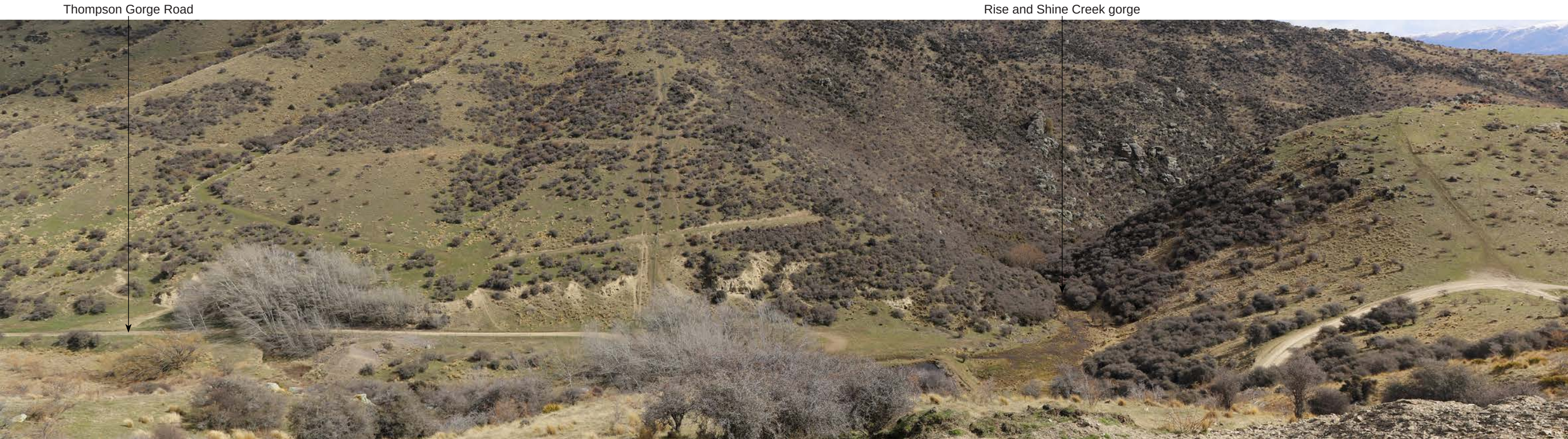
Site Appraisal Photograph E: View from Shepherds Creek, looking in a northwesterly direction towards the proposed location for processing plant.



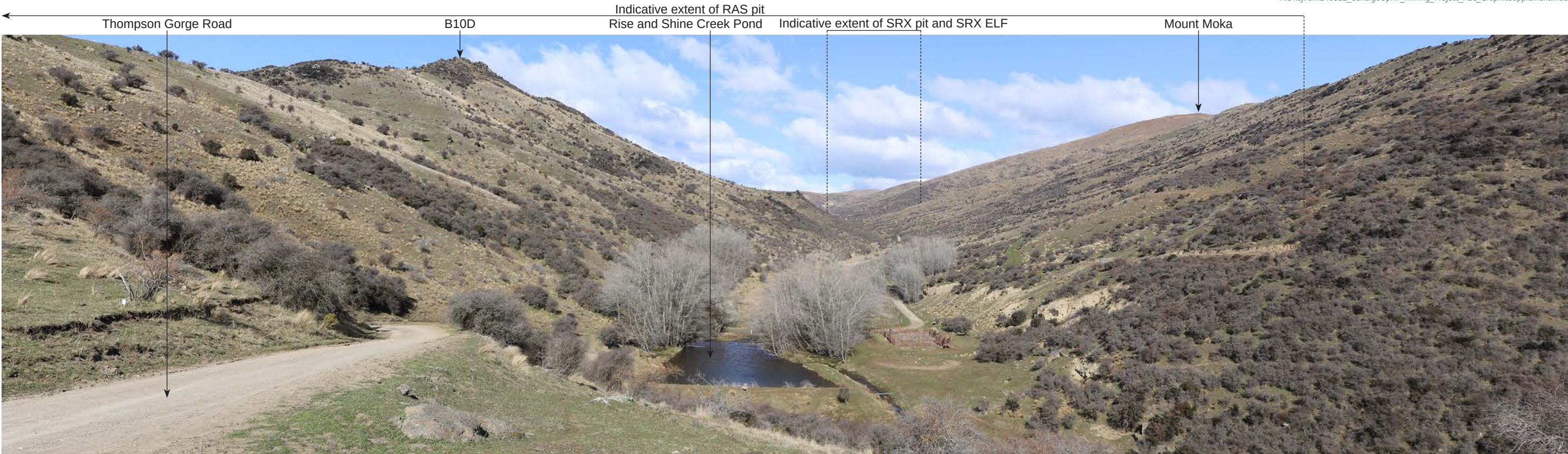
Site Appraisal Photograph F: View from Thompson Gorge Road, looking in a southeasterly direction towards the proposed location for RAS pit.



Site Appraisal Photograph G: View from existing Site access road, looking in a northwesterly direction towards the proposed location for RAS pit.



Site Appraisal Photograph H: View from existing Site access road, looking in a southwesterly direction over Rise and Shine Creek.



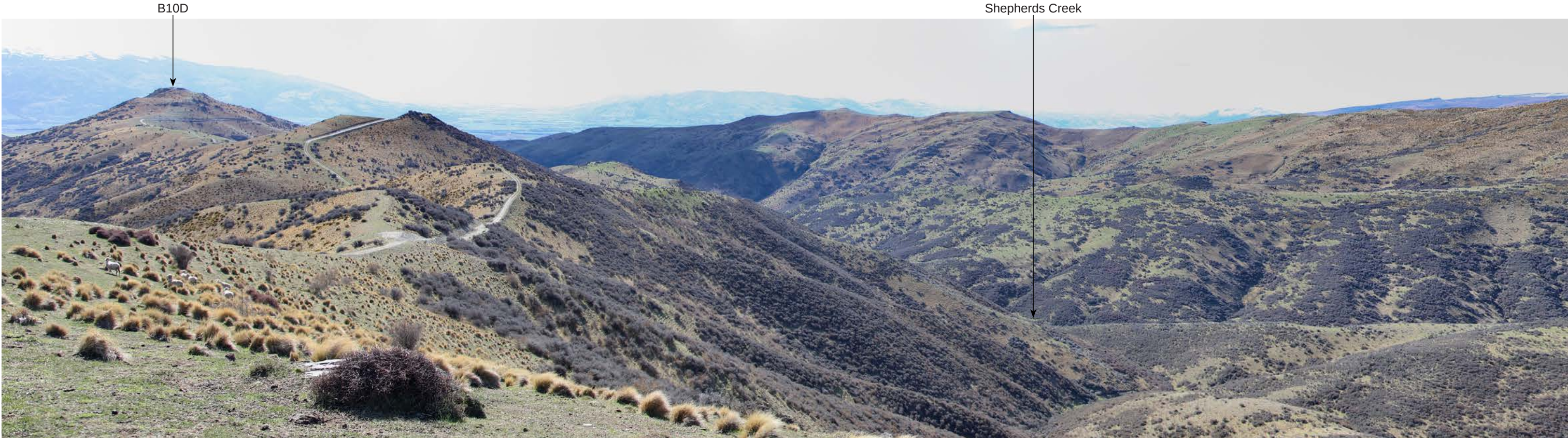
Site Appraisal Photograph I: View from Thompson Gorge Road, looking in a southeasterly direction into Rise and Shine Creek.



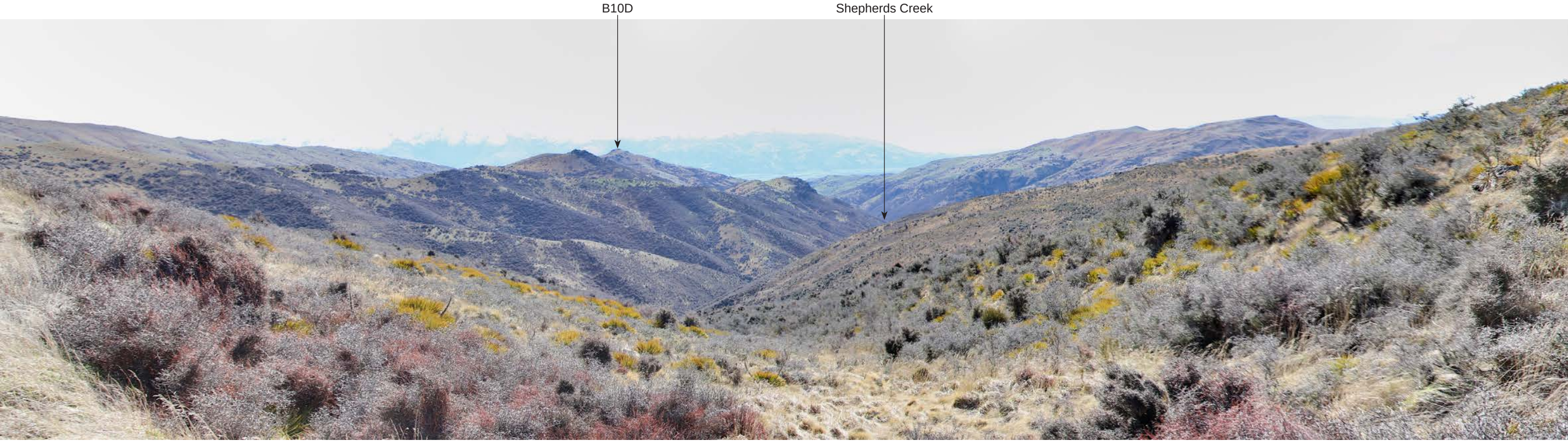
Site Appraisal Photograph J: View from existing Site access road, looking in a northeasterly direction towards the proposed location for ELF.



Site Appraisal Photograph K: View from existing Site access road, looking in a northeasterly direction towards the proposed location for TSF.



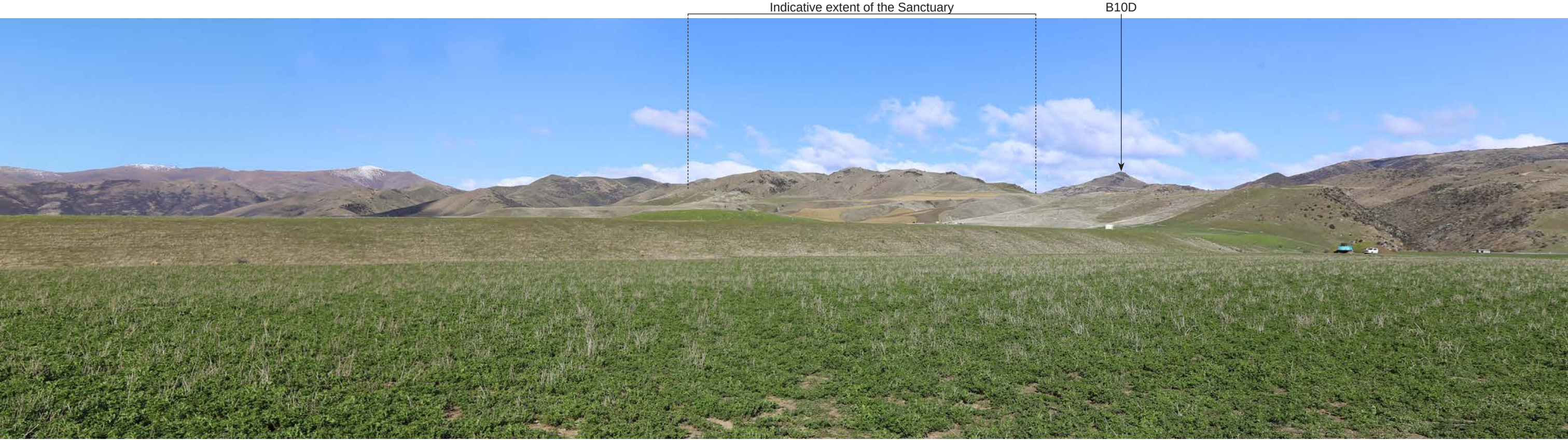
Site Appraisal Photograph L: View from existing Site access road, looking in a northwesterly direction towards the proposed location for ELF and TSF.



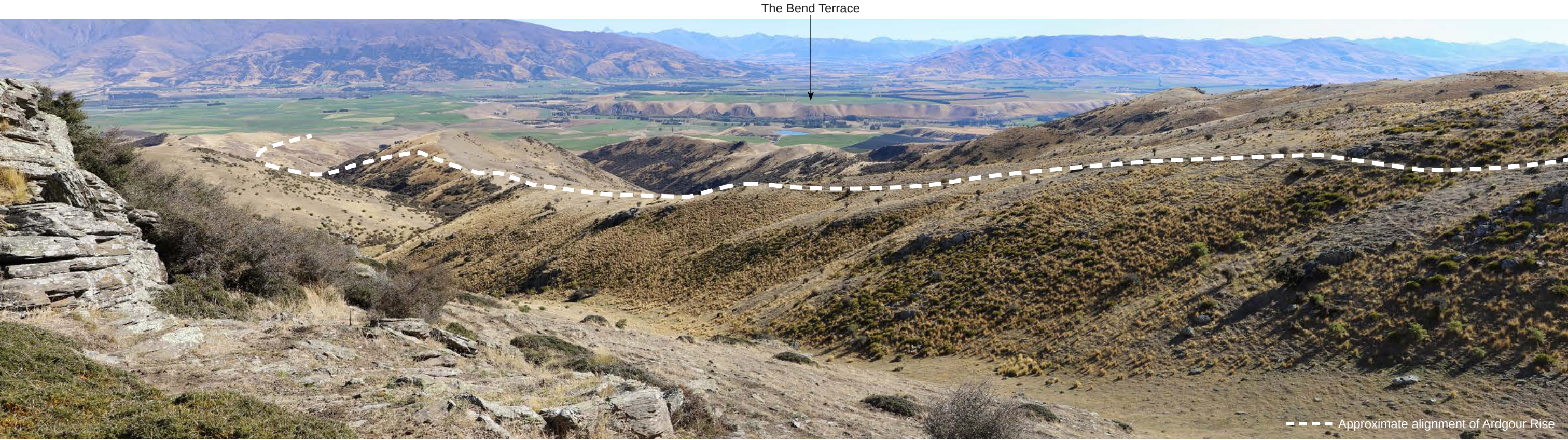
Site Appraisal Photograph M: View from Thompson Gorge Road, looking in a northwesterly direction towards the proposed location for TSF.



Site Appraisal Photograph N: View from existing Site access road, looking in a southeasterly direction over Rise and Shine Creek.



Site Appraisal Photograph O: View from Thompson Gorge Road at the foothills of Dunstan Mountains (within the proposed Site workers camp), looking in a southeasterly direction into the valley.



Site Appraisal Photograph P: View from existing farm track, looking in a northwesterly direction towards Upper Clutha valley.



Site Appraisal Photograph Q: View from existing farm track, looking in a southerly direction towards Thomsons Saddle.



Site Context Photograph 1: View from Kanuka Loop, approximately 6 kilometres west of the Site, looking in a northeasterly direction.



Site Context Photograph 2: View from Thompson Gorge Road, approximately 2 kilometres northwest of the Site, looking in a southeasterly direction.



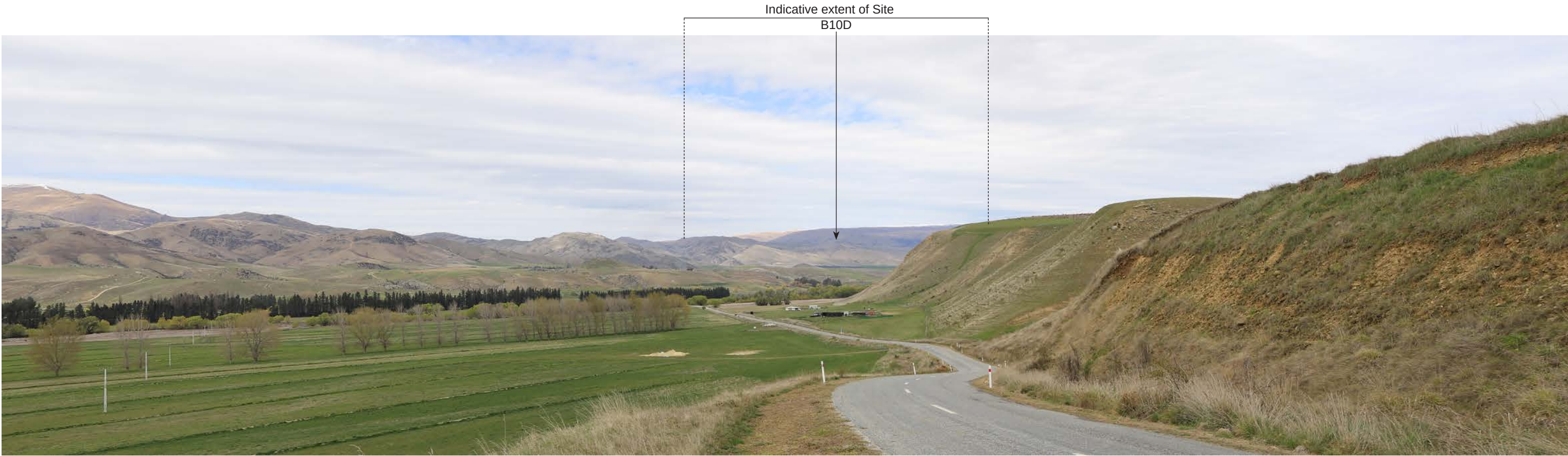
Site Context Photograph 3: View from Ardgour Road, approximately 5 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 4: View from State Highway 8, approximately 6 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 5: View from Māori Point Road, approximately 7 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 6: View from Ardgour Road, approximately 10 kilometres north of the Site, looking in a southerly direction.



Site Context Photograph 7: View from Jolly Road, approximately 12 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 8: View from State Highway 8A, approximately 11 kilometres northwest of the Site, looking in a southeasterly direction.



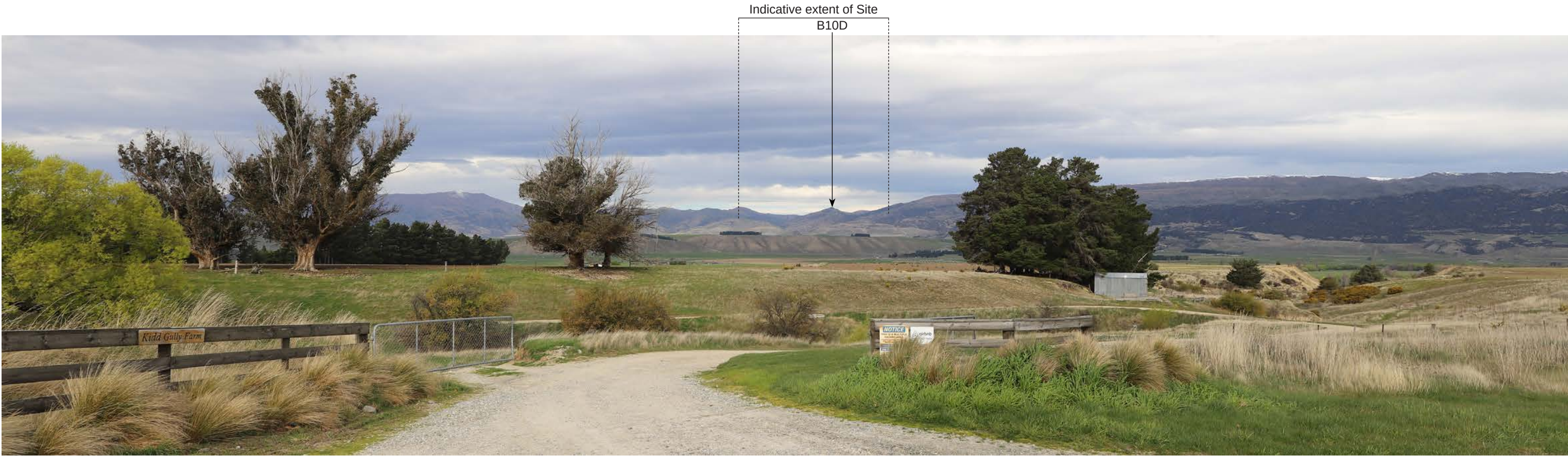
Site Context Photograph 9: View from the intersection of State Highway 8A and Glenfoyle Road, approximately 21 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 10: View from Pukekowhai Drive, approximately 16 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 11: View from Pisa Range Ridge Track, approximately 13 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 12: View from State Highway 6, approximately 9 kilometres northwest of the Site, looking in a southeasterly direction.



Site Context Photograph 13: View from Mount Pisa Road, approximately 12 kilometres west of the Site, looking in an easterly direction.

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Boffa Miskell is a leading New Zealand environmental consultancy with nine offices throughout Aotearoa. We work with a wide range of local, international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, Te Hīhiri (cultural advisory), engagement, transport advisory, climate change, graphics and mapping. Over the past five decades we have built a reputation for creativity, professionalism, innovation and excellence by understanding each project’s interconnections with the wider environmental, social, cultural and economic context.



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Appendix 6: Visual Simulations



BENDIGO OPHIR MINING PROJECT

VISUAL SIMULATIONS

08 JULY 2025



BENDIGO OPHIR MINING PROJECT

ALL MINE ELEMENTS HAVE BEEN SHOWN AS OCCURRING AT THE SAME TIME.



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View from Thomson Gorge Road - Single 50mm Frame (View During Operation)

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View from State Highway 8A - Single 50mm Frame (View During Operation)

View from State Highway 8A - Single 50mm Frame (View at Closure)
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View from Pukekowhai Drive, Queensbury - Single 50mm Frame (View During Operation)

View from Pukekowhai Drive, Queensbury - Single 50mm Frame (View at Closure)
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View from State Highway 6 - Single 50mm Frame (Existing View)
- VS 8:

View from State Highway 6 - Single 50mm Frame (View During Operation)

View from State Highway 6 - Single 50mm Frame (View at Closure)
- VP 9:

View from State Highway 8, Bendigo - Single 50mm Frame (Existing View)
- VS 9:

View from State Highway 8, Bendigo - Single 50mm Frame (View During Operation)

View from State Highway 8, Bendigo - Single 50mm Frame (View at Closure)
- VP 10:

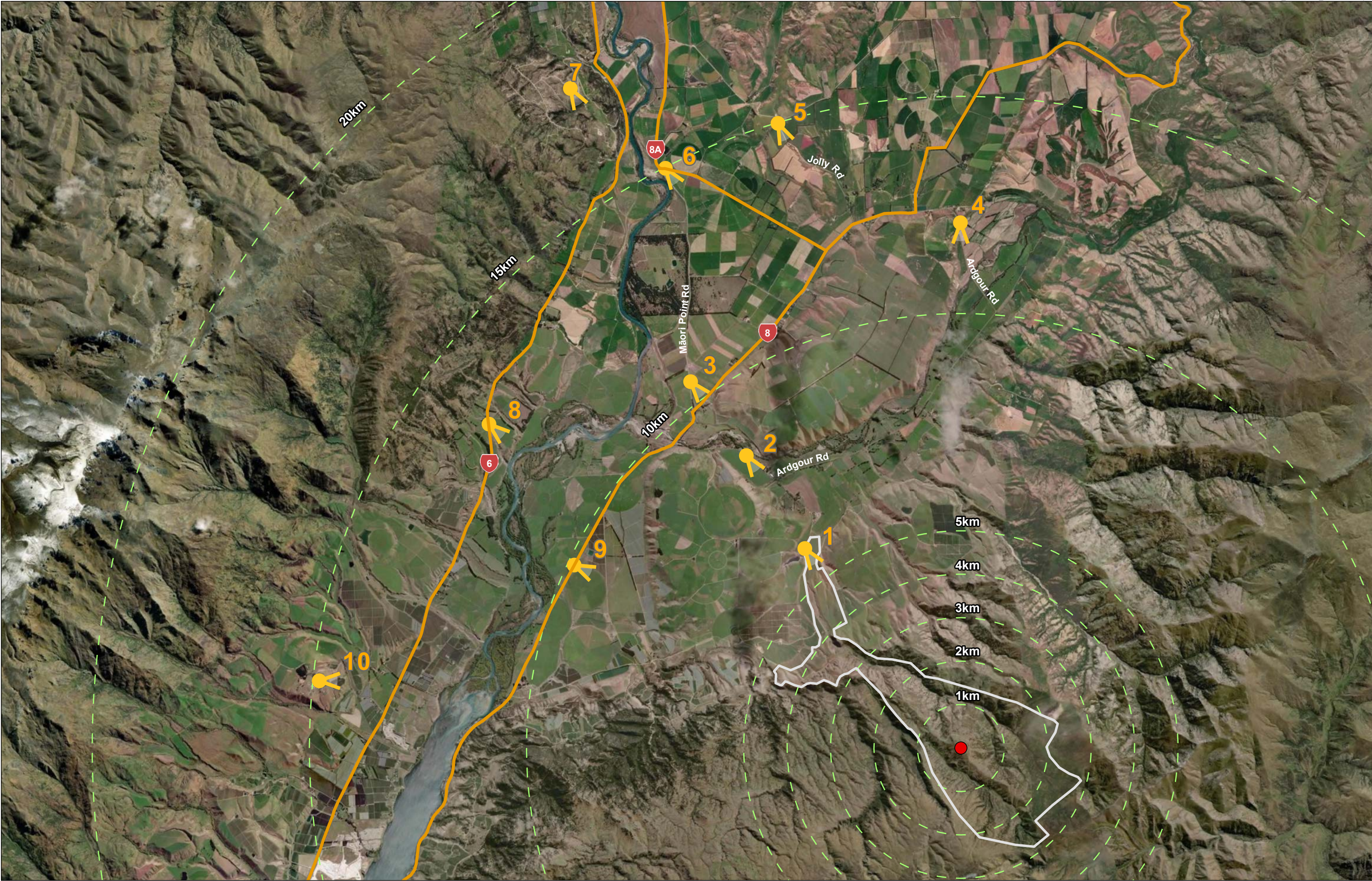
View from Mount Pisa Road - Single 50mm Frame (Existing View)
- VS 10:

View from Mount Pisa Road - Single 50mm Frame (View During Operation)

View from Mount Pisa Road - Single 50mm Frame (View at Closure)

METHODOLOGY

Visualisations Methodology







Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure



Existing View



Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

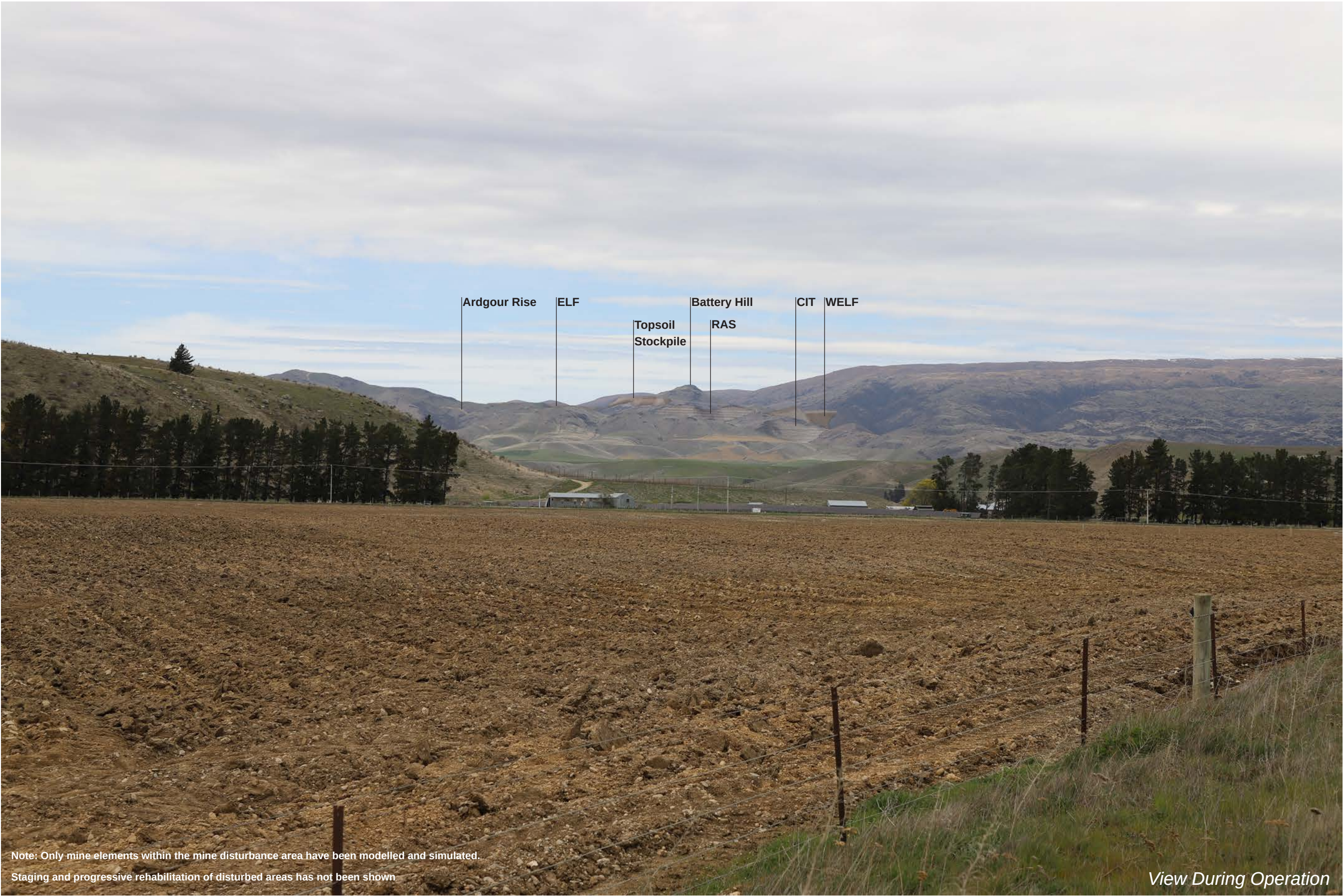
View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure







Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure

NZTM Easting	: 1 312 389.9 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 025 197.4 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 249.3m / 1.6m	Projection	: NA
Date of Photography	: 10:52am 25 September 2024 NZST	Image Reading Distance @ A3 is	50 cm



Existing View



Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure



Existing View





Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure



Existing View



Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure





Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure

Viewpoint Details

NZTM Easting : 1 309 621.5 mE
NZTM Northing : 5 031 947.4 mN
Elevation/Eye Height :392.5m / 1.6m
Date of Photography :2:54pm 25 September 2024 NZST

Data Sources:

Horizontal Field of View : 40°
Vertical Field of View : 25°
Projection : NA
Image Reading Distance @ A3 is 50 cm





Note: Only mine elements within the mine disturbance area have been modelled and simulated.
Staging and progressive rehabilitation of disturbed areas has not been shown

View During Operation



Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure







Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure

NZTM Easting	: 1 309 709.5 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 020 976.0 mN	Vertical Field of View	: 25°
Elevation/Eye Height	: 213.9m / 1.6m	Projection	: NA
Date of Photography	: 12:54pm 25 September 2024 NZST	Image Reading Distance @ A3 is 50 cm	



Existing View





Note: Only mine elements and associated land cover within the mine disturbance area have been modelled and simulated. Changes in land cover anticipated within the mine regeneration zone have not been simulated.

View at Closure

VISUALISATIONS - METHODOLOGY

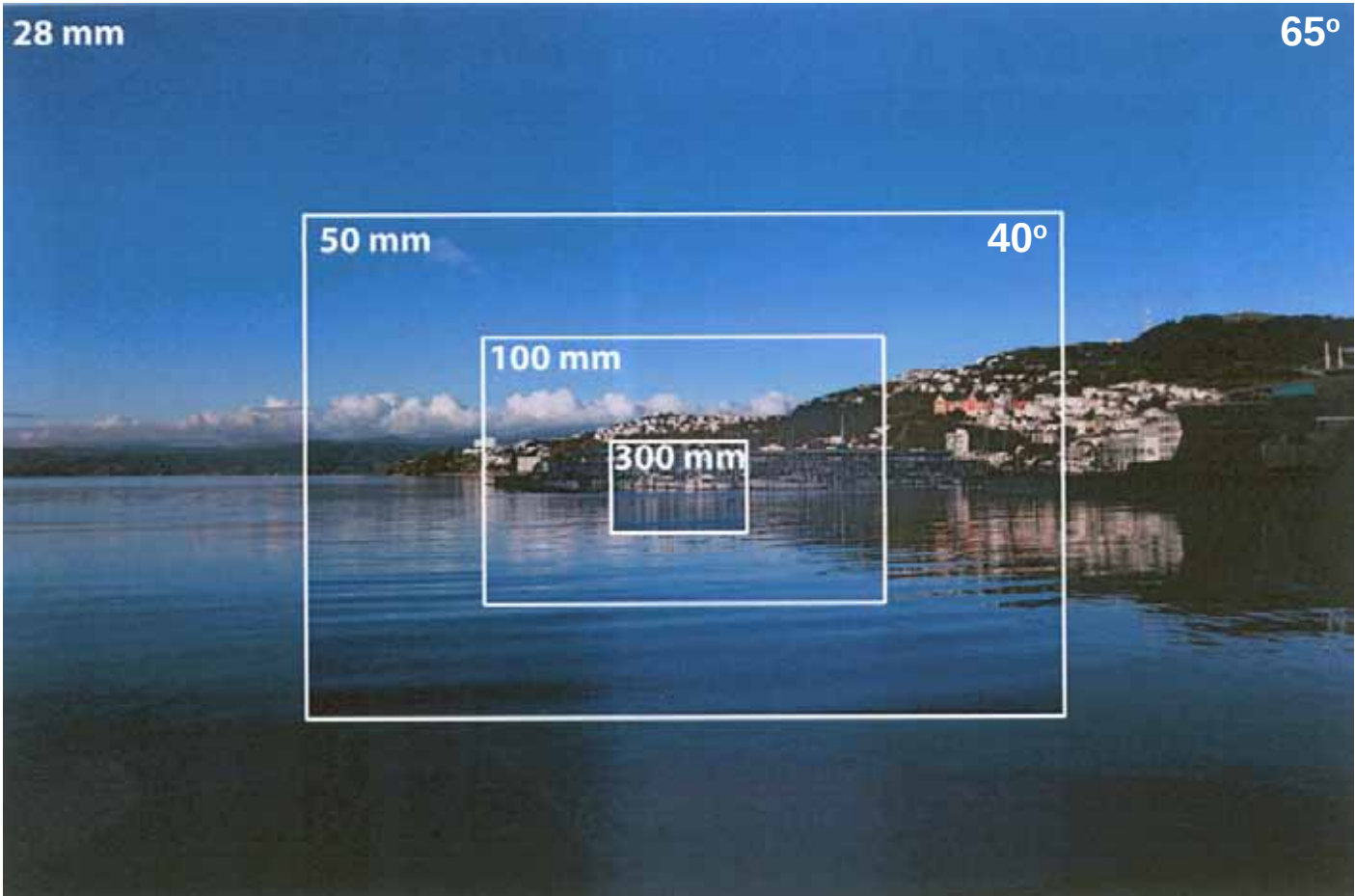
SITE VISIT & PHOTOGRAPHY

Site photographs were taken with a Canon digital SLR camera fitted with a 50mm focal length lens. A series of photos were taken at predetermined viewpoints, situated on public land. The locations of each viewpoint were recording using GPS.

NZILA GUIDELINES & PANORAMA PREPARATION

The visualisations have been produced in accordance with the Tuia Pito Ora New Zealand Institute of Landscape Architects (NZILA) Best Practice Guidelines for Visual Simulations (BPG 10.2) and also adhere to Boffa Miskell’s internal Visualisation Guidelines.

Camera lenses with different focal lengths capture images with differing fields of view. As can be seen below (derived from Fig 9 of the NZILA BPG), a photo taken with a 28mm lens provides a horizontal field of view of 65°. A 50mm lens will provide a cropped (40°) version of the same view. So panoramas can be created by taking multiple 28mm or 50mm photos (in “portrait” mode), and using digital stitching software to merge and crop to create a single panorama. The photos used in these visualisations have a field of view of 40°.

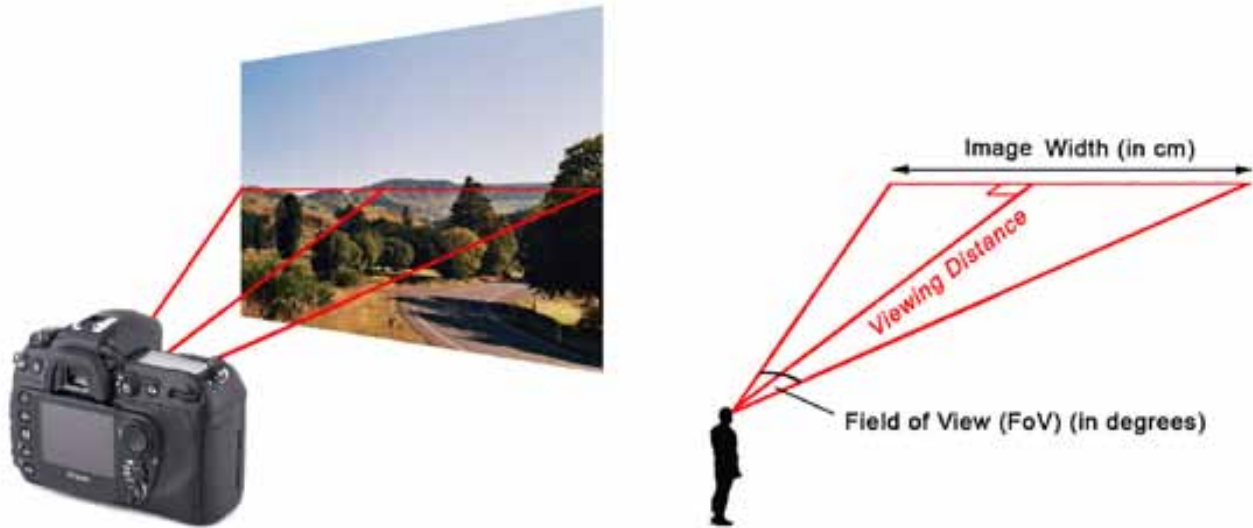


3D MODELLING

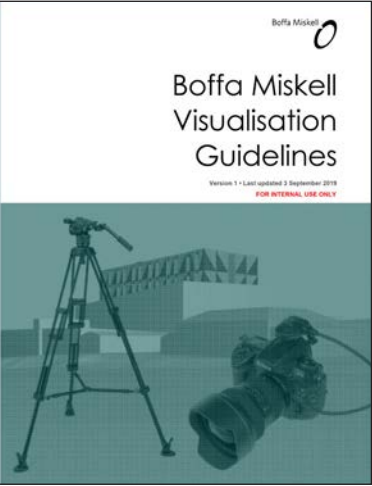
Virtual camera views were then created in 3D modelling software, and 3D terrain data and engineering modelling were imported. These views were then registered over the corresponding photographic panorama, using identifiable features in the landscape and the characteristics of the camera to match the two together. The visualisations were then assembled using graphic design software.

IMAGE READING DISTANCES

These visualisations have a field of view of 40° and so should be viewed from a distance of 50 cm when printed at A3. This will ensure that each simulation is viewed as if standing on-site at the actual camera location, and is in accordance with Section 7.11 of the NZILA BPG. Users are encouraged to print these pages on A3 transparency, go to the viewpoint and hold at the specified reading distance in order to verify the methodology.



Geometry of Image Reading Distance



Appendix 7: Landscape Mitigation and Closure Plans

SITE WORKER CAMP + OFFICES

LOWER SHEPHERDS WETLAND
0.5ha wetland.

PROCESS PLANT
Cut into valley floor. Waterway diverted to north of valley.

PEST EXCLUSION AREA
Habitat for native lizards.

COME IN TIME PIT
Delay mining to at least year-6 until rehabilitation and translocation techniques are successfully developed. Strict edge control to protect surrounding habitat.

COME IN TIME BATTERY
Access from car park (3) or walking track.

WILLOWS
Removal and management in Clearwater Creek.

BENDIGO HISTORIC RESERVE

ONL

ROAD TO MAGAZINE AND EMULSION

MAGAZINE

EMULSION

QUARRY

ARDGOUR RISE ROAD
New 4WD track created to enable access in place of Thomson Gorge Road.

PEST EXCLUSION AREA
Habitat for native lizards including lizards relocated from site. Constructed in first 2-3 years 2m high predator proof fence.

ORE STOCKPILE

SHEPHERDS CREEK DIVERSION CHANNEL

ARDGOUR STATION

UNDERGROUND PORTAL

SHEPHERDS CREEK FILL

SEEPAGE COLLECTION SUMP AND SILT POND

WORKSHOP PAD AND BUILDINGS

NORTHERN DIVERSION CHANNEL
Permanent diversion channel and 4WD access around ELF with riparian enhancement.

ELF
Progressively capped and rehabilitated for ecological outcomes. Create a mosaic of diverse shrubland and some tussock. Rock for lizard habitat.

NORTHERN DIVERSION CHANNEL
Temporary diversion channel and 4WD access around TSF.

SOUTHERN DIVERSION CHANNEL
Temporary diversion channel and 4WD access around TSF.

MINE REGENERATION ZONE
Progressive rehabilitation by enrichment and thickening of grey scrubland and tussock areas to connect Ardour Conservation Reserve and Sanctuary.

ARDGOUR CONSERVATION RESERVE

BENDIGO STATION

SREX DIVERSION CHANNELS
Temporary clean water diversion to Rise and Shine Creek.

SREX EAST
Pit is covered by ELF.

SREX ELF

SREX DIVERSION CHANNELS
Permanent clean water diversion to Rise and Shine Creek.

RAS

CIT

WELF
Final design to be naturalised.

RISE AND SHINE PIT

WATERWAY DIVERSION
Rise and Shine Creek diverted along bench around top of RAS Pit.

B10D
Visibility and integrity of B10D along skyline remains intact.

SOUTHERN DIVERSION CHANNEL
Temporary diversion channel and 4WD access around ELF.

TSF

SRX

SRX ELF

Mine regeneration zone

Private 4WD

Thomson Gorge Road

Ardour Rise Road

Clearwater Creek

Rise and Shine Creek

Shepherds Creek

New walking Track to access CT Battery

Existing Thomson Gorge Road retained

Upgraded and realigned Ardour Rise Road

Existing 4WD tracks

Area of disturbance

Outstanding Natural Landscape (ONL)

Existing waterways

Permanent clean water diversion channel

Temporary clean water diversion channel

Dirty water diversion channel

Known springs/ seepages

LEGEND

1 SOIL STOCKPILE
Rough surface established with vegetation and rock cover during mine operation.

2 HAUL ROADS
16m and 30m wide gravel roads.

3 THOMSON GORGE ROAD CLOSURE
From Year-2, closed at extent of works for public safety. Road surface remains to be re-purposed at closure for recreation

Boffa Miskell

BENDIGO-OPHIR MINE

Date: 21 July 2025

Plan prepared for Santana Minerals by Boffa Miskell Limited

Project Manager: Rhys.Girvan@boffamiskell.co.nz | Drawn: EWO | Checked: RGJ

0 50 300m
1:8,000 @ A0
1:18,000 @ A2