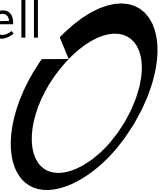


Boffa Miskell



Macraes Phase 4

Landscape and Natural Character Effects Assessment
Prepared for Oceana Gold (New Zealand) Limited
1 September 2026





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This document may be cited as: Boffa Miskell Limited 2026. <i>Macraes Phase 4: Landscape and Natural Character Effects Assessment</i>. Report prepared by Boffa Miskell Limited for Oceana Gold (New Zealand) Limited.				
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Revision /version:	Issue date:	Prepared by:	Description:	Reviewed by:
REV 0	1/09/2026	Rhys Girvan Associate Partner Landscape Architect Boffa Miskell Limited Hannah Wilson Associate Principal Landscape Architect Boffa Miskell Limited.	Final	Rhys Girvan Associate Partner Landscape Architect Boffa Miskell Limited Frank Boffa Consultant Landscape Architect
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Executive Summary

OceanaGold (New Zealand) Limited operates the existing Macraes Operation at Macraes Flat, East Otago. The Macraes Phase Four Project (MP4) seeks to extend mining activity within the established Macraes Operation through the expansion of existing open pits, waste rock and tailings facilities, underground mining, water management infrastructure, road realignments, ecological enhancement works, and closure and rehabilitation activities.

Boffa Miskell Limited has been engaged to assess the landscape and natural character effects of MP4, including visual effects. The assessment has been prepared in accordance with *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* and informed by desktop review, fieldwork, visibility analysis, visual simulations, and iterative input into the project layout and rehabilitation approach.

The Macraes Operation is located within an elevated rural upland landscape associated with the eastern Otago peneplain and Taiari Ridge. The wider landscape is characterised by rolling hill country, incised gullies, exposed schist, rock tors, pastoral land cover, historic mining associations, and the headwaters of the Taiari, Waihemo and Waikouaiti River systems.

The landscape is also of high significance to mana whenua, reflecting an enduring ancestral relationship with the area spanning more than 800 years. Heke between coastal and inland areas followed ara tawhito established by tīpuna, enabling access to resources for mahika kai and the intergenerational transmission of associated practices, knowledge and relationships.

Alongside its enduring mana whenua associations, the landscape has been shaped since the mid-nineteenth century by pastoral settlement and successive phases of mining. Historic mining patterns and features remain evident, while large-scale modern mining has been a prominent landscape influence since the 1990s. MP4 therefore represents a continuation and intensification of mining activity within an important albeit modified pastoral and mining landscape.

The assessment has considered MP4 across three established mining areas: the Coronation Mining Area, the Central Mining Area and the Golden Bar Mining Area. Each area has a different landscape setting, degree of existing modification, visual catchment and relationship with surrounding watercourses.

Within the Coronation Mining Area, MP4 will extend the Coronation and Coronation North pits and modify existing waste rock stack and backfill landforms. These works will increase the scale and extent of exposed mining modification during operation, including within the Trimbells Gully catchment, but will remain closely associated with existing mining activity and improved closure outcomes. In this context, adverse landscape effects are assessed as **moderate** during operation, reducing to **low-moderate** at closure following rehabilitation.

Within the Central Mining Area, MP4 will occur within the most intensively modified part of the Macraes Operation, but also encompasses headwaters of the Waikouaiti River North Branch that are of particular significance to mana whenua and have been affected by previous mining activity. Key changes occur in the context of this existing substantial modification and include the Innes Mills Pit extension, relocation of tailings, further development of the Frasers Tailings Storage Facility, relocation of the Open Pit Workshop, realignment of Macraes Road and changes to existing waste rock and backfill landforms. In this area, adverse landscape effects are assessed as **moderate** during operation, reducing to **low-moderate** at closure.

Within the Golden Bar Mining Area, MP4 will reactivate and extend an existing mined area currently under Interim Management and therefore partially rehabilitated. The proposed works will increase localised mining modification and temporarily reduce the perceived continuity of the surrounding rural hill country. These effects will be localised and, following mining, progressively reduced through rehabilitation intended to reintegrate the pit, waste rock stack and associated disturbed areas into the wider open rural landscape. Adverse landscape effects are assessed as **moderate** during operation, reducing to **low-moderate** at closure.

Natural character effects are primarily associated with localised changes to the headwaters, active beds, margins and hydrological management of streams within and adjoining proposed mining areas. These effects occur within catchments that have already been modified by grazing, mining, altered drainage patterns and

engineered water management infrastructure. Accordingly, adverse natural character effects are assessed as **low–moderate** to **moderate** during operation, reducing to **low–moderate** or lower at closure. Restoration and enhancement measures are expected to improve natural character relative to the existing and consented environment, particularly in terms of the Waikouaiti River North Branch headwaters. At closure, this is expected to provide a beneficial natural character effect, albeit within a still modified and engineered post-mining landform.

Visual effects will vary according to viewing location, distance, elevation, intervening landform and the staging of mining activity. The most open views will generally be available from parts of Longdale Road, Macraes Road, Red Bank Road and Golden Bar Road, and from some nearby rural properties. Visual effects are generally assessed as **low–moderate** from most public and private viewing locations, with some localised **moderate** adverse effects during operation. The highest localised effects will occur along parts of Golden Bar Road, Red Bank Road and areas adjoining the Macraes township where operational activity and extensions to existing waste rock stacks will be visible. These effects are expected to reduce to **low** once mining ceases and rehabilitation becomes established.

Night-time lighting associated with MP4 will continue the existing pattern of lighting associated with the 24-hour Macraes Operation. Subject to the lighting controls identified in the Lighting Assessment, lighting effects are not expected to materially alter the overall landscape and visual effects conclusions.

The assessment has also considered the cumulative effects of MP4 as a whole across the Coronation, Central and Golden Bar Mining Areas, in the context of existing landscape modification and successive phases of historic and modern mining at Macraes. This does not involve adding together the effects assessed for the individual mining areas. Rather, it considers how the combined works will extend the duration and geographic spread of mining and rehabilitation, rework some previously rehabilitated areas, and continue the modification of landscape patterns and stream headwaters over time. The established mining context, spatial separation and progressive staging of the mining areas moderate the degree of cumulative change across the wider Macraes Flat landscape. Taking these factors into account, cumulative adverse landscape effects during operation are assessed as **moderate**.

The proposed mitigation, rehabilitation, closure and environmental enhancement measures are integral to this overall conclusion. These include shaping and revegetating waste rock stacks and backfill areas; allowing permanent pit waterbodies to form; dry-capping and rehabilitating tailings storage facilities; riparian planting and watercourse reinstatement; controlling lighting; coordinating rehabilitation with heritage and archaeological recommendations; and continuing engagement with mana whenua. The broader compensation and enhancement package will also provide beneficial landscape and ecological outcomes, including habitat protection and restoration at Murphys, planted-pine removal and tussock restoration at Mt Highlay, and indigenous shrubland restoration and longer-term succession toward podocarp-dominant dryland forest within Cranky Jim's Link Restoration Area.

As mining activity ceases and rehabilitation and enhancement measures become established, cumulative adverse landscape effects are expected to reduce to **low–moderate** at closure. The post-closure landscape will remain materially modified and will continue to be understood as a rehabilitated mining landscape rather than a natural or unmodified upland environment. Nevertheless, the cessation of operational activity, removal of infrastructure, rehabilitation of disturbed surfaces, ecological enhancement and establishment of vegetation will materially reduce the effects experienced during operation.

Subject to the full and effective implementation of the proposed mitigation, rehabilitation and closure measures, MP4 can be accommodated within the established Macraes mining landscape from a landscape and natural character perspective.

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Graphic Supplement (bound separately)

Visual Simulations (bound separately)

1.0 Introduction

OceanaGold (New Zealand) Limited (“**OGNZL**”) currently undertakes open pit and underground gold mining operations at the Macraes Operation located at Golden Point Road, Macraes Flat, East Otago. As part of their ongoing operations, OGNZL continually review the remaining life of the Macraes Operation in light of updated knowledge of the gold resource and the economics of mining.

Reflecting recent exploration success and optimisation work, together with higher gold prices, the Macraes Phase Four Project (“**MP4**” or “**the Project**”) seeks to extend the life of mining at the Macraes Operation until at least 2039. The Project, which will enable gold production at a rate of approximately 130,000 ounces per annum, is identified as a Listed Project in Schedule 2 of the Fast-Track Approvals Act 2024 (“**FTAA**”) as a project providing significant national or regional benefits.

Boffa Miskell Limited (BML) has been engaged by OGNZL to prepare a landscape and natural character effects assessment of MP4. The proposal will include the expansion of the Coronation, Central, and Golden Bar Mining Areas of the existing Macraes Operation, located within the High-Country Rural Zone of the Dunedin Second Generation Plan (2GP), and the Macraes Mining and Rural Scenic Zones of the Operative Waitaki District Plan.

The assessment considers the effects of MP4 in relation to its broader and local landscape context, available views and effects on the natural character of streams within the vicinity of the Macraes Operation (including Coal Creek, Trimbells Gully, Deepdell Creek, Waikouaiti River North Branch, Murphys Creek, Clydesdale Creek and Golden Bar Creek). BML has worked collaboratively with Frank Boffa and the OGNZL MP4 project team to inform mitigation and long-term rehabilitation opportunities at project completion.

MP4 comprises several components. Within the Macraes Operation area (hereinafter referred to as the ‘Site’), the proposal will expand on the existing gold mine operation, waste rock disposal and tailings disposal. The MP4 description is set out in detail in the Fast Track Approvals Act (FTAA, 2024) Substantive Application Report (Mitchell Daysh 2026).

Given the complexity of the MP4 expansion, this report has been split into three parts. Part A outlines the landscape and statutory context. Part B sets out an assessment of Landscape, Natural Character and Visual Effects of each mining area, namely Coronation Mining Area, Central Mining Area, and Golden Bar Mining Area alongside ecological offsetting proposed as the Murphys Ecological Enhancement Area. Part C sets out an assessment of cumulative effects. 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 MP4.

To assess potential worst 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 MP4 elements. This is a conservative approach to the assessment as activity will occur gradually and sequentially across various stages within the respective mining areas and will not occur simultaneously everywhere all at once. This landscape assessment has also been undertaken concurrently during the design of the MP4 expansion. Accordingly, this has informed the nature and form of the proposed landscape mitigation and its subsequent rehabilitation at closure to avoid, remedy or mitigate potential for adverse landscape effects.

2.0 Approach

This assessment follows the concepts and principles outlined in *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines (TTatM)*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 (refer to Image 1 below).



Image 1: Seven-point scale. (TTatM, 2022).

2.1 Familiarisation of the MP4 expansion and Receiving Environment

2.1.1 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 MP4 expansion. This information included:

- a) the statutory setting of the MP4 area and surrounding context;
- b) existing landscape assessments undertaken within the receiving environment; and
- c) base map data² (such as contours and aerial photography).
- d) Kā Huru Manu, The Ngāi Tahu Cultural Mapping Project.
- e) Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, prepared by Aukaha.

2.1.2 Site Analysis and Input into the MP4 Layout

To inform this assessment and assist with managing the potential for adverse landscape, natural character and visual effects, the MP4 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 MP4 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 land cover 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.

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

² Mapping used to assess MP4 is based on NZTM and NZVD2016.

As part of the project, several Site visits were undertaken by BML Landscape Architects to understand the existing Site context and character. An initial Site visit was undertaken by Rhys Girvan, and Hannah Wilson (BML Landscape Architects), and Frank Boffa (Consultant Landscape Architect) from 26th -28th November 2025. The purpose of this Site visit was to undertake an initial appraisal of the Site including the operational and/or existing Coronation, Central, and Golden Bar Mining Areas, and to determine key views surrounding the Site. A series of Site Appraisal and Site Context Photographs were taken during the Site visit. The purpose of the Site Appraisal Photographs is to understand and document the existing characteristics and qualities of the Site including existing mine elements currently operational. The purpose of the Site Context Photographs is to understand and document the visual catchment of the MP4 expansion.

A secondary Site visit was undertaken by Rhys Girvan, and Megan Walker (BML Landscape Architects) on 19th -20th February. The purpose of the Site visit was to assist with the preparation of the Mitigation and Closure Plans. This included walking the existing and/or operational Coronation, Central, and Golden Bar Mining Areas and a series of workshops with the Project Team.

A third Site visit was undertaken by Rhys Girvan and Hannah Wilson on 20th April 2026. This Site visit was a joint Site visit with Council, Council experts, mana whenua appointed Pūkenga and other OGL experts and independent consultants assisting with the MP4 project. From a landscape perspective, the Site visit was an opportunity to discuss the draft Mitigation and Closure Plans with Council, Council experts, and mana whenua appointed Pūkenga and to walk the Site to discuss any potential areas of consideration or concern with regard to the project.

2.1.3 Engagement with Pūkenga

In addition to Site visits, the assessment process has included engagement with mana whenua appointed Pūkenga Dr Alayna Rā. This engagement has assisted with understanding of cultural landscape matters, including mana whenua associations with the wider Macraes landscape, the significance of headwaters and waterways, and the relationship between landform, water, vegetation, mahika kai, ara tawhito and kōrero tuku iho.

For the duration of this project, collaboration with mana whenua appointed pūkenga has included the following:

- An initial Site visit with BML landscape architects Rhys Girvan and Hannah Wilson and pūkenga Dr Alayna Rā was undertaken on 20th April 2026. The purpose of the Site visit was to conduct an initial meeting, walk the Site together, and discuss the initial draft of the Mitigation and Closure Plans prepared by BML.
- A follow up meeting was held in Queenstown on 26 June 2026 with BML landscape architects Rhys Girvan and Megan Walker, with the pūkenga. The purpose of the meeting was to review the draft Mitigation and Closure Plans for the project and Teams meeting on the 1 July to discuss incorporation of Cultural Values within the Assessment.
- REV C of this report was then provided to the pūkenga for commentary and received during the completion of the final report³.

Feedback from the pūkenga reinforced the sensitivity of this landscape for mana whenua and its cultural significance regarding occupation, mahika kai, and connections with the headwaters of the Taiari, Waihemo and Waikouaiti Rivers. This includes the importance of the health and

³ Feedback was provided as comments on the report and not in a form which can be appended to the updated report.

mauri of the water, the interconnectedness expressed through Ki Uta Ki Tai, and the ancestral status of freshwater environments. From a mana whenua perspective, the established mining environment is understood both as the context within which MP4 would occur and as part of the cumulative change affecting mana whenua relationships with the landscape and its waters. Accordingly, the pūkenga's identification of the potential for high or very high cultural landscape effects is understood as reflecting these enduring and compounding effects which must be considered alongside the incremental effects of MP4 when compared with the existing and consented environment.

Consistent with TTaTM, this assessment has sought to integrate mana whenua perspectives, into an understanding of landscape character, values and effects. Input from the pūkenga has informed recognition and description of cultural landscape values across the physical, associative and perceptual dimensions of landscape, including the significance of headwaters, relationships across the landscape, and the implications of rehabilitation and closure. Effects on the landscape's values have been assessed in the context of the existing environment and the outcomes anticipated by the relevant statutory provisions. The pūkenga input does not replace a cultural impact assessment or mana whenua evidence, which are separate but complementary. Rather, it has enabled this assessment to be appropriately informed by mana whenua landscape perspectives while remaining within the landscape architect's area of expertise.

Based on this ongoing engagement, the key landscape attributes understood as relevant to mana whenua can be summarised below:

Catchment and Water Systems

The site is located within the tributaries and headwaters of the Taiari, Waikouaiti and Waihemo catchments. These waterways form an interconnected network linking upland environments with downstream ecosystems, mahika kai resources and other culturally significant places. The health and functioning of these catchments directly influences the mauri of the wider landscape and the ability of mana whenua to maintain relationships with wai.

Landforms and Landscape Character

The valleys, ridgelines, river corridors and upland environments contribute to the distinctive character of the wider landscape and have historically shaped patterns of movement, occupation and resource use. These landscape features also provide enduring markers of cultural association and identity.

Ecological Systems and Mahika Kai Resources

Indigenous vegetation, wetlands, waterways and associated habitats support the ecological integrity of the landscape and the cultural resources upon which mana whenua have traditionally relied. The condition, diversity and connectivity of these ecosystems influence both environmental health and the continued exercise of customary practices.

Cultural Landscape Connections

The site forms part of a broader ancestral landscape containing wāhi tīpuna, traditional travel routes, historical use areas and places of cultural memory. Its significance is derived from the interconnected relationships that exist across the wider landscape, rather than from individual sites considered in isolation.

2.1.4 Preparation of Visual Simulations

A series of ten visual simulations were prepared to understand the extent of visibility of MP4 and the potential impact on the surrounding viewing audiences. Visual simulations are detailed in **Sections 7-9** of this report and included within a separate Graphic Supplement accompanying this report which includes a visual simulation location plan. 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 accordance with New Zealand Institute of Landscape Architects Best Practice Guide⁴ and adhere to BML's internal Visualisation Guidelines to assist with an accurate understanding of the proposed visual change.

3.0 Part A: Landscape Context

3.1 Site Location and Description

OGNZL owns and operates the Macraes Operation at Macraes Flat, approximately 30 km northwest of Palmerston in the Otago Region. The Macraes Operation is the largest gold mine in New Zealand and, since commissioning in 1990, has produced more than 6 million ounces of gold.

Macraes Flat is situated on an elevated plateau at approximately 500 m above sea level. The plateau is flanked by the Taiari Ridge to the northwest, Shag Valley and Horse Range to the east, and the coastal hills and extinct volcanic cones of Palmerston and Waikouaiti to the southeast. Macraes Road provides access to Macraes Flat and the Macraes Operation, connecting to State Highway 85 to the east and State Highway 87 (SH87, the Middlemarch–Hyde Road) to the west.

The environment within and surrounding the Macraes Operation has been shaped by historic and current mining activities undertaken in accordance with existing resource consents. **Image 2 below** shows the arrangement of the major mine features at the Macraes Operation. In summary, the current components of the Macraes Operation include:

- Numerous open pits (both operational and non-operational);
- Two underground mines (Frasers, now closed, and Golden Point, which is actively mined);
- Waste rock stacks at various stages of operation and rehabilitation;
- A network of haul roads and general mine service tracks;
- A Processing Plant;
- Five tailings storage facilities (three inactive, one active but nearing capacity, and one under construction and currently receiving tailings);
- An extensive network of water management infrastructure, including diversion drains, silt ponds, sumps, pit lakes, and freshwater storage reservoirs;
- Two consented but not yet constructed water storage reservoirs (Camp Creek Dam and Coal Creek Dam); and

⁴ NZILA Best Practice Guide, Visual Simulations BPG 10.2, February 2010.

- Associated infrastructure supporting ongoing operations, including district roads, powerlines, workshops, offices, and associated water and amenity facilities.

The pit lakes are not intended to recreate natural lakes. They will however form permanent post-mining pit waterbodies within the rehabilitated mine landforms.

The project area is located within the tributaries and headwaters of the Taiari, Waikouaiti and Waihemo river systems and forms part of a wider ancestral landscape of significance to Kā Rūnaka. While the area has experienced substantial modification through historic and contemporary land use activities, it remains an interconnected cultural landscape comprising rivers, wetlands, indigenous ecosystems, ridgelines, valleys and wāhi tīpuna that continue to support relationships between mana whenua and the environment.

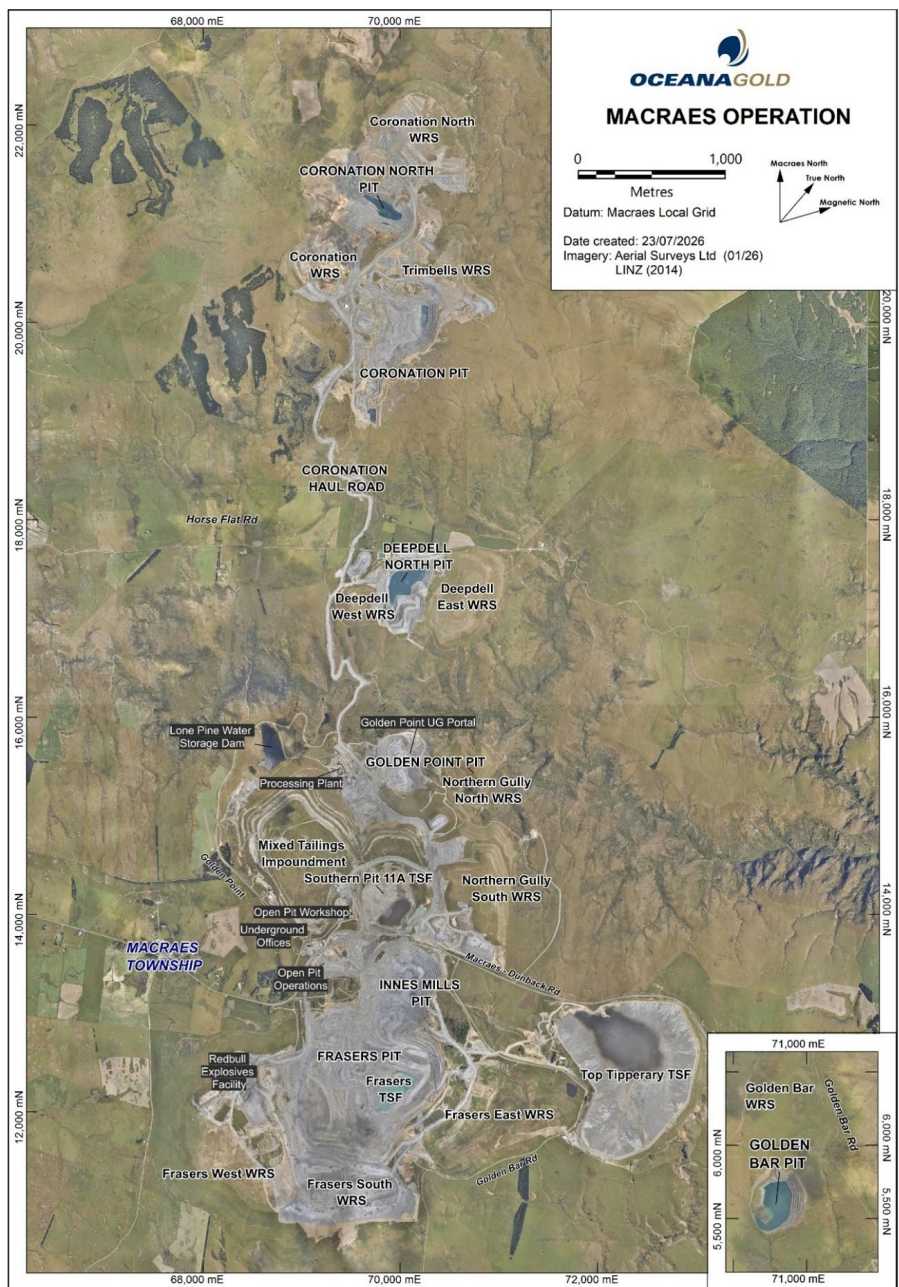


Image 2: Existing site layout at the Macraes Operation

3.2 MP4 setting

The Macraes township is located within a rural upland hill country landscape. The landscape is characterised by an extensive network of fluvially dissected rolling hills that have broad ridge crests where rock outcrops and tors are common, including along areas of skyline. These ranges and ridges are orientated northeast to southwest and enclose several narrow valley floors including Billys Flat, Moonlight Flat and Strath Taiari Plain (refer to **Figure 1: MP4 Setting** of the Graphic Supplement).

3.3 Topography

The topography of the Site (**Figure 2: Topography**) is characteristic of the modestly uplifted eastern Otago peneplain that transitions to the Taiari Ridge. This defines a broad, elevated upland setting dissected by a series of incised gullies, ridgelines and rolling hill country. The elevation plan shows the main mining areas occupying elevated terrain within the interior of this upland landscape, with the Coronation, Central and Golden Bar mining areas located on higher ground or along existing ridges and spurs. The landform falls away more sharply to the east and north-east, where a more deeply incised drainage pattern creates a finer-grained and more visually complex terrain around Stoneburn, Waynes and the wider Shag / Waihemo catchment.

To the west and south-west, the topography appears broader and more open, with more gently undulating upland surfaces and longer ridgelines associated with the Rock and Pillar / Taiari Ridge systems that run south-west to north-east toward Hyde and Macraes. The human induced topography of the existing Macraes Operation has created engineered benches and slopes expressing with some local landform high points reaching 600 metres above sea level (masl) adjoining Innes Mills Pit and 700 masl adjoining Coronation North Pit.

3.4 Landcover

Macraes Mine is located within the Macraes Ecological District. Vegetation within this Ecological District has changed drastically over time. It is suggested that the broader area would have been covered by tall montane coniferous-broadleaved forest, with matai, totara and kahikatea dominating the fertile soils of drier areas in the eastern parts of the district, whereas the western parts are dominated by inland species including toatoa, Hall's totara, broadleaf (*Griselinia littoralis*), kowhai, kanuka and red mapou⁵.

The original pre-human forest cover in the area was later altered by natural and Polynesian fires which cleared most of the inland drier coniferous-broadleaved forests. At the time of European settlement, much of the area would have been dominated by tussock grassland or shrubland, with extensive populations of purei on the colluvial flats. This vegetation has been further modified by pastoral farming and intensive agricultural practices.

Today, much of the land cover within the broader landscape is pastoral grassland with areas of tussockland covering the ridge crests and matagouri/grey scrub and gorse and/or broom occupying some of the more incised gullies. Areas of modified ground is primarily associated with the existing Macraes Operation, as illustrated in **Figure 3: Landcover**. An extensive area of exotic plantation is also found on the northeast-facing flanks of the Macraes upland near Morrisons.

⁵ Department of Conservation, Macraes Ecological District: Survey report for the Protected Natural Areas Programme, May 1997, pages 11-15.

The archaeology and heritage assessments identify a long sequence of occupation and land use, including Māori association with the wider landscape and catchments, 19th century alluvial gold mining, later hard-rock mining, early pastoral settlement, Chinese occupation at Macraes, and the development of the modern Macraes Operation. These histories remain legible in varying degrees through surviving mining features, tracks, water races, stone structures, historic fence lines, farm buildings, and places such as Gay Tan's Cottage and the Golden Point Reserve and Battery. For the purposes of this assessment, these matters are not assessed as archaeological or built heritage effects but are recognised as part of the associative values and historical legibility of the receiving landscape.

The night-time character of the broader Macraes landscape is rural, sparsely settled and relatively dark away from the existing Macraes Operation and Macraes township. Existing lighting associated with the mine already forms part of the operational landscape character, including fixed lighting, mobile lighting towers, vehicle headlights, mobile plant lighting and safety lighting. Accordingly, night-time lighting is not a new element in this landscape, although its visibility varies depending on topography, intervening vegetation, viewing distance and the location of active mining areas. The Lighting Assessment identifies that most sensitive receivers have limited or no visibility of existing or proposed mine lighting due to topographic and vegetation screening.

3.5 Landscape Character and Values

3.5.1 Waitaki Landscape Study 2004

A district-wide landscape study for Waitaki District⁶ was completed in 2004. The purpose of the study was to identify the nature and extent of areas of outstanding landscapes⁷ within the Rural Scenic Zone of the district. Within the study, 21 land units were identified, described and assessed in relation to their landscape character and values. The majority of the Site is located within Macraes Land Unit (P2) (**Figure 4**), the study states that:

- *This unit contains no landscapes that meet the 'Outstanding' criteria;*
- *The Macraes Ridge area, which forms the western or southern skyline for much of the Palmerston and Pigroot Land Units, is assessed as locally Significant landscape, for visual reasons;*
- *Parts of the Taiari Ridge are assessed as Significant for visual and natural character reasons;*
- *The Golden Point reserve containing historic mining activities, and its setting, are assessed as a Significant landscape feature.*

⁶ Graham Densem Landscape Architect, Waitaki Landscape Study: A visual assessment of Waitaki District, prepared for Waitaki District Council, May 2004.

⁷ 'Outstanding' criteria consider Natural Science, Legibility, Aesthetic, Transient, Shared and Recognised and Tangata Whenua factors.

3.5.2 Dunedin Landscape Management Areas Review 2007

The Dunedin Landscape Management Areas Review⁸ was undertaken in 2006-2007 to evaluate the Landscape Management Area (LMA) that was defined in the Dunedin City District Plan 1999. The review also provides a detailed description or characterisation of the Dunedin City landscape within each LMA, including the identification and analysis of key values and threats, and establishes management recommendations appropriate to each landscape area.

The proposed expansion, in particular the Coronation and Coronation North Pit, is within the Taiari Ridge LMA (**Figure 4**). The Taiari Ridge LMA has been assessed to contain high citywide-regional importance due to its *'significant landform that symbolically represents Dunedin's borders with both the Central Otago High Country and the Waitaki Districts, and its cultural and historic associations with both European and Māori histories'*. Within the Taiari Ridge LMA, the nearest Outstanding Natural Landscape is located approximately 3.5 km from Coronation Mine.

3.6 Cultural Impact Assessment, Aukaha 2025

As part of this landscape assessment a review of the Aukaha Cultural Impact Assessment (CIA) of the original Macraes Phase 4 (Stage 3) was undertaken. Although the CIA was prepared for a different application, the scope of the Macraes Phase 4 (Stage 3) resource consents is very similar to MP4 and provides useful context for understanding the landscape values. The assessment outlines the history of the area from the perspective of mana whenua, the interwoven connection to the landscape, and an assessment of cultural impacts based upon the four principles outlined within Te Taki Haruru⁹. A summary of these principles is outlined below in relation to this assessment.

3.6.1 Mana

As outlined within the CIA, there is a key correlation between the state of the environment and bounty of resources, and the mana of Kāi Tahu. Consequently, the duty to protect and sustain the environment is of immense significance to mana whenua, including the protection of taoka species.

In the context of MP4, the water and habitat quality of the Taiari, Waikouaiti and Waihemo Rivers and their catchments are of significance to mana whenua. This is due to the obligations of Kāi Tahu not only as kaitiaki of the whenua, but as active agents in environmental protection. Therefore, the ability to exercise mana over an area (rangatirataka) is of importance to enable kaitiakitaka.

3.6.2 Mauri

Mauri connects the physical and spiritual worlds for mana whenua and is the life force that all things possess. Just as mauri can be enhanced, it can be affected and depleted through human interactions with the taiao (environment).

⁸ Boffa Miskell Limited, Dunedin LMA Review: Landscape assessment final report, prepared for Dunedin City Council Planning, April 2007.

⁹ Te Taki Haruru, Māori Strategic Framework.

With regard to MP4, effects on the mauri of a waterbody can include changes in the appearance, smell, quality, chemical composition, and flow. This can also have impacts on the animal and plant species able to live in these ecosystems, including loss of native species, and introduction of conditions which favour exotic species.

Not only does the degradation of a waterbody or landscape affect its mauri, but also the connection between mana whenua and the associated stories, customs, and practices.

3.6.3 Tapu

As outlined within the CIA, the obligation to respect and protect the environment is derived from the significant tapu of te taiao¹⁰. Given elements within the landscape such as water and earth were created at the time of the atua and creation of the world, their tapu is heightened. It is therefore necessary to protect them as a taoka passed down from tīpuna and for those to come.

3.6.4 Whakapapa

Kāi Tahu are inherently connected to the land, water, and all life supported by them through whakapapa. They are connected to the descendants of Rakinui, Pokohāruatepō, and Papatūānuku and therefore the subsequent elements formed by them including the mountains, rivers, oceans, and forests.

The MP4 project is located within the headwaters of the Taiari, Waikouaiti, and Waihemo catchments. These upper catchments were once sites of settlement for tīpuna of Kāi Tahu, namely the Waihemo, and Waikouaiti, with the Waikouaiti facilitating passage between the coastline and Central Otago.

Since European arrival in New Zealand the connections to these ara tawhito and waterbodies has become disconnected, and by extension the passing down of knowledge and practices once associated with these areas including mahika kai.

Tūtohi 2: Values framework¹¹

	Autūroa	Auora	Autikaka	Autākata
	Mana	Mauri	Tapu and Noa	Whakapapa
Value	Tūroa is about longevity, ongoing influence and leadership in our community	Ora is about health and wellbeing, not only in people but also in the land and waterways	This is about the protection of resources, people and particular areas, enabling us to look forward sustainably	Tākata is people, and whakapapa is about genealogy. In a Māori world, we take the past with us and whakapapa is forever generative.

¹⁰ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025.
¹¹ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025. (Adapted from Dunedin City Council (2025) Te Taki Haruru, Māori Strategic Framework)

Key Intent	The mana of Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki and Te Rūnanga o Ōtākou is upheld within their takiwā.	The mauri of the whenua and wai is restored and enhanced including but not limited to the Taiari, Waikouaiti and Waihemo.	Balance is restored, and the future of our people and resources are protected.	The traditional authority of mana whenua in the Taiari, Waikouaiti and Waihemo is recognised through partnerships based on reciprocity and respect.
Environmental	Kāi Tahu are leaders in the management of our natural resources and built environment.	Mātauraka is incorporated through the co-design and co-management of our environment and resources	The environment is regenerated, and a sustainable future is secured.	Te Ao Māori informs policy, planning and decision-making
Cultural	Kāi Tahu will participate and demonstrate leadership in the community.	Kāi Tahu heritage and culture is visible, celebrated, protected and future proofed.	Communities, resources and customary practices are protected through responsible regulatory measures and processes.	Kāi Tahu values frameworks are embedded within consent conditions, restoration initiatives and mine practice.
Social	Kāi Tahu will have access to opportunities that enable social equity.	Whānau are thriving and connected	We are guided by tikaka and kawa (protocols) for the wellbeing of our whānau and wider community.	The social impacts of the Macraes Gold Project on the kaik of Kāti Huirapa ki Puketeraki are managed to meet the cultural needs, practices and values of whānau.
Economic	Kāi Tahu are active across all sectors of the economy.	Economic directions consistently enhance outcomes and equality for Kāi Tahu.	The Kāi Tahu economy is recognised as a critical part of our collective wellbeing.	Kāi Tahu networks are well connected and supported to build a prosperous future.

3.6.5 Landscape Character Description

The Macraes Operation is predominantly located within the Macraes Landscape Character Area as identified in the Waitaki District. This forms part of the elevated inland hill-country landscape between the Rock and Pillar / Taiari Ridge system to the west and the more dissected terrain extending east toward Palmerston and the Kakanui–Horse Ranges. Within this landscape context, the Coronation, Central and Golden Bar mining areas are distributed across a series of upland ridges, shallow basins and incised catchments around Macraes township, rather than forming a single compact disturbance.

Coronation Mining Area lies near the boundary between the Macraes Landscape Character Area and the equivalent Taiari Ridge Landscape Management Area within Dunedin City, reflecting a transition from the broader Macraes upland mining landscape toward the ridge-and-

basin landforms to the west. The relevant landscape for assessment is therefore not confined to the immediate pit, backfill, tailings storage and waste rock stack footprints, but includes the wider Macraes upland landscape within which the mining areas are physically, visually and historically associated.

Consistent with *Te Tangi a te Manu*¹², the landscape character of Macraes is described below through three overlapping dimensions: physical, associative and perceptual. These dimensions should not be read as discrete or independent layers. In particular, mana whenua values are interwoven across all three dimensions, including through whakapapa, hīkoi, kōrero tuku iho, mahika kai, ara tawhito and relationships with the headwaters of the Taiari, Waihemo and Waikouaiti River systems.

3.6.5.1 Physical

The physical landscape comprises a complex and sometimes rugged sequence of hills which transitions into the block faulted ridgeline feature of the Taiari Ridge in the southwest. These landforms are strongly fissured with extensive drainage gullies and striated with rocky outcrops and tors that form a distinctive characteristic of the Otago Peneplain landform alongside elevated rolling hills, shallow basins, ridgelines, incised gullies and dissected catchments. Scattered within the schist hills landscape are several smooth, rounded volcanic knobs, including the local high point of Highlay Hill which reaches 820 masl to the north-east of the Macraes Mine.

The hydrological pattern is also central to the physical landscape. Macraes lies around the headwaters of the Taiari, Waihemo and Waikouaiti River North Branch and associated tributaries. These upper catchments include intermittent and permanent streams, wetlands, gullies and modified drainage systems. While many of these waterways have been altered by pastoral land use, historic mining and the modern Macraes Operation, they remain important structuring elements of the landscape. These rivers form part of the cultural landscape for mana whenua as ara tawhito and places where resources were and continue to be gathered. The Waikouaiti River is also considered the 'wellspring' of the Puketeraki whānau and a focus of the hapū in expressing kaitiakitaka¹³.

Vegetation cover is predominantly exotic grassland, reflecting the pastoral land use of much of the landscape, particularly within the flatter Moonlight valley. Tussock grassland, and low shrubland occupies various steeper gullies within the open paddocks. Remnants of lowland snow tussock and short tussock grasslands, cushion bogs, sedge and rush swamps exist along the ridgeline crest of Taiari Ridge.

The Macraes Operation is a distinctive feature and the primary human landform modification evident in this landscape in conjunction with conversion to farmland. Other than Macraes township and some scattered rural lifestyle blocks and associated farmlands within the valleys, the broader area is essentially uninhabited farmland.

3.6.5.2 Perceptual

Despite the modification to landform by historic and existing mining activities, the broader rolling hills landform of Macraes upland and Taiari Ridge remain highly legible and expressive of their formative processes. Together, these form a contiguous and prominent backdrop to the valley floors. The hills encompassing Macraes Mine are also an important skyline consisting of a dissected and visually open rolling edge to Shag Valley in the north.

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

¹³ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025.

The Taiari Ridge, while being significantly lower than the Rock and Pillar Range, is an important landmark in framing the gateway into the Central Otago High Country and Waitaki District to the north. The rock outcrops are highly coherent with the landscape, creating a particular visual interest. The skyline, in particular Taiari Ridge, in many places is dramatic on account of these outcrops and tors, and the transient influence of winter snowfall.

The Macraes Operation creates a strong perceptual contrast with the surrounding pastoral and upland landscape. Its open pits, engineered landforms, haul roads, tailings storage facilities, processing infrastructure and areas of exposed rock and soil are highly modified and industrial in character. However, mining is also an established and defining element of the local landscape identity. The operation is not read as a new or isolated activity, but as part of the long-standing working landscape of Macraes.

Perceptual values also overlap with movement and experience. The landscape is encountered from Macraes Road, Golden Bar Road, Golden Point Road, local rural roads, heritage areas, mine viewing locations and informal recreational routes. From these places, the landscape is experienced as a combination of open rural hill country, historic mining remnants, active mining, rehabilitated landforms, headwater catchments and distant upland skylines. This creates a distinctive landscape character where rural, cultural, historic, ecological and mining values are closely interwoven.

3.6.5.3 Associative

The headwaters of rivers are of significance to mana whenua for mahika kai and were used as traditional travel routes connecting the inland and coastal landscapes of Otago. Archaeological evidence within the broader area has recorded seasonal food gathering journeys, hunting weka or harvesting eels and freshwater crays^{14 15}.

Upon European settlement, the connection between mana whenua and these landscapes became disconnected, including the passing down of knowledge and practices through interacting with the whenua, rivers and streams within the Macraes catchment. The area became extensively farmed and grazed with sheep and cattle. It had increasingly strong associations with farming, with Deepdell Station and Shag Valley Station being the larger early pastoral runs. These associations and land use practices have continued through until today.

The area has a long history of gold and quartz mining in particular at Murphys Flat, Macraes, Golden Point and further south in Nenthorn. Some of these early mining-related remnants and infrastructure are recognised for their significant historic values, including the Murphys Flat Reserve Historic Area¹⁶ and Golden Point Historic Reserve¹⁷. Both areas are listed heritage areas that contain important cultural, historical and archaeological values and are representative of Otago's gold mining history. Several heritage sites associated with the gold mine operations and the Macraes township are also identified and recognised under the Waitaki District Plan¹⁸.

These historic remnants, together with the modern operations, provide a number of recreation opportunities, including the wetland walk and viewing areas of the operating gold mine. While

¹⁴ macraes.nz/our-history/pre-european/

¹⁵ Department of Conservation, Macraes Ecological District: Survey report for the Protected Natural Areas Programme, May 1997, pages 15-17.

¹⁶ [Heritage New Zealand - Murphys Flat Reserve Historic Area](#)

¹⁷ [Heritage New Zealand - Golden Point Historic Area](#)

¹⁸ Appendix B Schedule of Heritage Places, Items and Archaeological Sites number 78 (Stanley's Hotel Complex), 79 (St Patrick's Catholic Church (Former)), 122 (Stone House), 123 (Presbyterian Church), 128 (Old Cemetery), 129 (Golden Point Sod Hut and Battery), and 166 (Gay Tan's Cottage).

not directly on the Central Otago Rail Trail, Macraes is considered an 'off the trail' destination for its impressive sight of the gold mine operations.

3.7 Natural Character

Natural character is a specific matter to be addressed under Section 6(a) of the RMA. As an existing mining operation, the proposed mining activity is mostly separated from existing streams. The streams and creeks adjoining MP4 and which have potential to be affected by this proposal encompass tributaries of the Taiari River, (Coal Creek, Māori Hen Creek and Trimbells Gully), Waihemo / Shag River (Deepdell Creek and Highlay Creek) and Waikouaiti River (Waikouaiti River North Branch, Murphys Creek, Clydesdale Creek and Golden Bar Creek) (see **Figure 5**). None of the affected sections of streams have been identified as outstanding waterbodies within the Regional Plan: Water for Otago. A brief summary of natural character considerations which have been assessed is set out below.

The headwaters of the Taiari River, Waihemo River, and Waikouaiti River are integral to the identity and history of local mana whenua. The Waikouaiti River and Waihemo River catchments have been sites of settlement for Kāi Tahu for several hundred years dating back to the arrivals of the three waka Uruao, Takitimu, and Araiteuru. These rivers and their headwaters were part of the practice of mahika kai where water, food, and other materials were sourced.

3.7.1 Taiari River

Tributaries of the Taiari River occupy catchments to the north of the Coronation and Coronation North Pits. These include Coal Creek, Māori Hen Creek and Trimbells Gully which culminate along the edge of the existing Trimbells Waste Rock Stack through areas of modified pasture and tussock grassland.

3.7.2 Waihemo / Shag River

Deepdell Creek forms a tributary of the Waihemo / Shag River and flows between Coronation Mining Area and Central Mining Area. Several of the tributaries to Deepdell Creek have been realigned by the existing Macraes Mine. Highlay Creek extends south-east from the Coronation Pit through regenerating riparian vegetation.

3.7.3 Waikouaiti River

A tributary of the Waikouaiti River, the North Branch Waikouaiti River, is bisected by the existing Frasers / Innes Mills Pit before continuing to the south-east of the Site. Golden Bar Pit straddles Clydesdale Creek and Golden Bar Creek which are tributaries of Murphys Creek which also feeds into the North Branch Waikouaiti River.

4.0 Relevant Statutory Provisions

As part of this assessment, there are a number of planning provisions that are relevant to this proposal. Specifically, they include:

- *Fast Track Approvals Act 2024*
- *The Resource Management Act 1991 – notably Section 6 matters (natural character) and Section 7 matters relating to amenity values and the quality of the environment.*
- *Treaty of Waitangi*
- *Otago Regional Policy Statement, 2021*
- *Regional Plan: Water for Otago*
- *Dunedin City District Plan (2GP)*
- *Operative Waitaki District Plan*
- *Exemptions Version - Proposed Waitaki District Plan*
- *Te Taki Haruru*

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 the FTAA (2024) is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.

MP4 is listed in Schedule 2 of the FTAA, described as to: “*In stages, expand the existing open pit and underground gold mining operations to enable output of approximately 130,000 ounces per annum to 2036*”.

As per Schedule 5 of the FTAA, regarding approvals relating to the Resource Management Act 1991, matters to be covered in an assessment of environmental effects includes Clause 7(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 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 Regional Plan: Water for Otago, Dunedin City Second Generation District Plan (2GP) and the Operational and Exemptions versions of the Waitaki District Plan as set out in the Assessment of Environment Effects. The key overlays of relevance to this assessment are shown in **Figure 6** 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...*”¹⁹.

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 are assessed in response to effects on Coal Creek, Trimbells Gully, Deepdell Creek, Waikouaiti River North Branch, Murphys Creek and the associated tributaries of Clydesdale Creek and Golden Bar Creek.

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

The landscape context is characterised by established mining activity which adjoins established pastoral land use. This forms a distinct rural landscape character and amenity unique to the Macraes area. 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.*

4.3 Treaty of Waitangi

It is noted that mana whenua include the iwi Kāi Tahu, and the hapū Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Moeraki, and Te Rūnanga o Ōtākou.

As outlined within Te Tangi a Te Manu, Aotearoa Landscape Assessment Guidelines, the principles of the Treaty of Waitangi relevant to this landscape assessment include:

- *iwi/hapū/whānau self-autonomy (mana motuhake)*
- *partnership*
- *meaningful engagement*
- *participation and active protection of Māori interests.*

¹⁹ ‘Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines’, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

4.4 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.

4.5 Otago Regional Policy Statement, 2021

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

Objectives of relevance to this assessment include Objective LF-FW-08 to LF-FW-10A. The purpose of these objectives is to ensure Otago's freshwater, wetlands, lakes and rivers are identified, protected and appropriately managed to preserve their natural character and outstanding values, sustain and enhance mana whenua values, and maintain or restore ecosystem health, hydrological functioning, biodiversity, water quality, amenity, and flood and water storage capacity, while promoting restoration where degradation has occurred.

Whilst the Site is not located within an outstanding natural landscape, the Proposed RPS is under appeal to the Environment Court and we refer to the weighting assessment by Mitchell Daysh (2026) 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 Dunedin City District Plan (2GP)

The northern extent of the Coronation Mining Area is located within the Dunedin City District. A full list of relevant Objectives, Policies and Landscape Values are outlined within **Appendix 2**. This area of the mine is included within the Rural Zone – High Country and the Taiari Ridge and Mare Burn mapped area.

The key objectives and policies of relevance to this assessment are outlined within Section 16 of the Dunedin City District Plan. Relevant objectives and policies are primarily associated with maintaining the character and amenity of the Rural Zone. This includes reference to mineral exploration, and ensuring land is restored to at least the same standard prior to operation with respect to landform and productive potential.

In addition, the Coronation Mining Area is located 3.5km to the north-east of the High Country Outstanding Natural Landscape. This landscape is valued for its exposed schist tors, dramatic skyline and iconic ridgelines, highly coherent natural landform and vegetation patterns, large scale, open, expansive, remote wilderness character, limited visual impact of human imposed elements, and dark night sky.

It has been noted that mining activity can pose a threat to these values becoming visually dominant, if inappropriately sited, or if the design, scale and finish of structures conflict with established high-country values.

4.8 Operative Waitaki District Plan

Each area of the Project is located within the south-western extent of the Waitaki District. A full list of relevant Objectives, and Policies are outlined within **Appendix 2**. The Site is located within the Macraes Mining Project Mineral Zone and the Rural Zone of the Operative Waitaki District Plan.

The Operative Waitaki District Plan (“ODP”) contains 17 chapters within Part 2 which are related to zone specific and district wide issues, objectives and policies. Although the Macraes Operation is located within the Macraes Mining Zone, there is no specific Mining Zone or Nature Conservation Values chapter within Part 2 of the ODP, and these matters are addressed within Chapter 6 of Part 3 of the ODP.

The key objectives and policies of relevance to this assessment are located within 16.7.1 Objective 6 and 16.8.2 Landscape Objective of the Operative District Plan. The provisions enable mineral exploration and extraction while requiring adverse effects on rural amenity, environmental values and landscape character to be avoided, remedied or mitigated in response to the sensitivity of the receiving environment. Large-scale mining at Macraes Flat is specifically provided for through the dedicated Macraes Mining Project Mineral Zone, recognising the scale of operations while requiring effective effects management and rehabilitation that restores post-mining landscapes to an appropriate rural use.

4.9 Exemptions Version - Proposed Waitaki District Plan

The Site is located within the *Special Purpose Zone: Macraes Mining Zone* of the Exemptions Version – Proposed Waitaki District Plan²⁰. The relevant Objectives and Policies associated

²⁰ Waitaki District Council removed the Natural Features and Landscapes chapter provisions and associated schedules/map overlays, together with the General Rural Zone provisions, from the Proposed Waitaki District Plan on

with this zone are outlined in detail within **Appendix 2**. The purpose of the zone is to ensure the continuation of mining is provided for while ensuring any actual or potential adverse effects on the environment from mining activities are avoided, remedied, or mitigated²¹.

The relevant objectives and policies associated with the zone encourage the protection of amenity, environmental, landscape and heritage values, particularly in relation to adjoining rural areas and sensitive environments. Mining is directed to existing and appropriate locations, avoided in outstanding or significant areas where practicable, and otherwise subject to a precautionary, effects-based approach supported by staging, adaptive management and progressive rehabilitation. Emphasis is placed on progressive rehabilitation to restore landforms and vegetation consistent with local character, while enabling compatible non-mining activities that do not undermine rural character or create reverse sensitivity effects.

Whilst the Natural Features & Landscapes section has been removed from the Exemptions Version - Proposed Waitaki District Plan and therefore has no statutory weight, the values outlined within Schedules 8 and 10 still assist in understanding the landscape values associated with the broader Site context (outlined within **Appendix 2**). This includes the Taiari Ridge and Billy's Ridge Outstanding Natural Landscapes, and the Nenthorn-Stoneburn, and Billy's Ridge Rural Scenic Landscapes.

4.10 Non-statutory and Contextual Documents

4.10.1 Te Taki Haruru

Te Taki Haruru is a values-based framework that supports the wellbeing and future prosperity of Ōtepoti Dunedin by giving effect to the shared vision of Kākā Ōtepoti, Kākā Ora – a thriving home and village. Its purpose is to guide collaborative action between local government, mana whenua, Māori, and the wider community to enhance collective wellbeing through strong connections between people, place, and environment. The framework provides a clear pathway for Dunedin City Council to meet its Treaty of Waitangi commitments, build meaningful partnerships with mana whenua, and align decision-making and projects with shared aspirations.

Within Te Taki Haruru there are four principles which will require consideration and recognition as part of this assessment:

- **Autūroa:** *refers to mana (authority) – tūroa is about longevity, ongoing influence and leadership in our community.*
- **Auora:** *refers to the mauri of Ōtepoti – ora is about health and wellbeing, not only in people but also in the land and waterways.*
- **Autikaka:** *refers to tapu (restricted) and noa (unrestricted) – this is about the protection of resources, people and particular areas, enabling us to look forward sustainably.*

15 January 2026. Those provisions would otherwise have been relevant to this assessment. Relevant extracts are reproduced in Appendix 2.

²¹ Exemptions Version - Proposed Waitaki District Plan, Part 3 Area Specific Matters.

- **Autakata:** refers to whakapapa – tākata is people, and whakapapa is about genealogy. In a Māori world, we take the past with us and whakapapa is forever generative. Kā ariā ahurea o Kāi Tahu Kāi Tahu cultural concepts.²²

4.10.2 Ngāi Tahu Settlement

The Ngāi Tahu Claims Settlement Act 1998 forms an important contextual reference for understanding Kāi Tahu relationships with the wider Macraes landscape. While the statutory implications of the Settlement Act are addressed elsewhere, it is relevant in landscape terms because it records the historical context of Kāi Tahu loss, recognises the rakatirataka of Kāi Tahu within its takiwā, and provides redress associated with mahika kai, taoka species, statutory acknowledgement areas and other resource management matters.

For this assessment, the Settlement assists in understanding that the Macraes landscape is not only a modified rural and mining landscape, but also part of a wider Kāi Tahu cultural landscape connected to whenua, wai, mahika kai, ara tawhito, wāhi tīpuna and the headwaters of the Taiari, Waikouaiti and Waihemo catchments. The history of land alienation, environmental modification and restricted access to mahika kai areas is also relevant to how cumulative landscape and natural character change is understood by mana whenua.

5.0 Proposal Description

5.1 MP4 Overview

The Project is made up of the following proposed key activities:

- **Open pit extensions** at Coronation, Coronation North, Innes Mills and Golden Bar.
- **Underground mine expansion** through further development of the Golden Point Underground mine (“**GPUG**”).
- **Tailings management**, including:
 - Construction of the Frasers Tailings Storage Facility (“**FTSF**”) Stage 3 to accommodate a total tailings storage of up to 153 Mt; and
 - Hydraulic mining and relocation of tailings from the Mixed Tailings Impoundment (“**MTI**”), Southern Pit Option 10 TSF (“**SP10**”), and Southern Pit Option 11A TSF (“**SP11**”) to FTSF.
- **Waste rock disposal**, including increased disposal capacity within open pits and at existing waste rock stacks at Coronation, Coronation North, Trimbells, Innes Mills, Golden Bar, Golden Point, and Frasers.
- **Water management infrastructure and operations**, including:
 - Construction of Camp Creek and Coal Creek water storage dams for flow and water quality management;
 - Construction, operation and maintenance of a Water Treatment Plant; and
 - Ongoing operation and maintenance of the Mine Water Management System (“**MWMS**”).

²² Te Taki Haruru Māori Strategic Framework, Dunedin City Council, 2025

- **Infrastructure and roading works**, including:
 - Realignment of Macraes Road in two stages; and
 - Relocation of the Open Pit Workshop.
- **Ecological enhancements**, including establishment of:
 - Murphys Ecological Enhancement Area (“**MEEA**”) near Murphys Creek, including predator fencing, access tracks, and site facilities;
 - Mt Highlay restoration area;
 - Cranky Jims Link shrubland enhancement area;
 - Murphys Link tussock protection area; and
 - Additional compensation measures for residual ecological impacts.
- **Mine closure and rehabilitation activities**, including rehabilitation of mining landforms, creation of pit lakes, dry capping of tailings storage facilities, and revegetation in accordance with closure objectives.

Macraes Operation is proposed to extend mining activity out to at least 2039. MP4 represents a continuation and intensification of mining activities within an established mining landscape that has been progressively modified over more than three decades. Importantly, MP4 does not introduce any new mining areas or processing facilities. Instead, it focuses on expanding existing open pits, re-opening previously mined pits, extending underground workings, increasing the capacity and relocating established waste rock and tailings facilities, and realigning infrastructure to support these activities.

Exterior lighting associated with MP4 will comprise fixed lighting, primarily associated with the relocated Open Pit Workshop, and mobile lighting associated with above-ground mining activities, haul roads, vehicles and mobile plant. The Macraes Operation will continue to operate 24 hours per day, seven days per week, consistent with the existing operational pattern.

For the purpose of this Landscape and Natural Character Assessment, MP4 is described across three established mining areas including

- The Coronation Mining Area containing Coronation Pit, Coronation North Pit, Coronation WRS, Coronation North WRS and Trimbells WRS;
- The Central Mining Area containing Innes Mills Pit, the MTI, SP11, Golden Point WRS, Frasers West WRS, Golden Point Underground, realignment of Macraes Road and relocation of the Open Pit Workshop; and
- The Golden Bar Mining Area containing Golden Bar Pit and Golden Bar WRS.

Each of these areas occupy a distinct topographic setting, exhibit different degrees of existing modification, and contributes differently to the overall pattern of the wider Macraes landscape.

Part B: Landscape, Natural Character and Visual Effects

6.0 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 permitted and consented activities which can be 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.*
- **Natural Character Effects:** *Derived from changes in physical condition and characteristics of waterbodies encompassing their elements, patterns and process and how these are experienced.*
- **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 MP4. Accordingly, the findings from this assessment have informed and influenced the nature and form of the proposed landscape mitigation and its subsequent rehabilitation. This assessment has also considered the actual and potential landscape effects of MP4 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.

For mana whenua, the landscapes affected by the Project are shaped through whakapapa relationships extending between people, whenua, wai, indigenous species and ancestral narratives. The assessment has therefore considered not only physical and visual landscape attributes, but also the extent to which proposed changes may affect the expression of mana, mauri, whakapapa, kaitiakitaka and the ability of mana whenua to maintain enduring cultural relationships with the landscape.

The findings of this assessment are set out in **Sections 7.0 to 9.0** 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 Tuia Pito Ora New Zealand Institute of Landscape Architects (NZILA) to determine the overall level of effect.

6.1 Method to Assess 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 values²³. 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 assessment is informed, where determined appropriate by mana whenua, by Pūkenga input, which assists in understanding cultural values and relationships that may influence how landscape change is interpreted and assessed. 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.

6.2 Method to Assess 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. This is relevant to the assessment of natural character under section 6(a) of the RMA, including the way in which natural character is understood in relation to the particular waterbody, its margins, and its wider setting. This assessment has been undertaken by assessing the abiotic, biotic and experiential attributes²⁴ which contribute to the existing and post development levels of natural character. This has also been informed by the assessment inputs from hydrogeologists, hydrologists and aquatic and terrestrial ecologists relating to the active bed and margins of affected identified waterbodies. In general terms, natural character effects are derived through comparing the existing and post development conditions of affected waterbodies.

In addition to the western understanding of natural character (abiotic, biotic, and experiential attributes), relevant mana whenua concepts also include mauri, whakapapa, tapu, Ki Uta Ki Tai relationships, and the ancestral status of freshwater environments when it comes to the health of waterbodies and assessment of natural character. Whilst this assessment seeks to acknowledge the nature of these relationships, it does not seek to replace any separate cultural impact assessment identifying the importance of such values which may be identified by mana whenua.

6.3 Method to Assess 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.

²³ 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

²⁴ Experiential attributes relate to how humans perceive and experience the natural environment.

To assess the overall level²⁵ and nature²⁶ 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 included 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.

As a preliminary exercise to identify the nature of available views, zone of theoretical visibility (ZTV) mapping has been prepared to understand the locations from which the proposed built form will be visible in the surrounding landscape (see **Figure 14**). It must be emphasised that ZTV analysis is indicative only, and may either over or under-represent visibility. It cannot indicate the potential visual impacts of a development, nor show the likely significance of impacts. In this instance, ZTV mapping also does not take account of the intervening nature of vegetation or built development which may also reduce or screen available views.

The ZTV plans indicate that theoretical visibility of proposed extensions to WRSs is relatively broad but strongly shaped by the rolling and dissected upland landform around Macraes. Views of the WRSs are primarily available from elevated slopes, ridge crests and open pastoral ground within the 5 km study area, particularly around the Central Mining Area, Macraes township, Golden Point Road, Macraes Road and parts of the surrounding local road network. Visibility is more broken in the incised gullies and lower-lying catchments, where intervening landform limits or screens views. The ZTV also shows areas where visibility of multiple waste rock stack areas may overlap, especially through the central Macraes landscape, although this does not necessarily equate to clear or prominent views on the ground.

Conversely ZTV mapping of the proposed relocated Open Pit Workshop is more limited and indicates that theoretical visibility is concentrated across the open land to the west, south-west and south of Macraes township, including parts of Macraes Road, Golden Point Road and nearby rural properties (see **Figure 15**). Visibility also extends into parts of the existing mine area to the north-east. However, available views are likely to vary considerably depending on local landform, viewing angle, distance, existing mine infrastructure and intervening vegetation or built elements. Overall, the ZTV plans suggest that views are most available from elevated open areas and parts of the local road/dwelling network, while lower gullies and more enclosed landforms are less visually exposed.

In addition to preliminary ZTV mapping, visual simulations have been prepared to understand the proposed nature of visual change. These are included in a separate Graphic Supplement and have been used to illustrate a predicted two-dimensional view as depicted in a photograph from a defined viewpoint. It must also be emphasised that these 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 to inform the decision-making process. Thus, the primary purpose of a visual simulation is to accurately portray the proposed activity or change in the landscape.

It is recognised that visibility mapping identifies potential visual exposure only and does not capture broader landscape, natural character or cultural effects. In particular, changes affecting hydrological systems, ecological processes, headwater environments and culturally significant landscapes may influence landscape values beyond the areas from which development is visually apparent.

²⁵ The level of effect is assessed on a seven-point scale of very low to very high.

²⁶ Adverse, neutral, or positive.

Site photographs were taken with a Canon digital SLR camera 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 photographs taken using a 50mm lens 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 they are 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 from which the photograph was taken.

In addition to representative public viewpoints, consideration has been given to locations and landscapes identified by mana whenua as culturally significant, recognising that the experience and interpretation of landscape change may differ for those maintaining ancestral and ongoing cultural relationships with the area.

Visual effects have also been considered in relation to night-time lighting. The technical assessment of lighting effects is addressed in the Lighting Assessment. For this landscape and visual assessment, the relevant consideration is the extent to which lighting would be visible to public and private viewing audiences and whether it would materially alter the perceived night-time character of the landscape. The Lighting Assessment concludes that, subject to the proposed lighting controls, effects from lighting will be no more than low.

7.0 Coronation Mining Area

The Coronation Mining Area at the northern extent of the Macraes Operation is set within an expansive rolling landscape characterised by broad, gently undulating hill country and deeply incised gullies associated with the Trimbells and Coal Creek catchments. The broader landscape exhibits a strong sense of openness, with long views across rolling tussock-clad hills towards the Rock and Pillar Ranges and Kakanui Mountains with a limited presence of built form beyond mining-related landforms. Key landscape features include the predominantly pastoral land use, locally exposed schist rock faces, and meandering streams within the upper Coal Creek and Trimbells Catchment.

Vegetation within the Coronation Mining Area would have historically comprised montane coniferous-broadleaved forest; however, extensive clearance and burning has resulted in a landscape now dominated by modified pasture and tussock grassland. This consequently altered the landscape through reduction of indigenous ecosystems and modification to catchment processes which once contributed to the ecological and cultural richness of the wider area. Vegetation cover is low and uniform, reinforcing the open character of the landscape. The land use surrounding the Coronation Mining Area is characterised by pastoral farming, with no residential dwellings within the immediate vicinity. Access is provided by internal mine roads and surrounding rural roads, including Longdale Road, a gravel low traffic road to the west of the Site and Hyde–Macraes Road connecting Macraes through to Hyde.

The Coronation and Coronation North Pits form locally prominent landscape elements, with steep, terraced rock faces and exposed benches. WRSs and backfilled areas, including the Coronation North WRS and Trimbells WRS, form elevated landforms that are characteristic of

the broader Macraes Operation. Adjoining these, Trimbells Gully, Coal Creek, Māori Hen Creek, Camp Creek and their associated tributaries all occur within the immediate context of the Coronation Mine. These typically follow narrow gullies and contain intermittent creeks and streams surrounded by adjacent exposed schist outcrops. While these features are now established components of the existing landscape character, they are also located within a landscape which has a layered history beyond the mining landscape the area is known for today.

The Coronation Mining Area has historic associations with earlier mining activity around Highlay, Trimbells Gully and Mare Burn. However, the Archaeological Assessment identifies limited surviving archaeological evidence within the surveyed project footprint, apart from the historic fence line along the eastern edge of Part Section 2 Block VII Highlay Survey District. However, the extent of surviving archaeological material should not be taken as an indicator of cultural significance.

The broader landscape retains cultural value through its associations with ancestral waterways, catchment systems, historical occupation, movement through the landscape, and the ongoing relationship mana whenua maintain with these environments. For mana whenua, these waterways contribute to the maintenance of mauri, support Ki Uta Ki Tai relationships, and play an important role within the broader cultural landscape extending beyond the immediate project area. Trimbells Gully, Coal Creek, Māori Hen Creek, Camp Creek and their associated tributaries form a key characteristic of this landscape within the Coronation area. In addition to their contribution to landscape character, they form part of important headwater systems connected to the wider Taiari and Waihemo catchments.

7.1 Site Appraisal

The Coronation Mining Area is situated approximately 5 kilometres north of the Processing Plant. The broader area forms part of an elevated and undulating basin contained to the north of the Macraes Operation that is intersected by the District boundary between Dunedin City and Waitaki District Councils. Existing mining is defined by a combination of two large open pits (Coronation and Coronation North), WRSs, and backfilled areas that collectively form a complex assemblage of engineered landforms overlaid on a broader rolling pastoral setting (see **Figure 7: Site Appraisal Plan - Coronation Mining Area**).

The Coronation North WRS forms a distinctive elevated landform to the north of Coronation North Pit with broad, gently sloping faces and a flattened upper surface. **Site Appraisal Photograph A** illustrates the view to the west of the Coronation North WRS, characterised by an undulating rural landscape intersected by narrow streams and creeks within the upper Coal Creek catchment. These waterways, although highly modified through existing land use contribute to the identity, ecological functioning and cultural significance of the wider landscape and provide important connections to downstream catchment systems. A distant view of Longdale Road is visible near the skyline seen against a backdrop of the Rock and Pillar Range along the skyline.

From the existing Coronation North Backfill to the west of the Coronation Mining Area, views extend eastwards towards the Coronation North Pit (**Site Appraisal Photograph B**). The pit is defined by steep, stepped benches with exposed rock faces, and adjoined by engineered landforms and grassed slopes beyond the immediate mining footprint. The base of the pit is characterised by a small pit sump.

Views to the east from within and around the Coronation Pit further illustrate the extent of excavation within this area. From the pit edge looking north-east and north-west, views of the terraced benches, haul roads, and exposed rock faces are available, creating a highly modified series of engineered landforms (**Site Appraisal Photographs C and D**). The enclosing pit walls curtail views of the surrounding pastoral landscape beyond, although views towards the Kakanui Mountains and Rock and Pillar Ranges and associated foothills are available. While views towards surrounding ranges and pastoral landscapes contribute to visual character, landscape values are also derived from cultural associations and the ecological functioning of interconnected catchment systems. These values may persist irrespective of visual exposure or visibility from particular viewpoints.

To the west and north-west, the existing Trimbells WRS forms another substantial engineered landform. Views from this rock stack looking south and west demonstrate the relationship between the adjoining Coronation and Coronation North Pits (**Site Appraisal Photographs E-G**). The WRS provides a large flat gravel area separating the two adjoining pits. From elevated areas on the WRS, views encompass the immediate mining areas of Coronation and Coronation North Pits towards a broader undulating hill country landscape as shown in **Site Appraisal Photographs H and I**. This backdrop is characterised by rolling pastoral hills and incised gullies characteristic of the broader rural landscape surrounding the mine.

7.2 Proposed Coronation and Coronation North Pits

The MP4 proposal provides for continued mining within this established landscape through staged extensions to the Coronation Pit (Stages 6–8) and the Coronation North Pit (Stage 6). Waste rock generated from the pit extensions would be managed through progressive pit backfilling and height increases to the existing Coronation North, and Trimbells WRSs. Ore would be transported to the Processing Plant via the established Coronation haul road network, with temporary road closures and traffic management measures where required. An understanding of the existing, construction and post construction form of the Coronation / Coronation North Pits is shown in **Figure 8** and summarised below.

7.2.1 Proposed Open Pit Extensions

The existing Coronation Pit would be extended approximately 560 metres to the southeast, increasing its footprint by around 40 hectares²⁷. This expansion would deepen and widen the existing Coronation Pit, to an RL of 532.5. The existing Coronation North Pit would be extended approximately 205 metres to the northeast and deepened to an RL of 442.5, increasing its footprint by approximately 17 hectares, including excavation of Trimbells WRS and adjacent tussock grassland²⁸.

Prior to mining, both pits would be dewatered. Mining would then proceed using conventional drill and blast open pit methods, with excavation occurring on a staged basis over several years.

²⁷ The currently authorised Coronation Stage 5 (CO5) Pit has a footprint of 85 ha. The proposed extension to the Coronation Pit will result in an overall increase to the pit footprint of approximately 40 ha, increasing the total pit footprint to approximately 125 ha.

²⁸ The currently authorised Coronation North Stage 5 (CN5) Pit has a footprint of 40 ha. The proposed extension to the Coronation North Pit will result in an overall increase to the pit footprint of approximately 17 ha, increasing the total pit footprint to approximately 57 ha.

7.2.2 Waste Rock Disposal and Backfilling

Waste rock from the Coronation and Coronation North pit extensions will be managed within the Coronation Mining Area.

Proposed disposal methods include:

- *Progressive backfilling of mined-out portions of the pits; and*
- *Height increases and limited lateral extensions to the existing Coronation North, and Trimbells WRSs.*

Coronation WRS: will retain an RL of 730 and consented capacity of 14.93Mm³ of material. The proposed modification to the Coronation North, and Trimbells WRSs will include:

1. Coronation North WRS: increased RL of 670 from 640 and increase in 15.10Mm³ of material.
2. Trimbells WRS: increased RL of 740 from 670 and increase in 16.67Mm³ of material and increased footprint of 58 ha.

The proposed final landform and consequent landcover will be designed to integrate with the existing and surrounding landforms forming the broader context to the Coronation Mining Area.

7.2.3 Ore Transport, Roding, and Public Access

Ore extracted from the Coronation Mining Area would be transported to the Processing Plant using the established Coronation haul road system. This would involve ongoing use of controlled haul road crossings and traffic management measures to maintain public access on existing public roads.

7.2.4 Rehabilitation and Closure

At closure, the Coronation and Coronation North pits would be rehabilitated to form pit lakes, consistent with the established closure strategy for the Macraes Operation in the rural context and headwaters of the Taiari River. WRSs and backfilled areas will be contoured to achieve stable, naturalised landforms, with slopes softened and contours aligned with adjacent topography. Final outcomes are illustrated on the Coronation Landscape Closure Plan included with the application.

Rehabilitation of WRSs focuses on reinstating pasture interspersed with pockets of tussock grassland, with the objective of visually integrating mining landforms into the surrounding upland landscape over time. Disturbance areas outside of the pit will also be re-established with pasture and areas of tussockland to integrate with the surrounding rural landscape. Within the expanded mines, the lower benches within the pits will become submerged by a future waterbody. Where these remain above the future water level, these will be stabilised and remain in perpetuity. Clean water will continue to be diverted to the north-east of Trimbells WRS and two spillways will be established: to the west of Coronation North Pit; and, to south of Coronation Pit to release overflow from the future pit lakes through expanded riparian planting.

As a consequence of ongoing mining, closure outcomes will also have influences on hydrological function, connectivity and the wider landscape systems associated with these catchments. While the presence of large-scale landform modification would remain evident,

closure design aims to reduce visual contrast and enhance long-term landscape outcomes overtime. Further consideration has also been given to the location of the Coronation area within the headwaters and tributaries of the Taiari and Waihemo catchments and expansion of riparian planting in localised areas.

7.3 Visual Appraisal

Views towards the Coronation Mining Area are limited and generally obtained from the west, north-west and north, where the undulating landform allows for intermittent visibility across open pastoral and tussock-dominated terrain (**Figure 17**). As shown in **Site Context Photograph 1**, taken from the east of the Trimbells catchment looking north-west, views of the Coronation Mining Area are limited to the Coronation North WRS and fringes of the Coronation North and Coronation Pits. Land cover surrounding the mining area is predominantly tussock grassland with areas of short pasture and sparse low shrubland. Engineered landforms tend to be devoid of native vegetation, rather they form well integrated pastoral landforms which gently fall away from the pit edge.

Some limited long-distance views are also available from Longdale Road to the west. In **Site Context Photograph 2**, taken from Longdale Road near the existing stock yards looking south-east, the Coronation North and Coronation pits and associated WRSs are discernible within the broader undulating rural context of Trimbells Gully and the upper Coal Creek catchment. From this viewpoint the exposed rock landforms are evident and contrast with the surrounding pastoral land cover, although they remain visually contained below the local ridgeline.

7.4 Zoning

As illustrated on **Figure 6**, the southern extent of the Coronation Mining Area is located within the Macraes Mining Project Mineral Zone and Rural Scenic Zone of the Operative Waitaki District Plan and the Special Purpose Zone - Macraes Mining of the Exemptions Version - Proposed Waitaki District Plan. The northern extent of the Coronation Mining Area is located within the High-Country Rural Zone and Taiari Ridge and Mare Burn mapped areas within the Dunedin 2GP (Appeals Version).

7.5 Landscape Effects

Within the context of MP4, the Coronation Mining Area will remain an established and defining component of this broader landscape. The existing Coronation and Coronation North open pits, WRSs, haul roads and backfilled areas form existing modified landforms that contrast with the surrounding pastoral hillslopes.

Proposed Coronation and Coronation North mining would extend open pits to the south-east, expanding on the existing extent of the pits. At the Site scale, this would intensify the existing mining character through further enlargement of steep rock faces, increased excavation depth, and a greater extent of exposed rock and active mining surfaces during operation. The proposed pit extensions will therefore result in an increase in scale and extent of modified landform within the Coronation Mining Area. Notwithstanding this, the expansion would remain closely associated with existing mining features and would not introduce new landform features such as new pits or WRSs. The extensions expand established pits and occur within an area already defined by large-scale extractive activity.

Waste rock generated by the pit extensions will be managed within the Coronation Mining Area through progressive backfilling of mined-out pit areas and height increases and limited lateral extensions to the existing Coronation, Coronation North and Trimbells WRSs. The exception is the Trimbells Rock Stack which will expand into the Trimbells catchment by 58 ha. During operation, the expansion of this element would further increase the scale of engineered landforms, but as the operation continues, these landforms will be progressively rehabilitated to integrate into the surrounding landscape.

At closure, the Coronation and Coronation North pits will both be partially backfilled and allowed to fill with water establishing pit lakes with eventual lake levels expected to reach approximately 625masl and 562masl respectively.

Whilst the WRSs and backfilled area associated with the proposed expansion of Coronation North Pit will remain legible as locally modified features within the landscape, these areas will be contoured to form stable, naturalised landforms to reintegrate with the adjacent landforms. Progressive capping with brown rock and revegetation will further assist in integrating these features with the surrounding pasture and tussock-dominated landscape. As part of the rehabilitation of the Coronation Mining Area, clean water diversions and adjacent gullies below spillways will also be rehabilitated with riparian vegetation to assist in improving ecological function and landscape integration within parts of the Trimbells, Coal Creek and Deepdell Creek catchments.

Overall, adverse landscape effects of the proposed developments in the Coronation Mining Area, including effects of the expansion into the Trimbells Gully catchment, are considered **moderate** reducing to **low-moderate** at closure. The proposal will result in the continued mining of a landscape which has cultural significance to mana whenua and will result in a greater extent of landform modification and mine elements. To limit and mitigate this, MP4 will be closely associated to the existing footprint of the Coronation Mining Area, and within an area associated with mining activity. These landforms will be progressively rehabilitated throughout operation, and at closure will be rehabilitated to assimilate with the broader rural landscape, acknowledging the landscape will not be returned to as it once was.

7.6 Natural Character Effects

7.6.1 Existing Natural Character

The Coronation Mining Area falls within the upper reaches of the Taiari and Waihemo River catchments. The Taiari River is the fourth longest river in New Zealand. It originates on the northern side of the Lammermoor Range, flowing northeast, then southwest around the Rock and Pillar Range to the coast south of Dunedin. The headwaters of the river within the Site include Trimbells Gully including Coal Creek, and Māori Hen Creek. The catchment forms the upper reaches of the Mare Burn and includes the mine footprint, extensive agricultural land, and recently established plantation forestry. The Waihemo (Shag) River rises in the Kakanui Mountains and flows east through the Shag Valley to the coast near Palmerston, with its headwaters within the Site including Deepdell Creek and its tributaries Camp Creek and Highlay Creek. A summary of the existing natural character of each of these affected rivers is set out below. As much of the affected reaches of Trimbells Creek, Coal Creek, Camp Creek, and Deepdell Creek are located on private property, they are largely inaccessible to the public.

In addition to physical and ecological attributes, the natural character of these waterways is also influenced by their role as tributary headwater environments within the wider Taiari and Waihemo catchments. For mana whenua, the condition of these waterways is intrinsically linked

to the maintenance of mauri, the expression of whakapapa relationships and the ability of waterways to sustain ecological and cultural values from the headwaters to downstream environments.

7.6.1.1 Taiari River

In broad terms, the Coronation Mining Area extends into an upper tributary of the Taiari River encompassing Trimbells Gully which comprises a network of predominantly intermittent and permanent streams extending from higher elevation pastoral and tussock-covered slopes toward Māori Hen Creek and Mare Burn. The waterways occupy shallow to moderately incised gullies characteristic of the northern Otago uplands, within a landscape that has been substantially modified by historic and ongoing pastoral land use and mining-related activity.

Although these headwaters have been modified by the Macraes mining operation and rural activity, they remain of very high significance to mana whenua. The headwaters play a role in the seasonal travel routes, and mahika kai practices, which strengthen the whakapapa of the Ōtākou and Puketeraki hapū²⁹.

The hydrology of Trimbells Gully is variable along its length and defined by the sediment pond at the base of the Trimbells WRS. Upper reaches and tributaries are considered intermittent, with surface flows absent or substantially reduced during drier periods of the year. Lower reaches below the sediment pond are characterised by incised channels with permanent flow, limited erosion and shallow areas of fine sediment.

Riparian margins throughout Trimbells Gully are strongly modified. Vegetation is dominated by grazed exotic pasture and tussock grassland, with stock having direct access to much of the channel length. Woody riparian vegetation is sparse and discontinuous, generally limited to localised areas of scrub in lower reaches. Nevertheless, modification within the upper reaches of the catchment has implications for downstream environments.

Further to the west, Coal Creek forms the north-western tributary of the Mare Burn and displays similar levels of modification. The upper reaches include a series of intermittent channels and wetland gullies, transitioning to small permanent stream sections in mid to lower reaches. Channel widths are narrow and, dominated by gravels and fine sediment with localised bedrock exposure. Similar to the Trimbells Gully catchment, the riparian margins are largely grazed pasture and tussock with limited woody vegetation.

7.6.1.2 Waihemo (Shag River)

The southern extent of the Coronation Mining Area catchment includes the upper reaches of Camp Creek and Highlay Creek before flowing into Deepdell Creek which flows into the Waihemo River. The overall character of the Deepdell Creek catchment is defined by a large valley system extending between the Coronation Mining Area and Central Mining Area. The creek is predominantly classified as intermittent, occasionally subject to drying out during the summer months in lower reaches of the catchment, with a mixture of shingle, cobbles, and exposed bedrock.

Riparian vegetation along Deepdell is comparatively more developed, consisting primarily of scrub species including willow, gorse, broom, coprosma and bush lawyer, interspersed with more open channel sections, particularly in the vicinity of the Golden Point Reserve. In these open reaches, reduced shading, warmer water temperatures and low flows during summer

²⁹ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025.

contribute to algal growth. Stock have direct access to much of the catchment resulting in grazing pressure on riparian margins, trampling and localised bank disturbance. Pests including feral pigs are also an identified influence downstream of the mine and contribute to ongoing physical disturbance of banks and margins. Notwithstanding this, Deepdell is still a major tributary of the Waihemo River and upstream modifications have implications for habitats downstream.

Within the upper reaches of the Deepdell Creek catchment, Camp Creek is characterised by a narrow and steep active bed, severed by the existing haul road which connects the Central Mining Area and Coronation Mining Area. The stream beds include a mixture of silt, shingle, and cobbles, and are largely surrounded by a mixture of gorse, coprosma and bush lawyer. Like much of the Deepdell catchment, stock also have access to the margins of the stream.

By comparison, Highlay Creek does have some areas of stock exclusion where riparian vegetation includes regenerating tussock and scrub. The geomorphology of the stream is similar to that of Camp Creek with a narrow and steep active bed, with rocky outcrops within the upper reaches. The Golden Point Reserve provides direct access to the mid-reaches of Deepdell Creek which is primarily associated with historic gold workings within the surrounding gully. Stock presence, grazing pressure, modified riparian margins, sediment ponds and artificial flow influences are readily apparent across each of these catchments.

7.6.1.3 Summary of existing natural character

Overall, the waterways within the Coronation area exhibit varying degrees of modification associated with pastoral land use and mining activities. Nevertheless, they retain important characteristics associated with headwater environments, including hydrological connectivity, ecological function, natural landform expression alongside high cultural significance. The level of natural character within these catchments therefore reflects both the influence of existing modification and the continued presence of values that contribute to the identity and functioning of the wider landscape. Overall, the existing natural character of Māori Hen Creek, Coal Creek, Trimbells Gully, Camp Creek and Highlay Creek is **moderate**.

7.6.2 Natural Character Effects

7.6.2.1 Taiari River

At the broad scale, modification to the Taiari River will be limited within the context of continued modification to part of the upper Taiari headwaters. Effects include the modification of existing infrastructure associated with the current management of sediment and clean water within the Coronation Mining Area and changes to the infrastructure to accommodate the larger footprint of the Coronation North WRS and Trimbells WRS.

At the catchment scale, while the headwaters will continue to contribute to the upper Taiari River, the proposal will introduce further engineered modification to the headwaters of the catchment. These changes will increase the degree of modification to patterns and processes within the headwaters and will have impacts on runoff at a local scale. At the broader scale however, the headwaters within the Coronation Mining Area will continue to support an upper catchment and tributary of the Taiari River, albeit with more modified flows and engineered structures. Riparian vegetation will also be added downstream of identified spillways which become operational following project closure. Whilst these will not fully offset the modifications to the headwaters, they will assist in providing both ecological and landscape benefits over time.

The proposal will result in an increased footprint of modification within part of the Taiari River headwaters and modification to the existing patterns and processes of this system, albeit within a highly modified landscape. Notwithstanding this, effects on the wider upper catchment will be limited and are assessed as **low** during operation and **very low** at closure.

7.6.2.2 Coal Creek

More locally, during the operational phase, natural character effects on Coal Creek will arise from the establishment of sediment management infrastructure at the base of the Coronation Waste Rock Stack, including sumps and French drains designed to intercept runoff and manage sediment loads. This infrastructure will introduce further engineered structures into the landscape and modify the hydrological processes of the margins, albeit within the context of a highly modified and engineered landscape. While the active bed of Coal Creek is largely unmodified throughout MP4, the relationship between the margins and surface runoff will become more controlled as the sediment pond at the base of the drain discharges runoff into the headwaters of Coal Creek.

At closure, a clean water spillway from the Coronation North Pit is proposed, with associated planting to encourage ecological and landscape integration over time. This feature will introduce a permanent artificial hydrological element; however, rehabilitation planting and removal of operational infrastructure will assist in integrating the margins into the broader rehabilitated landform.

Overall, adverse natural character effects on Coal Creek are anticipated to be **low-moderate** during operation and reduce to **low** following closure and rehabilitation. MP4 will result in permanent modifications to hydrological processes, drainage pathways and catchment function within the Coal Creek catchment and consequently contribute to the overall cumulative effects on the Taiari River headwaters. However, closure measures are expected to mitigate some of these effects to improve ecological condition and reintegrate infrastructure into the broader environment.

7.6.2.3 Trimbells Gully

Trimbells Gully forms the catchment to the north of the Coronation Mining Area. The gully is currently used for grazing and adjoins the existing Trimbells WRS and Coronation North WRS. Whilst land use has modified the landcover within the catchment, the gully system remains largely intact and highly expressive of its formative processes.

During operation, natural character effects will be primarily associated with the increased footprint of the Trimbells WRS into the southern tributary of Trimbells Gully and the associated management of runoff from mining landforms. The proposed expansion will remove approximately 700 metres of the existing active bed within the southern Trimbells Gully catchment which will then be realigned through a clean water diversion. Although situated adjacent to existing mining infrastructure, the affected section of Trimbells Gully retains some intact stream attributes associated with the Trimbells headwater system. The removal and realignment of the active bed results in the modification of natural drainage processes and catchment form, resulting in the permanent loss of part of the existing gully system. Sediment management infrastructure includes the realignment of clean water diversions around the Trimbells WRS, and the construction of French drains, sumps, and sediment ponds to manage silt before discharging into Trimbells Gully. These works will continue to modify the natural drainage patterns of the gully, forming an extension to the existing engineered landforms to the north of the Coronation and Coronation North Pit.

At closure, a clean water diversion will remain to the south of the Trimbells WRS. This will collect runoff to the south of the WRS and discharge it into the Trimbells catchment via the

waterway realignment established during operation. A silt pond will remain at the base of the clean water diversion to manage sediment before any water is discharged into the broader Trimbells Gully catchment.

Overall natural character effects on Trimbells Gully are associated with the increased footprint of existing engineered landforms into the southern extent of the Trimbells Gully catchment. Effects will result in a similar outcome to existing infrastructure, including the use of clean water diversions, and sediment management infrastructure to manage water within this area of the catchment. This will result in further modification to the margins and active bed on the southern Trimbells Gully catchment. This will include the extension of waste rock storage, active bed loss, watercourse realignment and ongoing stormwater management infrastructure resulting in further modification of the Trimbells headwaters. Adverse natural character effects on Trimbells Gully are therefore considered **moderate** during operation reducing to **low-moderate** at closure.

7.6.2.4 Waihemo River

At the catchment scale, Deepdell Creek forms the south-western headwaters of the Waihemo River and is a highly legible feature separating the Coronation Mining Area and Central Mining Area. Highlay Creek and Camp Creek form two main tributaries of the catchment. Direct natural character effects on Deepdell Creek will be limited and will be primarily associated with the headwaters. Works within the headwaters will be primarily associated with one tributary of Camp Creek, where the Coronation Pit will extend south-east towards Deepdell Creek. Overall flows will remain unchanged, and modification to the margins are largely associated with the disturbance area which will be rehabilitated at closure.

Similar to the Taiari River headwaters, the experiential and whakapapa connection to mana whenua and the principle of Ki Uta Ki Tai requires consideration when addressing natural character effects. Although physical effects on the waterbody will be limited to the headwaters within the upper reaches of the catchment, these effects represent enduring modifications to the hydrology of the river system.

Overall, natural character effects are considered **low** during operation, reducing to **very low** at closure on the Waihemo River catchment.

7.6.2.5 Camp Creek and Highlay Creek

Deepdell Creek is the only affected tributary of Waihemo River comprising Camp Creek and Highlay Creek in its upper reaches. There will be no direct effects on the active bed or margins of Deepdell Creek although works will occur in the headwaters. Camp Creek catchment forms the catchment to the west and south of the Coronation Mining Area and south of the Coronation WRS. The catchment includes a mixture of grazed pasture, forestry and scrub, however, remains a legible network of streams within the headwaters of Deepdell Creek.

During operation modification to the west of the Coronation Mining Area within the Camp Creek catchment will be limited. Modification will occur to the south-eastern extent of the catchment as the headwaters of Camp Creek and Highlay Creek fall within the disturbance area and expansion of the Coronation Pit. As the Coronation Pit expands to the south, the pit will expand approximately 130 metres into the active bed of one of the Camp Creek tributaries. The affected tributary forms part of the headwater environment of Camp Creek and contributes to the hydrological and ecological functioning of the wider catchment. While resulting in the permanent disturbance of natural drainage processes within the catchment, the remainder of the headwaters are predominantly located within the Highlay Creek catchment and will remain largely intact albeit within the disturbance area of the Coronation Mining Area.

At closure the sediment pond to the south-west of the Coronation Mining Area will remain and continue to manage the Camp Creek catchment south of the Coronation WRS. To the south east of the Coronation Mining Area, a spillway is proposed within the Camp Creek catchment which will extend from the Coronation Pit lake into the headwaters of the Camp Creek catchment. The spillway outlet will be planted in native riparian species. The headwaters of the Highlay Creek catchment will remain intact in relation to the extent of the active bed. The margins disturbed during operation will be rehabilitated with pasture.

Overall adverse effects on the Camp Creek and Highlay Creek catchments are considered no greater than **low-moderate** during operation, reducing to **low** at closure.

7.6.3 Summary of Natural Character Effects within the Coronation Mining Area

Natural character effects within the Coronation Mining Area vary according to the scale at which they are assessed. At the broader river-catchment scale, MP4 will affect relatively confined parts of the upper headwater networks. The wider Taiari and Waihemo River headwaters will retain their overall flow, catchment function and landscape expression. Adverse effects at this scale are therefore assessed as **low** during operation, reducing to **very low** at closure for both river systems.

These broader-scale ratings do not mean that effects will be uniform or negligible within the affected tributaries. At the local catchment and watercourse scale:

- Effects on **Trimbells Gully** are assessed as **moderate during operation**, reducing to **low-moderate at closure**. This reflects the removal and realignment of approximately 700 metres of active bed, expansion of the Trimbells WRS into the southern tributary, and the permanent retention of engineered water-management infrastructure.
- Effects on **Coal Creek** are assessed as **low-moderate during operation**, reducing to **low at closure**, principally due to changes in runoff, drainage pathways and the relationship between the watercourse margins and surrounding mining landforms.
- Effects on **Camp Creek and Highlay Creek** are assessed as no greater than **low-moderate during operation**, reducing to **low at closure**. These effects include the loss of approximately 130 metres of a Camp Creek tributary, disturbance of headwater margins, and the permanent pit-lake spillway and water-management arrangements.
- Direct effects on the main stem of **Deepdell Creek** will be limited, with the broader creek system remaining legible and functional within the Waihemo River headwaters.

At closure, removal of operational infrastructure, rehabilitation of disturbed margins and riparian planting introduced downstream of spillways will reduce effects. These measures will not, however, reinstate the affected headwaters to their previous condition. Realigned watercourses, sediment-management structures, modified drainage pathways and the loss of sections of active bed will remain.

Accordingly, the Coronation Mining Area is characterised by **moderate** localised adverse effects, particularly within Trimbells Gully, within an overall pattern of **low** adverse effects at the broader Taiari and Waihemo River headwater scale during operation. At closure, effects are expected to reduce to **low-moderate** or **low** locally and **very low** at the broader catchment scale.

7.7 Visual Effects

7.7.1 Views from local roads

Local roads of relevance to the Coronation Mining Area include Longdale Road to the north-west, Hyde-Macraes Road to the west, and Horse Flat Road to the south.

Views from Longdale Road afford the most open views of the Site and will be primarily associated with the northern extent of the proposed expansion of the Coronation Mining Area. Longdale Road is a narrow gravel road extending from Hyde-Macraes Road to the south to Four Mile Road to the north. When travelling in both directions along Longdale Road, oblique views of the Site are available, although occasionally curtailed by the intervening topography. During operation, views of the WRS expansion will be visible from the road, although glimpses of the broader operation within the existing pits and Trimbells Gully will be available. Given the existing land use associated with the Macraes Mining operation, the proposed extension to the Coronation Mining Area will not appear out of character, albeit with a greater sense of disturbance. Overall adverse visual effects for road users of Longdale Road will be **low** during operation reducing to **very low** once operation ceases and rehabilitation has been undertaken.

Other local roads include Hyde-Macraes Road and Horse Flat Road. Views from Hyde-Macraes Road and Horse Flat Road will be curtailed by the intervening topography of the rolling hill country surrounding the Site. Glimpses of the existing haul road will remain, however, the nature of the view is unlikely to change given the intervening landform. Overall, adverse visual effects are considered **neutral** with regard to Coronation Mining Area from these local roads.

Night-time visual effects within the Coronation Mining Area will primarily arise from mobile lighting towers, vehicle lighting and mobile plant lighting associated with active mining areas and haul roads. These lighting sources are already characteristic of the operational mine environment and will move with the location of active works. Subject to the controls identified in the Lighting Assessment, including management of mobile lighting tower height, orientation and visibility from residences and public roads, night-time visual effects are not expected to materially alter the overall visual effects conclusions for this area.

7.7.2 Visual Simulations

To better understand the proposed visual change generated by the MP4 activities within the Coronation Mining Area a visual simulation has been prepared from a representative viewpoint on Longdale Road and included in a separate Graphic Supplement. The description of the view is outlined below within **Table 1**.

Table 1: Visual simulation descriptions		
Viewpoint	Distance to closest MP4 element	Description of view
VS1 Longdale Road	2.5 km	This viewpoint is located on a section of Longdale Road orientated to the south-east towards Coronation Mining Area. The likely viewing audience for this viewpoint are local farm and station owners to the north-west of the Macraes Operation. The road is unsealed and is not frequently used. Given the existing open views towards the Coronation Mining Area, views of the Site will be available from commencement of operation through to closure. Elements of the proposal visible will include the

Table 1: Visual simulation descriptions		
Viewpoint	Distance to closest MP4 element	Description of view
		Coronation North WRS, Coronation Backfill, Coronation WRS, Trimbells WRS and glimpses of the Coronation North Pit. During operation, the progressive construction and rehabilitation of the WRSs, and expansion of the Coronation North Pit will be evident from this viewpoint, including the increased presence of machinery and trucks operating within the Site. The proposed expansion of the WRSs will begin to become more apparent along the horizon but will not appear out of character given the existing environment. At closure, glimpsed views of the newly formed pit benches will remain available, and as revegetation outcomes establish, the WRSs will begin to be assimilated into the broader rural landscape. Views of the proposed spillway to the west of Coronation North Pit will also be evident.

7.7.3 Views from residential and private viewpoints

Within the context of the Coronation Mining Area there are limited views from private viewpoints and residential dwellings. The landscape to the north-west of the Coronation Mining Area is remote and characterised by high country farmland with limited dwellings and buildings.

Views from this area of the Site are limited to long distance views from the west including 482 Longdale Road (**Figure 13** and **Visual Simulation 1**). From here, views of the Site will be primarily associated with the expansion of the Coronation North WRS, Coronation WRS, and Coronation North Backfill, although partial to glimpsed views of the remaining mine expansion elements will be available including the expansion of the Coronation and Coronation North Pits, and modification to the Trimbells WRS. Views from this property will be observed approximately two kilometres from the edge of the Site and within the context of the existing mining infrastructure, with views of the expansion into Trimbells Gully likely to be curtailed by intervening landform both natural and associated with the existing mine. Overall adverse visual effects of the proposed activities within the Coronation Mining Area are considered **low-moderate** during operation, reducing to **low** at closure once operation ceases and rehabilitation has been completed.

Private views to the south-east from Horse Flat Road will be entirely curtailed by intervening landform, although views of the existing haul road will remain. No change in this view is anticipated, and therefore visual effects are considered **neutral**.

8.0 Central Mining Area

The Central Mining Area is located at the core of the Macraes Operation, adjoining the Macraes Township and forming a key component of the long-established mining landscape. The broader landscape is characterised by gently rolling hills and steep gullies and adjoining pastoral land use. The underlying landform at the Site scale has been substantially reshaped by mining activity, with large-scale pits, WRSs, tailings storage facilities and processing infrastructure forming prominent landscape elements within an otherwise open rural landscape.

Vegetation across the Innes Mills and Frasers area has been extensively modified. Beyond the immediate mining footprint, pastoral grazing remains the primary land use, interspersed with shelterbelts and small areas of planted vegetation associated with the Macraes Township. Areas of wetland have also been re-established near the Haast Eagle sculpture within Macraes township along the headwaters of the North Branch Waikouaiti River.

The headwaters of the Waikouaiti River North Branch are an important aspect of the landscape within this part of the Macraes Operation. Although substantially modified by mining, road infrastructure, pastoral land use and engineered water management, they remain part of the river's source area and contribute to the wider pattern of upland gullies, drainage lines, wetlands and modified pastoral basins framing Macraes township and the Central Mining Area. They also hold high cultural significance for mana whenua, with the upoko, or headwaters, understood as tapu and contributing to the cultural identity, whakapapa relationships and mauri of the wider catchment. Notwithstanding the scale of existing modification, the Central Mining Area therefore retains landscape values associated with catchment function, hydrological connectivity, cultural identity and the relationship between upland source environments and downstream receiving environments. Further changes within these headwaters have the potential to affect these values and associations beyond the immediate mining footprint, including through cumulative and compounding effects over time.

As central elements of Macraes Operation, the Frasers and Innes Mills pits form large, steep-sided excavations with terraced benches and exposed rock faces that contrast strongly with the surrounding smooth hill slopes. Associated infrastructure, including workshops, haul roads, the process plant and tailings storage facilities, further reinforces the industrial character of the local landscape.

Beyond the Macraes Operation, the township of Macraes is central to the history of the area. The township comprises a small settlement, surrounded by the adjoining farming landscape and includes a local school, and Stanley's Pub. The proximity of the Macraes Township, public viewing areas and transport routes means the Central Mining area has a high level of visibility and legibility as an operational mining landscape to both the local community and visitors to the area. Natural features are limited and largely secondary to engineered landforms; however, the surrounding pastoral hills and distant ridgelines continue to provide a broader rural context that frames and contrasts with the scale and intensity of mining activity. While engineered landforms are visually prominent and contribute strongly to the character of the Central Mining Area, important natural and cultural landscape features remain present. This includes the surrounding pastoral hills, broader rural context, and the Waikouaiti headwaters. Additional features include associated wetlands, drainage corridors and remnant ecological systems which continue to contribute to landscape character, catchment function and cultural values despite the extent of existing mining modification.

8.1 Site Appraisal

As central mining elements within the Site, the Innes Mills and Frasers Pits areas are directly accessible from Macraes Road which intersects this area of the Site. The presence of existing mining activity exhibits a more transitional industrial landscape character, where intensive mining activity, infrastructure, coexist with rehabilitated landforms and extend into pastoral farmland with limited public access (see **Figure 9: Site Appraisal Plan - Central Mining Area**). In addition to the visual expression of mining activity, the Central Mining Area occupies an important position within the headwaters of the Waikouaiti River system. The landscape is therefore defined not only by its visual character and mining infrastructure, but also by its role within a broader network of waterways, wetlands, ecological systems and cultural relationships

that extend beyond the immediate mining footprint. This section discusses the existing character of the Central Mining Area from the southern extent of the Coronation Mining Area and from within the Central Mining Area.

The view looking south from the elevated margins to the south of Coronation Pit illustrate the transition between Coronation Mining Area and the Central Mining Area. From the southern edge of Coronation Backfill, long views extend towards Deepdell Pit, the Process Plant, and the Mixed Tailings Impoundment, including the connecting haul roads, and intersecting Horse Flat Road (**Site Appraisal Photograph J**).

From the elevated haul road north-west of Horse Flat Road, broad views extend across Deepdell Pit, the Processing Plant, and the Mixed Tailings Impoundment (**Site Appraisal Photograph K**). This view illustrates the northern extent of the Central Mining Area, with large buildings, processing machinery, and rehabilitated engineered landforms forming prominent elements within the landscape from this viewpoint. The scale and density of infrastructure is framed by the more open, grazed hills within the broader landscape.

To the north of the Central Mining Area views of the broader infrastructure become curtailed. Views from Golden Point Road towards Golden Point Reserve illustrate the existing rehabilitated landforms and Golden Point Pit (**Site Appraisal Photograph L**). The existing Golden Point Pit benching contrasts with the surrounding engineered landform to the north-east and vegetated area surrounding the historic reserve within the Deepdell Creek catchment. The Deepdell Creek catchment and Golden Point Reserve also contribute to the ecological and cultural values of the wider landscape. These areas provide an important counterpoint to the surrounding mining environment where formative processes of these catchments are still evident, and ecological connectivity and associations with the headwaters of the wider catchment system remain.

To the south of the Golden Point Pit is the existing Processing Plant set below the Mixed Tailings Impoundment. The Processing Plant is relatively contained by adjacent benching and haul roads providing access to the broader Central Mining Area, as demonstrated within **Site Appraisal Photograph M**, however from the Golden Point Road viewpoint, the extent of the Processing Plant becomes more evident against the backdrop of the Mixed Tailings Impoundment and engineered landforms to the north of the Innes Mills Pit (**Site Appraisal Photograph N**). Operational infrastructure associated with the Open Pit Workshop area is also present to the east of the Mixed Tailing Impoundment, including workshops accessed from Golden Point Road. These introduce built elements at a more human scale, with hardstand surfaces, vehicles, and equipment evident within a broader pastoral context (**Site Appraisal Photograph O**).

Further south, views from the Macraes Visitors Centre provide a clear outlook across the Frasers Pit (**Site Appraisal Photograph P**). The visitors centre provides members of the public an interactive visitors experience at this location accessed from Macraes Road, including views of the mining infrastructure, machinery, video recordings, and interpretation panels. The Frasers Pit is the largest of the Macraes Mine operation, including extensive haul roads, pit benching, and surrounding engineered landforms and tailings storage infrastructure seen against a backdrop of the existing Frasers East and Frasers South WRSs seen along the skyline. This is further illustrated within **Site Appraisal Photograph Q** to the north of the pit.

Views from Macraes Road and an internal lookout looking south towards the existing Innes Mills Pit and Frasers Pit highlight the proximity of mining activity to public roads³⁰ (**Site Appraisal Photographs R and S**). From these viewpoints, the existing extent of open cast mining is

³⁰ These photographs have been included as the road intersects with mining operation.

clearly evident with haul roads connecting through these features to the Processing Plant to the north. Views looking north-east from Macraes Road are shown in **Site Appraisal Photograph S**, where views over the existing SP11 Tailings Storage Facility are obtained below the surrounding rural landscape containing Coronation Pit seen between Rock and Pillar Range to the left and Highlay Hill to the right.

The Central Mining Area also sits within a landscape containing several historic heritage associations, including Innes Farm, the former upper Macraes township area, Macraes Chinese Camp and Gay Tan's Cottage. These features contribute to the historic values of Macraes as assessed separately in the Heritage and Archaeological Assessments. Beyond the historic associations of mining and settlement, the landscape also contains much deeper cultural associations for mana whenua. These associations form an important component of landscape character that sits alongside the more visible mining and settlement history of the area. In landscape terms, they reinforce the long-standing relationship between mining, settlement and pastoral land use around Macraes.

8.2 Proposed development

The Central Mining Area includes the bulk of proposed MP4 components and is located within the operational core of the Macraes Operation, which is the most intensively modified part of the Site. As described above, the area contains multiple large open pits, tailings storage facilities, WRSs, haul roads, workshops and processing infrastructure, and has a long history of mining-related landform modification. An understanding of the existing, construction and post construction form of the Central Mining Area is shown in **Figure 10** and summarised below.

8.2.1 Innes Mills Open Pit Extension

MP4 proposes a substantial extension of the Innes Mills Open Pit through Stages 11 to 13, expanding the pit to the north-west through the existing SP11 Tailings Storage Facility. This extension will increase the Innes Mills Pit footprint by approximately 49 hectares, albeit only 1.7 ha of which extends into greenfield areas. Tailings from the existing SP11 Tailings Storage Facility will be pumped to the proposed Frasers Tailings Storage Facility Stage 3 (refer to Section 8.2.3 below).

8.2.2 Tailings Relocation to Enable Pit Expansion

A defining feature of the Innes Mills extension is the need to relocate existing tailings material to enable the proposed expansion of the Innes Mills Pit. This includes:

- Complete removal of tailings from the SP11 Tailings Storage Facility; and
- Removal of the upper 30 metres of tailings from the Mixed Tailings Impoundment (MTI) from 551mRL to 512mRL.

Tailings will be removed using hydraulic mining techniques and relocated to the Frasers Tailings Storage Facility.

8.2.3 Frasers Tailings Storage Facility (TSF) – Stage 3

MP4 includes construction of Frasers TSF Stage 3, involving raising the existing in-pit embankment from 480mRL to approximately 520mRL to provide additional tailings storage and also accommodate Stage 2 of the Macraes Road realignment (refer to 8.2.5 below). Tailings removed from the MTI and SP11 Tailings Storage Facilities will be pumped into the Frasers TSF, along with the remaining tailings from the proposed MP4 mining. At closure, the TSF will be dry capped and rehabilitated. The proposed relocation and storage of tailings also occurs within the headwaters of the Waikouaiti River North Branch catchment. As acknowledged elsewhere in this assessment, these source environments hold elevated significance from both catchment and mana whenua perspectives. Consequently, the scale and location of tailings management infrastructure is relevant not only from an operational perspective, but also in terms of its relationship with the wider landscape.

8.2.4 Open Pit Workshop

To enable the expansion of the Innes Mills Pit, the existing Open Pit Workshop will be relocated to the southwest of the Innes Mills Pit adjacent to Macraes Road. The proposed Open Pit Workshop will be of the same scale as the existing workshop facility approximately 16 metres in height and approximately 4000 m² in area, excluding the surrounding hardstand and carpark area. The Open Pit Workshop will also be used for refuelling and hazardous substance storage.



Image 3: Existing Open Pit Workshop to be relocated

8.2.5 Macraes Road realignment

In addition to moving the existing open pit workshop, the existing Macraes Road will need to be realigned in two stages.

The first stage of the Macraes Road realignment is required to accommodate the IM12 expansion. This stage involves a localised diversion of the existing road alignment, shifting Macraes Road approximately 160 metres to the north to the east of the existing bridge. This realignment enables continued road function while making space for the IM12 pit extension.

The second stage is required to facilitate the IM13 expansion and involves a more substantial realignment. Macraes Road will be fully diverted to the south, crossing over the Frasers TSF embankment. Construction of the new road platform will require vegetation and topsoil removal to expose a stable rock base, with the road base formed using waste rock sourced from the Innes Mills Pit.

8.2.6 Waste Rock Disposal and Supporting Infrastructure

Waste rock from the Innes Mills extension will be placed within a network of existing and expanded disposal locations, including Frasers Backfill Embankment, Frasers West WRS, Innes Mills Backfills, and Southern Pit Backfill. These activities will incrementally increase landform height and area, with the exception of the Mixed Tailings Impoundment, but will continue to be integrated with the adjacent landform and rehabilitated predominantly with pasture interspersed with tussock grassland and areas of grey scrubland to provide visual texture and habitat diversity.

Supporting infrastructure includes realignment of power, water, and tailings pipelines.

8.2.7 Rehabilitation and Closure

The Innes Mills open pit (Stages 11–13) will be partially backfilled and remain at closure as a pit lake. Exposed benches above the lake will remain in perpetuity. Final outcomes are illustrated on the Central Mining Area Landscape Closure Plan included with the application.

Backfill areas (IM-BF1 and IM-BF2) will be regraded to remove haul roads and benching, creating smoothed and stable landforms. Surfaces above the final water level will be capped with brown rock and rehabilitated predominantly in pasture.

The Mixed Tailings Impoundment will be lowered to approximately +512 masl, with a perimeter dam wall retained at approximately +515 masl and rehabilitated to pasture. The Frasers TSF will be dry-capped and rehabilitated to support pasture and defined overland flow paths.

The Frasers West WRS will be shaped to reduce the expression of engineered benches and establish a stable landform that integrates with the adjoining rehabilitated mine landscape. Completed surfaces will be capped and revegetated, including pasture and tussock planting in the areas identified on the Landscape Closure Plan.

Watercourses will be reinstated in a naturalised form, including redirection of the upper catchment of the North Branch Waikouaiti River across the TSF capping and embankment with riparian planting. While these measures are intended to provide stable long-term drainage and ecological function, the resulting waterways will remain part of a modified post-mining landscape. Roads and access will be rationalised, with redundant haul roads rehabilitated and opportunities provided for post-closure recreation and public access.

8.3 Visual Appraisal

The Central Mining Area occupies the central portion of the Site accessed from Macraes Road passing through the Site and as a result is the most frequently and clearly visible component from surrounding public viewpoints (See **Site Appraisal Photographs R and S and Figure 13**).

Longer distance views to the west from Hyde-Macraes Road afford glimpsed views of the northern extent of the Central Mining Area, typically limited to parts of the existing Mixed Tailings Impoundment and existing Frasers WRSs seen near the skyline as illustrated within **Site Context Photograph 3**. Views from this area also observe Golden Point Pit as well as the existing Processing Plant which is otherwise not visible from within the Macraes township.

Horse Flat Road intersects the haul road which connects the Coronation Mining Area to the Processing Plant. As shown in **Site Context Photograph 4**, views of the Mixed Tailings Impoundment and SP11 Tailings Embankment are also available from this location as well as the existing workshop, albeit glimpsed.

Broad long-distance views from rural roads to the north and west further illustrate mining activity to the north of the Central Mining Area and its integration with the broader rural landscape. This rehabilitation has softened the visual appearance of engineered landforms; however some remain expressive of landscape modification. As illustrated in **Site Context Photograph 5** taken from Matheson Road, an appreciation of the Central Mining Area and associated infrastructure and engineered landforms can be observed within the broader context of the undulating rural landscape surrounding this area of the Macraes Mine. A glimpse view of the Pacific Ocean is also available along the visual horizon from this location which is important from a Kā Rūnaka perspective as ki uta ki tai connections contribute to the significance of the wider landscape. A similar outlook is illustrated within **Site Context Photograph 6**, from a location near the eastern end of Horse Flat Road, where views of the mine elements and rehabilitated engineered landforms are available.

Nearer distance panoramic views are available from public lookouts designed to observe the mine. As demonstrated within **Site Context Photograph 7** taken from the Golden Point Road lookout, views of the Processing Plant, Mixed Tailings Impoundment and Golden Point Pit are available set against the backdrop of the engineered landforms to the south.

Further to the south, views of the mine from within Macraes township become more limited. As shown in **Site Context Photograph 8** from the western end of Hyde Road, parts of the existing Mixed Tailings Impoundment, Frasers West WRS and open pit workshop building are visible from this area of the township. From the main street, as shown on **Site Context Photograph 9** from the intersection of Hyde Street and Main Street (Stanley's Pub) and the Tussock Sculpture Park (**Site Context Photograph 10**), the Frasers West WRS forms an evident part of the surrounding skyline, punctuated by intervening mature vegetation and blending in with surrounding areas of pasture. To the south-east of Macraes township, the Frasers West WRS remains a highly legible feature on the skyline from Red Bank Road as illustrated in **Site Context Photograph 11**.

Views from the north-east of Central Mining Area approaching the Site along Macraes Road are illustrated in **Site Context Photograph 12**. From this viewpoint views of the existing mine elements and infrastructure are extremely limited and curtailed by the intervening undulating landform. Views when approaching the Site from the north-east are primarily associated with an existing rock stack to the east of the SP11 Tailings.

Long distance oblique views from the south-west are shown in **Site Context Photograph 13**, taken from Nenthorn Road. From here, views towards the Site encompass glimpses of Deepdell Pit, Golden Point Pit, Mixed Tailings Impoundment and the Open Pit Workshop. Further to the

right, Frasers East and Frasers West Rock Stack are also visible as modified areas of pasture seen along the skyline. Other long-distance views to the south are available from Red Bank Road as illustrated within **Site Context Photograph 14**, where Frasers West WRS is seen below the Kakanui Mountains. The existing WRS while a legible engineered landform, broadly integrates with the broader gently undulating landscape surrounding the mine operation.

8.4 Zoning

As illustrated on **Figure 6**, the Central Mining Area is located within the Macraes Mining Project Mineral Zone of the Operative Waitaki District Plan and the Special Purpose Zone - Macraes Mining of the Exemptions Version - Proposed Waitaki District Plan. The Central Mining Area is not located within any Outstanding Natural Landscape or Feature overlay.

8.5 Landscape Effects

As the core of the Macraes Operation, the Central Mining Area will continue to represent the most intensively modified landscape within the Site. The existing landscape character is dominated by large-scale engineered landforms, including open pits, WRSs, tailings storage facilities, haul roads and industrial infrastructure, set within an otherwise open pastoral landscape of rolling hills and incised gullies. These elements create a highly legible mining landscape in which industrial elements form part of the landscape character of Macraes and the associated township.

In addition to the more legible aspects of this landscape are the connections *mana whenua* have to this landscape including the Waikouaiti River headwaters. As acknowledged in earlier sections of this report and through *pūkenga* input, the site of the Central Mining Area is considered a highly sensitive landscape to *mana whenua* due to historic and enduring connections to this area. This is supported by the Cultural Impact Assessment where the Waikouaiti River is identified as the “...*wellspring for the wellbeing and identity of Puketeraki whanau*”³¹.

The proposed expansion of MP4 activities will occur largely within the existing footprint of the Central Mining Area. The extension of the Innes Mills Open Pit (Stages 11–13) will substantially enlarge the open pit footprint, including excavation below the existing SP11 Tailings Storage Facility. During operation, this will also entail the relocation of Macraes Road through the central mining area, relocation of the Open Pit Workshop and an increase in the extent of steep, terraced pit faces and exposed rock surfaces albeit within the context of an existing highly modified mining landscape.

The removal and relocation of tailings from the SP11 Tailings Storage Facility and the upper portion of the Mixed Tailings Impoundment also forms part of a landscape change within the Central Mining Area in addition to the infilling of Frasers Pit. This process will include the decommissioning and modification to TSF within the Site resulting in exposed tailings surfaces, hydraulic mining activity and the presence of related infrastructure.

Waste rock disposal associated with the Innes Mills expansion will occur within existing and expanded disposal areas, including Frasers West WRS, TSF embankment construction and Innes Mills backfills. Placement of waste rock onto existing waste rock stacks will incrementally

³¹ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025.

increase landform height and will continue to replicate and integrate with the existing landscape pattern of large, engineered landforms found within the Site.

Increasing the elevation of the Frasers West WRS will expand an existing engineered landform which forms part of the backdrop to the Macraes township. Whilst expanding the existing landform will create a more prominent and legible feature, the toe of this existing WRS will remain unchanged. Rehabilitation at closure will continue to integrate the Frasers West WRS with the surrounding rural environment.

The proposed rehabilitation and closure measures within the Central Mining Area will assist in reintegrating the mining landforms into the broader landscape. The formation of a pit lake within the resultant Innes Mills pit, will assist in reducing the extent of exposed rock in the longer term below exposed high walls. Reconfiguration of the existing road network and relocation of the Open Pit Workshop will remain well integrated in the context of the existing working mine.

The regrading and rehabilitation of backfill areas including removal of haul roads and benching will also assist in reintegrating these areas into the surrounding rural landscape. Similar rehabilitation methods will be applied to the Mixed Tailings Impoundment and Frasers TSF which will be dry-capped and reinstated in pasture interspersed with native grassland and riparian vegetation. While these landforms will remain discernible as modified features, the reinstatement of pastoral landcover characteristic of the broader context will assist in integrating these landforms into their rural surroundings over time.

In reaching an overall assessment of landscape effects, consideration has been given to the cultural significance of the Waikouaiti River North Branch headwaters as the upoko (head) of this river system. While the Central Mining Area is highly modified, MP4 will contribute to the continued modification of this area of landscape that continues to hold ecological, hydrological and cultural significance. When assessing the nature and overall level of landscape effects, those values are assessed against the existing environment, including some further consented modification, and interpreted in light of the landscape outcomes sought by the relevant statutory provisions.

Overall, adverse landscape effects of the Central Mining Area expansion are assessed as **moderate** during the operational phase. This takes into account the existing high level of modification within this area of the Site, overarching zoning of the operative and exemptions version of the Waitaki District Plan, and the containment of the proposed expansion to the existing disturbance area. This level of effect however also seeks to acknowledge the cultural significance of this landscape and the effect which occurs as the landscape is continually reworked.

To respond to the significant landscape values associated with this landscape, the design response includes the reconnection of the Waikouaiti River North Branch headwaters with the downstream active bed, separation of the headwaters from mine elements such as the Frasers TSF, and wetland planting within the margins. With the implementation of the proposed mitigation and closure measures, adverse landscape effects will reduce to **low-moderate** as the newly defined landscape elements are effectively reintegrated into the broader rehabilitated mining landscape, acknowledging that this will not replicate historic hydrological and ecological processes of the headwaters.

8.6 Natural Character Effects

8.6.1 Existing Natural Character

The Central Mining Area encompasses the upper reaches of the Waikouaiti River North Branch and includes several small tributary systems that have been substantially modified by historical and contemporary mining activity which extend north into the upper catchment.

The Waikouaiti River consists of two primary branches, the North Branch and South Branch, which join downstream before discharging to the coast via the Waikouaiti estuary at Karitane. The North Branch originates within the mine site itself, with the current headwaters located east of Macraes township. Historically, the river extended further east; however, has since become highly modified and interrupted by the development of the Innes Mills and Frasers open pits. From its headwaters, the North Branch flows southwards through the mine site before joining the South Branch downstream. The wider catchment incorporates the active and historic mine footprint, extensive agricultural land use, and areas of native vegetation in the lower catchment.

The hydrology of the Waikouaiti River North Branch is highly modified and intermittent given the disconnect between the headwaters and the active bed downstream. The existing connection between the headwaters and downstream areas near Macraes consists of surface water flowing directly into the existing Frasers Pit. Consequently, there are extended dry periods in the upper catchment occurring due to existing altered drainage patterns, and landform modification associated with mining.

Due to the high levels of modification within the upper reaches of the catchment within the Central Mining Area, the active bed is dominated by fine sediment. These effects on the active bed and margins are exacerbated by the presence of stock, and consequently habitat quality is considered very low for flora and fauna. Vegetation present within the margins includes a mixture of scrub, and pasture.

Whilst the upper reaches of the Waikouaiti North Branch are highly degraded the overall condition of the Waikouaiti River as a system retains high biotic characteristics overall at a catchment scale. This is due to downstream reaches providing extensive and diverse instream habitat and support a range of Threatened and At-Risk fish species.

The Waikouaiti River is of immense significance to mana whenua, namely the Puketeraki whānau, both in terms of being able to interact with the river and the broader catchment through practices and knowledge sharing such as mahika kai, but also for exercising kaitiakitaka and rangatirataka. The headwaters of the catchment within the Site are currently inaccessible to the public, although the lower reaches near Macraes township can be observed from walkways and the Macraes Dredge Ponds. Evidence of mining activity altered landforms, sediment-dominated channels, stock access and the frequent absence of flowing water during dry periods result in low levels of perceived naturalness, particularly in the headwaters.

Notwithstanding the degraded environmental condition of the upper catchment, the natural character assessment also recognises the importance of the Waikouaiti River North Branch as the upoko of a culturally significant river system. From a Kā Rūnaka perspective, the significance of the headwaters is not determined solely by its condition, but also by their role in sustaining whakapapa relationships, cultural identity and the future restoration potential of the river.

Overall, the existing natural character of the Waikouaiti River North Branch is characterised by the highly modified headwaters, engineered active bed in the upper reaches, and degraded instream condition. While the Waikouaiti River North Branch is of high ecological and cultural

significance at a catchment scale, the upper reaches within the Central Mining Area currently represent a severely degraded area of the broader catchment. It is therefore considered that the existing natural character of the Waikouaiti River North Branch is **low**.

To the north of the Central Mining Area the existing Innes Mills Pit extends into the Waihemo catchment. As described above (Section 7.6.1) the Waihemo River (Shag River) is located downstream of the Deepdell Creek catchment. The catchment is also of significance to mana whenua for both whakapapa connections, and for traditional mahika kai practices. The waterways of relevance to this assessment are located at the head of the Waihemo catchment and occupy low-gradient, weakly defined channels within a landscape that has undergone extensive physical disturbance and reconfiguration over time. Deepdell Creek extends perpendicular to the Central Mining Area, including several unnamed tributaries to the south of the Creek. Overall, the existing natural character of Deepdell Creek is considered **moderate**.

8.6.2 Natural Character Effects

8.6.2.1 Waikouaiti River North Branch Headwaters

The headwaters of the Waikouaiti River North Branch are a key feature of the MP4 proposal. They are currently disconnected from the lower river by mining activity within the Central Mining Area. As part of MP4, a stream channel will be established along the raised embankment associated with Macraes Road, reconnecting a network of narrow gullies in the upper catchment with the downstream river system. This will restore hydrological continuity, although the resulting alignment will remain engineered and will not recreate the pre-mining stream pattern. The existing stream alignment and associated habitat are already highly modified by historic mining within the Central Mining Area.

During operation, the natural character of the Waikouaiti North Branch headwaters will remain modified by the continued effects of mining, including the severance and diversion of existing headwaters. This modification will continue to influence the mauri of the waterbody and disrupt the relationship of Ki Uta Ki Tai. As rehabilitation progresses, the headwater catchment will be reconnected through a constructed watercourse adjoining the alignment of Macraes Road. This channel will be designed and planted to establish a naturalised riparian corridor consistent with the treatment proposed for the upper reaches of the catchment.

Overall natural character effects of MP4 will ultimately result in a beneficial move towards reconnecting the headwaters of the Waikouaiti River North Branch with the lower reaches of the catchment. It is important to also acknowledge that whilst the proposed reconnection represents improvement of natural character, the resulting system will remain an engineered post-mining watercourse including realigned channels, constructed drainage features and modified hydrological processes. The active bed and margins of the stream will remain within a highly modified context albeit separated from mining landforms such as the Frasers TSF. Daylighting of the stream and planting of the margins will enable ecological enhancement through to the upper reaches and create a more coherent connection, albeit in a modified context.

Effects on the natural character of the Waikouaiti River North Branch headwaters are considered **low-moderate** during operation given the continued modification to the headwaters and realignment of the stream once more, albeit in the context of a mining landscape. Importantly, the alternative to MP4 is not the reinstatement of the North Branch to a more natural condition. Existing consents provide for further mining within Innes Mills, continued deposition of tailings as part of Stage 2 and an increase in the height of the tailings-storage embankment, but do not provide for the North Branch to be daylighted and reconnected with its

lower catchment. In the absence of MP4, the headwaters would therefore remain severed following closure.

MP4 provides for the headwaters to be daylighted, planted and reconnected with the lower catchment at closure. Although the proposed alignment will not replicate the natural patterns and processes that existed before mining, it represents a beneficial outcome relative to the consented environment. Over time, the establishment of riparian vegetation and renewed catchment connectivity are expected to improve the natural character of the headwaters from **low to low-moderate**.

8.6.2.2 Waihemo River Headwaters

Deepdell Creek extends perpendicular to the Central Mining Area of MP4 and remains outside of the disturbance footprint of the proposed MP4 expansion within the Central Mining Area. During operation effects on the Waihemo River headwaters (Deepdell Creek) will remain limited from the Central Mining Area. As part of closure, a spillway is proposed from the Innes Mills pit to the water treatment plant adjacent to Golden Point Backfill. Beyond this, effects on natural character associated with the discharge of water from the WTP will be managed via the Water Quality Management Plan.

8.6.3 Summary of Natural Character Effects within the Central Mining Area

8.6.3.1 Waikouaiti River North Branch

The Waikouaiti River North Branch is an integral landscape feature and natural system within Central Mining Area. While the headwaters have been severed from the lower catchment by the existing Frasers Pit the river still retains some of its ecological, and hydrological processes downstream, including cultural significance. The proposed MP4 expansion will have limited effects on the existing natural character and condition of the Waikouaiti North Branch during operation, noting that this will represent continual modification within this headwater environment. The headwaters will remain heavily engineered, albeit to reinstate the existing stream channel during operation to follow the crest of the Frasers TSF embankment. Notwithstanding this, the reconnection to the headwaters and additional riparian vegetation, will have a positive effect on the existing natural character of the waterbody and on the broader catchment enabling the re-establishment of habitat from the lower extent of the catchment to the headwaters. This beneficial effect however is noted within the context of a highly modified headwater system and will not replace the historic hydrological and ecological processes or pre mining condition.

8.7 Visual Effects

8.7.1 Views from local roads

Surrounding the Central Mining area there are several local roads where short to long distance views of the proposed MP4 activities are available. Views from the north are available from Horse Flat Road and Golden Point Road, views to the west are available from Macraes Road, Nenthorn Road and Macraes township, views to the south are available from Fraser Road and Red Bank Road, and views to the east are available from Golden Bar Road and Macraes Road.

8.7.1.1 Views from the north

Short-to-mid-distance views of the Innes Mills expansion to the north, Golden Point Backfill and reduced height of the Mixed Tailings Impoundment are available from Horse Flat Road and Golden Point Road. Transient views of each of these elements are available when driving along Golden Point Road towards the Golden Point Road lookout. Golden Point Road is a public road providing a connection to the Golden Point Reserve and allows visitors to overlook the existing Processing Plant and other mine elements to the north of the Innes Mills Pit. During operation open views of the Mixed Tailings Impoundment will be available as it is reduced in height. Views of the Innes Mills Pit expansion to the north will be limited to the upper reaches of the pit edge, and open views of the Golden Point Backfill formation and rehabilitation will be available for road users, and visitors to the Golden Point Road lookout.

These modifications and extensions to the existing infrastructure will not be considered out of character within the context of the existing mine and are broadly located within the existing disturbance area of the existing mine footprint. It is noted that Golden Point Road is a dead-end road and will therefore only be used by those wishing to observe the mining infrastructure and access the Golden Point Reserve. Therefore, adverse visual effects on road users from Golden Point Road are considered **low**, reducing to **very low** once operation ceases.

Views from Horse Flat Road will be partially curtailed by the intervening topography of the broader landscape. Views of the transient presence of trucks and other mining vehicles will be available from this local road, including from the proposed crossing with the Coronation haul road. Views to the north of the proposed Innes Mills and Frasers expansion are not dissimilar to those from Golden Point Road, however the mine elements would be viewed together against the broader landscape. Similarly, these modifications will not appear out of character given the adjacent existing mining landforms, albeit causing a more legible area of disturbance than existing operations which will be rehabilitated at closure. Overall adverse visual effects from Horse Flat Road are also considered **low**, reducing to **very low** once operation ceases, and rehabilitation has occurred.

8.7.1.2 Views from the west

Views from the west of the Site are available from Macraes Road, Nenthorn Road and Macraes township including views of the existing open pit workshop which will be relocated, the Mixed Tailings Impoundment and the Frasers West WRS. Views of these mine elements will be transient and fleeting, filtered through the intervening undulating topography of the surrounding rural landscape within the broader context. Throughout operation, the visible disturbance associated with the Mixed Tailings Impoundment and Frasers West WRS will be limited and will appear associated with existing modifications associated with the Macraes Mine. Overall adverse long-distance views of the proposed MP4 expansion to the west of the Site are considered **very low**.

Views from within Macraes township and Macraes Road approaching the Site to the west will be largely associated with the Frasers West WRS, relocated Open Pit Workshop and Stage 2 of the realignment of Macraes Road. Oblique views will be largely experienced from Macraes Road and High Street where the proposed extent of disturbance associated with the Frasers West WRS will be legible against the existing rehabilitated landform below, and temporary open views of construction works associated with the road realignment will be available. Overall, the modifications to these mine elements will occur within the existing footprint of the mine and appear associated with existing mining activity associated with the broader Macraes Mine operation. Adverse visual effects are therefore considered **moderate** during operation, reducing to **low** once operation ceases and rehabilitation has occurred.

8.7.1.3 Views from the south

Views from local roads to the south include those from Fraser Road and Red Bank Road. These roads service approximately three residential properties associated with large farms, with access restricted on the fringes of the Red Bank Reserve.

During operation, views will be primarily associated with the raised height of the Frasers West WRS, with open views available from the northern end of Red Bank Road. Glimpsed, long-distance views of the reduction to the Mixed Tailings Impoundment are also likely to be available from these roads, albeit transient and fleeting being curtailed by intervening landform and vegetation within the broader context. During operation, views of the Frasers West WRS will include a distinct contrast between the existing rehabilitated landform and newly deposited material to be rehabilitated. While the remaining mine elements will be largely curtailed from view, this will gradually replace more distant views of this type of modification and activity will not appear out of context throughout operation, and at completion will be integrated into the existing landform through revegetation with pasture and areas of representative native grassland and grey shrubland. Therefore, adverse visual effects from local roads to the south of the Site are considered **moderate** adverse as more distant views of the Kakanui Mountains are gradually replaced, reducing to **low-moderate** once pasture and vegetation have reestablished on the rehabilitated landform in this existing pastoral landscape context.

8.7.1.4 Views to the east

Views to the east of the Central Mining Area from local roads are from the eastern extent of Macraes Road and northern extent of Golden Bar Road. Views when approaching the Site from the east along Macraes Road will be largely curtailed by the existing Top Tipperary TSF, and intervening topography until the road reaches a crest near the intersection with Golden Bar Road. Until the road is realigned to allow for the expansion of Innes Mills Pit, open views of the Site to the north and south will be available throughout operation, with long distance views of the Central Mining Area available to the east of the Site as Macraes Road undergoes realignment. Not only does this include views of the expansion of the Innes Mills Pit and the construction of the Frasers TSF, but also the supporting infrastructure and WRSs which will be altered during the MP4 expansion. This includes views of the Frasers West WRS height increase, the Mixed Tailings Impoundment height decrease, and relocating of the Open Pit Workshop. Similar views will be available from the north of Golden Bar Road, where the construction of the Frasers WRS and Frasers TSF will be the most prominent features when travelling north towards Macraes Road.

Overall whilst the proposed activities in the Central Mining Area will be most evident from these roads, the expansion will be occurring within a highly modified and engineered landscape. The proposed activities will disturb areas of rehabilitated land but will not appear out of context within this landscape, remaining contained within the existing disturbance area associated with the mine. Adverse visual effects expected from local roads to the east are therefore considered **low-moderate** during operation, reducing to **low** once operation ceases and the closure outcomes have been established.

8.7.2 Visual Simulations

To better understand the visual change generated by the proposed activities in the Central Mining Area, a series of visual simulations have been prepared from representative viewpoints and included in a separate **Graphic Supplement**. These have been generated from six representative publicly accessible viewpoints within the Macraes Township, Nenthorn, Golden Point, and Red Bank Road area. These viewpoints demonstrate the relative visibility of the Site

and its relationship with the surrounding landscape. A description of these views are outlined below within **Table 2**.

Table 2: Visual simulation descriptions			
Viewpoint	Distance to closest MP4 element	Viewing audience	Description of view
VS2 Hyde-Macraes Road	6.3 km	Representative view of road users travelling east along Hyde Macraes Road.	This viewpoint is located on Hyde Macraes Road orientated to the east towards Central Mining Area. The road is frequently used by locals and visitors to the area as a connection from the coastline through the Macraes township to Central Otago. These views are primarily observed by those using the road travelling east. From this viewpoint there are existing glimpsed views of the Central Mining Area and this is expected to continue throughout the MP4 expansion. Visible elements of the proposal are associated with the Golden Point Backfill, Frasers West WRS, and reduction in the Mixed Tailings Impoundment. During operation, the removal of up to 30 metres from the Mixed Tailings Impoundment will be evident, albeit set below the skyline. Work on the Golden Point Backfill and Frasers West WRS will appear more evident, with partial views available of both of these features. As Golden Point Backfill is formed, the increased area of disturbance will become more apparent contrasting with surrounding rehabilitated landforms. Similarly, the disturbance associated with the Frasers West WRS will be apparent, albeit at some distance, continuing to form a prominent feature on the local skyline. As progressive rehabilitation is undertaken, these landforms will begin to recess into the broader landscape and become assimilated with the adjacent vegetation and landform patterns.
VS3 Horse Flat Road	2.1 km	Representative view of road users of Horse Flat Road.	This viewpoint is located on Horse Flat Road, a local gravel road which primarily services local properties and light vehicles accessing the Coronation haul road which intersects Horse Flat Road. Views of the proposal will be oblique when approaching the Site from the west. From this viewpoint there are views of the existing haul roads, WRSs, Mixed Tailings Impoundment, Deepdell Pit, and Open Pit Workshop. These views will remain throughout operation and at closure, in addition to the proposed Golden Point Backfill, and reduction in the Mixed Tailings Impoundment which is barely visible from this angle and orientation. During operation, views of excavation associated with the Mixed Tailings Impoundment will be glimpsed, although disturbance of the feature will be legible. Similarly, in latter stages of MP4, the construction of the Golden Point Backfill will introduce a new landform into the local landscape, but not a new area of disturbance which is already evident from this viewpoint. At closure, these elements will be

Table 2: Visual simulation descriptions			
Viewpoint	Distance to closest MP4 element	Viewing audience	Description of view
			rehabilitated to assimilate with the broader local landform and landcover.
VS4 Golden Point Road	450 m	Representative view from Golden Point Road near the public viewing area.	This viewpoint is located from Golden Point Road lookout which affords views of the Processing Plant and Mixed Tailings Impoundment. Visitors to Macraes Operation often use this road to access this public viewing area, and the Golden Point Reserve within the valley below. From this viewpoint during operation, views will primarily entail those of the Mixed Tailings Impoundment height reduction, and in latter years, the formation of the Golden Point Backfill (although not visible within VS4). This will include the continued presence of machinery and trucks within the Site, already characteristic of the operation of the existing mine. At closure, these newly established landforms and modifications will be rehabilitated to assimilate with the broader local landform and landcover.
VS5 Macraes Township (Stanleys Pub)	1.3 km	Representative view from within Macraes township near Stanley's Pub	This viewpoint is located at the heart of the Macraes township near Stanley's Pub orientated to the south-west. This viewpoint is located at the intersection of Macraes Road and Hyde Street. From this viewpoint the primary element of the Macraes Operation visible is the Frasers West WRS which will continue to be visible throughout the operation. The WRS forms a distinctive feature on the skyline, forming the backdrop to the town. During operation, the increased presence of machinery, and trucks, and disturbance to the upper extent of the WRS will be visible, although occurring within the context of existing mining activity. Throughout operation, the WRS will increase in height by up to 50 metres and will be progressively rehabilitated. At closure, the new addition to the landform will appear assimilated with the existing WRS footprint on the lower slopes.
VS6 Nenthorn Road	4.6 km	Representative views for road users of Nenthorn Road travelling north-east.	This viewpoint is located from an elevated section of Nenthorn Road to the south-west of the Site. Nenthorn Road is a local, unsealed road, primarily used by local residents. Views of the Site are available for those travelling east towards Macraes Road. From this viewpoint the primary element of the Macraes Operation visible is the Frasers West WRS which continue to be visible throughout operation. Views of the broader context including the upper reaches of the Frasers Pit are also available. During operation, the increased presence of machinery, and trucks, and disturbance to the upper extent of the Frasers West WRS will be visible, although occurring within the context of existing mining activity. From this viewpoint, modification of the broader landform will be more evident, albeit progressively rehabilitated throughout operation. At

Table 2: Visual simulation descriptions			
Viewpoint	Distance to closest MP4 element	Viewing audience	Description of view
			closure, the increased height of the landform means the WRS will remain a prominent feature on the skyline and will gradually become integrated into the broader context through revegetation with pasture and areas of tussock and grey scrubland.
VS7 Red Bank Road	1.7 km	Representative view of road users of Red Bank Road travelling north-west, and adjacent residential dwellings.	This viewpoint is located to the south from Red Bank Road, a local unsealed road primarily used by local residents. The road extends parallel to the Frasers West WRS. Given the scale of the landform, views of existing infrastructure and landforms associated with the Macraes Operation are curtailed by the Frasers West WRS, and this will largely continue for the duration of the operation. During operation views of the southern extent of the Frasers West WRS will be available, this, includes the increased presence of machinery, trucks, and disturbance along the upper extent of the WRS which will gradually foreshorten more distant views of the Kakanui Mountains along the skyline. Long distance views of the Trimbells WRS associated with the Coronation Mining Area will also be available on the skyline albeit glimpsed. Throughout operation the Frasers West WRS will be progressively rehabilitated so that at closure it will appear coherent with the existing landform and surrounding local landcover.

8.7.3 Views from residential and private viewpoints

The Central Mining Area has the largest albeit relatively limited private viewing audience including properties accessed from Horse Flat Road, Fraser Road, Red Bank Road, and from within the Macraes township.

To the north, views from private properties accessed from Horse Flat Road will be primarily associated with the northern extent of the MP4 Innes Mills and Frasers expansion. This includes the lowering of the existing Mixed Tailing Impoundment by 30 metres, and establishment of the Golden Point Backfill. Glimpses of the Innes Mills Pit expansion and the associated use of machinery and trucks as per the current operation will also be available. The nature of these views will be glimpsed, due to intervening topography to the north of the Central Mining Area and will be observed in the context of existing mining activity. Overall adverse visual effects from dwellings accessed along Horse Flat Road are considered no greater than **low-moderate**, reducing to **low** at completion following effective rehabilitation.

Properties to the south are limited and accessed from Fraser Road and Red Bank Road. Views from these dwellings are similar to those from within Macraes Township and will be primarily associated with the increased height of the Frasers West WRS. As the expansion of Innes Mills Pit and associated activities progresses, partial to open views of the Frasers West WRS height raise will include the presence of exposed rock, contouring of the landform using machinery and temporary haul roads. The addition of rock to the existing landform will soften over time as pasture and tussock establishes on the rehabilitated landform. To the north, glimpsed views of the existing open pit workshop and height reduction of the Mixed Tailings Impoundment by 30

metres will be visible. Views towards the remaining form of the Mixed Tailings Impoundment will be curtailed by the intervening topography of the broader undulating rural landscape.

Overall, any views associated with the MP4 expansion will be largely limited to the Frasers West WRS and viewed in the context of existing mining landforms and infrastructure. Adverse visual effects of the proposal on properties to the south and west of the Innes Mills and Frasers MP4 expansion will therefore be no greater than **low-moderate** during operation, reducing to **low** once operation ceases and rehabilitation has been completed.

8.7.4 Views from Golden Point Historic Reserve

Views from within the Golden Point Historic Reserve look up towards the existing Golden Point Pit, the northern lower slopes of SP11, and the Mixed Tailings Impoundment. The Golden Point Historic Reserve includes remnants of the historic Macraes Mining Settlement and is accessed by Golden Point Road. Views of the proposed MP4 expansion will include the reduction of the Mixed Tailings Impoundment, the construction of the Golden Point Backfill, and the external upper slopes of the Innes Mills Pit expansion. Views of these elements, whilst disturbing both rehabilitated and existing landforms, will not appear out of context given the existing mining landscape, and will be partially curtailed by the landform within the gully. Overall, adverse visual effects are considered **low**, reducing to **very low** once closure outcomes have been completed.

8.7.5 Night-time Lighting Effects

Within the Central Mining Area, the most relevant lighting change is the relocation of the Open Pit Workshop. The Lighting Assessment records that the relocated Open Pit Workshop lighting will be similar in function to the existing lighting but will be less obtrusive, including through the avoidance of direct visibility from Macraes Village, use of floodlights with no upward tilt, and a 2700K colour temperature. Lighting associated with hydraulic mining and tailings pumping will also be required, together with mobile lighting towers within the tailings storage facilities; however, these are expected to be shielded or obscured by the TSF embankments. In visual terms, the relocation of the Open Pit Workshop is not expected to increase adverse night-time effects on residential viewing audiences and mitigation is considered to result in a beneficial effect.

9.0 Golden Bar Mining Area

The Golden Bar Mining Area is located to the south-east of the broader Macraes Operation. The character of the broader landscape includes steep and undulating rural hills with incised gullies and narrow streams which form the headwaters of the Murphys Creek catchment. Key landscape features include the high sense of openness, lack of structures and stunted vegetation, as well as exposed schist tors which are a key characteristic of the underlying geology.

Vegetation within the area would have once included tall montane coniferous-broadleaved forest, however, has since been burned and cleared and now accommodates farming practices. The land use beyond the existing Golden Bar Pit is primarily used for grazing within a broader rural landscape with no adjoining residential development. Access to this area is by narrow

gravel roads connecting isolated rural properties. Vegetation now resembles expansive areas of pasture and small areas of rehabilitated tussockland.

Throughout this landscape there is a varied sense of openness and enclosure. In more elevated areas there are open views towards the Kakanui Mountains and Rock and Pillar Range which form the backdrop to the broader context. Within the gullies the landscape becomes more incised and sheltered.

Golden Bar has a more direct historic mining association than some other parts of the MP4 footprint. Evidence of the Golden Bar Mine and Battery foundations, together with associated adits, tracks, water races, sluicing and battery remains, contribute to the historic legibility of this part of the landscape. The proposed expansion will reintroduce active mining into an area where mining is already part of the historic and contemporary landscape character. The Heritage Assessment records that the Golden Bar Mine and Battery will be avoided by the proposed works, while the lower-value 19th century sluicing site would be removed and recorded under the archaeological authority process. This is addressed in the Heritage Assessment.

9.1 Site Appraisal

The existing Golden Bar Mine remains a discrete and spatially contained area of previous mining activity within the Site (see **Figure 11: Site Appraisal Golden Bar Mining Area**).

The northern extent of the Golden Bar Mining Area is characterised by rolling hills and incised gullies associated with tributaries of Murphys Creek (**Site Appraisal Photograph T**). These landforms retain a predominantly pastoral cover, with pockets of regenerating vegetation within gully floors. The existing Golden Bar Rock Stack has been rehabilitated in this context.

Due to the topography surrounding Golden Bar Pit the existing pit formation and associated rehabilitated rock stack remains relatively well contained within this area of undulating rural landscape. From the northern elevated edge of the pit, outward views to the north of the Site are characteristic of the surrounding rural environment as visible in **Site Appraisal Photograph U**. From this location, the existing Golden Bar Rock Stack is visible as an undulating pastoral foreground with views towards the Rock and Pillar Range available along the skyline. Views back into the pit reveal steep rock faces, grassed haul roads, and an existing lake at the base of the pit, (**Site Appraisal Photographs V and W**). Views beyond the Site are limited, although some glimpses of the coastal hills north of Dunedin are available (**Site Appraisal Photograph V**).

9.2 Proposed Development

The proposal involves re-opening and extending the existing Golden Bar open pit, with an expansion of approximately 340 metres to the east and northeast. This will increase the pit footprint from around 15.2 hectares to approximately 29.2 hectares. Prior to mining, the existing pit lake will be dewatered, and extraction will proceed using conventional open pit mining methods. The expanded pit will extend to within approximately 50 metres of Golden Bar Road at its northern edge.

All waste rock generated by the Golden Bar Pit extension will be placed within an expanded Golden Bar WRS located to the northwest of the pit. This approach consolidates waste rock within an established mining landform, avoiding the creation of dispersed new features across the surrounding catchment. Ore will be transported to the Process Plant via a private haul road

that extends broadly parallel to Golden Bar Road, forming a linear infrastructure corridor during active mining operations.

Following completion of mining, the Golden Bar Pit will be rehabilitated to form a permanent pit lake, with a spillway and riparian planting established around the outlet of the lake margins where practical. Pit benches will be completed to maintain long-term landform stability. The WRS will be progressively rehabilitated throughout operations, contoured to form a gently sloping landform and revegetated primarily with pasture interspersed with tussock consistent with the wider rural context.

The existing construction and post construction form of Golden Bar is shown in **Figure 12** and summarised below.

9.3 Visual Appraisal

Views of the Golden Bar Mining Area are associated with lower-relief landforms and greater separation from major public viewpoints. Consequently, visibility of this area is more limited and localised (**Figure 17**).

As shown in **Site Context Photograph 15**, open views of the proposed Golden Bar Mining Area expansion area are available from Golden Bar Road. The landscape is characterised by gently rolling pastoral terrain, with existing mining landforms curtailed by intervening landform from this viewpoint. This is reinforced within **Site Context Photographs 16 and 17**, also taken from Golden Bar Road where views of the northern extent of the Golden Bar Waste Rock are available, and demonstrate how this assimilates well within the surrounding pastoral landscape.

Views from the south of the existing pit are illustrated within **Site Context Photographs 18 and 19**. From these viewpoints, transient glimpsed views of the existing pit are available including pit benches and pit lake. Long distance views from Philip Road are illustrated by **Site Context Photograph 19** and show one of the limited locations where views of the upper pit benches are available, albeit difficult to discern within the undulating hill country of the broader context.

9.4 Zoning

As illustrated on **Figure 6**, the Golden Bar Mining Area is located partly within the Macraes Mining Project Mineral Zone and partly within the Rural Scenic Zone of the Operative Waitaki District Plan, and the Special Purpose Zone - Macraes Mining of the Exemptions Version - Proposed Waitaki District Plan³². The Golden Bar Mining Area has not been located within an Outstanding Natural Landscape or Feature overlay.

9.5 Landscape Effects

While the Golden Bar Pit was previously mined and rehabilitated in accordance with conditions, the area has undergone a period of landscape recovery, including the formation of a pit lake and re-establishment of vegetation on the rehabilitated WRS. The Golden Bar Mining Area is also located within the headwaters of the upper Waikouaiti River catchment, which is of significance to mana whenua with regard to whakapapa connections, mahika kai practices, and Ki Uta Ki Tai relationships. The extension of the Golden Bar Mining Area will reintroduce and

³² The effect of this has no current statutory weight.

increase the level of modification to the existing Golden Bar Pit and WRS within the surrounding rural and headwater landscape.

During operation, the exposed rock will contrast with the adjacent rural landscape and rehabilitated landforms, reinforcing the presence of mining activity. As extraction of the Golden Bar Pit continues, the WRS will be constructed from south to north and will be progressively rehabilitated throughout operation with pasture and tussockland. Whilst this will be a legible feature within the local context, the consolidation of waste rock with the existing Golden Bar WRS avoids dispersal of new landforms across the catchment and further fragmentation of the rural landscape. Over time, contouring and rehabilitation of the WRS to a gently sloping form, will assist in integrating the landform with the surrounding hill country.

The expansion of the Golden Bar Pit will equally increase the level of modification within the Golden Bar Mining Area. Benching will expand to the north-west, altering the underlying schist landform further. At a local scale, the expanded pit will increase the extent of excavation and reduce the perceived continuity of pasture and tussockland, particularly where the pit approaches Golden Bar Road. Similarly, the transient presence of trucks and machinery travelling to and from the pit, and within the pit itself will change the character of the landscape.

The above expansion will alter the current landscape character, mining activity and landforms within the context of the Golden Bar Mining Area. These modifications are part of the landscape characteristic and qualities associated with this area. The reactivation of this area of the Macraes Operation whilst different to the existing land use is not contrary to what is anticipated within this existing working landscape. However, it is also important to acknowledge this reworking of the Golden Bar Mining Area represents the continued modification to the headwaters which are important to mana whenua. To limit these effects, landscape effects of the proposed expansion will be localised and transitional, with rehabilitation proposed following closure to reintegrate the mining landforms into the surrounding landscape.

Additional rehabilitation measures include the reestablishment of the pit lake with riparian planting downstream of the proposed spillway and restoration of disturbed areas to grazing and tussockland. Beyond the footprint of the mine, the Murphys Ecological Enhancement Area will further strengthen ecological and landscape values within the headwaters of Murphys Creek as described further in section 10 below.

While rehabilitation is expected to improve landscape coherence over time, residual effects will remain associated with permanent pit expansion, continued occupation of headwater environments, expansion of a pit lake, and the presence of expanded engineered landforms. The proposed expansion will however occur within an area of existing modification associated with the Macraes Operation and will give rise to **moderate** adverse landscape effects during operation. These effects are anticipated to reduce to **low-moderate** once operation ceases and rehabilitation has occurred, with post-closure landscape character remaining broadly consistent with the surrounding open rural hill country context.

9.6 Natural Character Effects

9.6.1 Existing Natural Character

The Golden Bar Mining Area is adjacent to two catchments including the Murphys Creek and Golden Bar Creek catchments. Both creeks form a large part of the headwaters of the Waikouaiti River North Branch and are characterised by incised, narrow stream beds surrounded by tussockland, scrub, and pasture, and exposed rock outcrops within the gullies.

The largest of the two catchments is the Murphys Creek catchment, including Clydesdale Creek. The headwaters of the Creek originate to the south of the Central Mining Area and is considered a permanent waterway unlike many of the headwaters surrounding the Macraes Mine. Instream habitat includes coarse substrates generating a sequence of riffles, runs and pools. Vegetation within the margins of Murphys Creek includes a mixture of grasses, tussock and scrub.

Whilst macroinvertebrate health within the Murphys Creek catchment is relatively low due to stock access continuing to be available, it is considered that there are no major barriers for fish passage and habitat for fish is generally of good quality.

Clydesdale Creek is a key tributary of the Murphys Creek catchment and currently adjoins the existing Golden Bar WRS. At the headwaters of the creek, there is a small sediment pond which discharges into the Clydesdale Creek catchment and is contained by an earth bund limiting fish passage into the upper reaches of the tributary. The catchment below the sediment pond is predominantly characterised by a permanent flow of water with the active bed containing entirely soft sediment. Vegetation within the margins is reflective of the broader land use, characterised by grazed pasture and sparse areas of tussock.

To the south, Golden Bar Creek forms the second catchment adjacent to the Golden Bar Mining Area. Similar to the Murphys Creek catchment, the Golden Bar Creek is a tributary of the Waikouaiti River North Branch and is surrounded by extensive areas of grazed pasture.

As the northern most tributary of the creek headwaters are located at the base of the Golden Bar Pit lake. Stock grazing like much of the waterways within the broader Macraes landscape has caused pugging within the active bed and margins of the creek.

Both the Murphys Creek and Golden Bar Creek are located within private property and therefore there are limited opportunities to experience these creeks. The presence of mining and engineered landforms and agricultural land use have altered the hydrology and habitats within the headwaters of both catchments.

Despite existing modification, both Murphys Creek and Golden Bar Creek continue to perform important headwater functions within the Waikouaiti River catchment and retain ecological and cultural significance that extends beyond their current physical condition. Whilst the upper reaches of the Murphys Creek (Clydesdale Creek) and Golden Bar Creek contain more intensive areas of modification associated with historic mining activity; the overall catchment contains a permanent flow of water and provides for good fish habitat. Overall, the existing natural character of Murphys Creek (including Clydesdale Creek), and Golden Bar Creek is considered **low-moderate**.

9.6.2 Natural Character Effects

9.6.2.1 Clydesdale Creek

Clydesdale Creek is located to the west of the Golden Bar Pit disturbance area and is one of the main tributaries of the Murphy's Creek catchment. During operation, the existing silt pond at the base of the existing Golden Bar WRS will be submerged by the footprint of the WRS extension. This also includes the removal of one of the tributaries of Clydesdale Creek above the existing silt pond as the WRS is constructed within the valley immediately west of the Golden Bar Pit.

Natural character effects of the proposal on Clydesdale Creek during operation include the removal of one of the Clydesdale Creek tributaries and operation within the broader margins of the upper Clydesdale Creek catchment. These effects will include earthworks within the active bed and margins of the creek.

At closure, the broader headwaters of the Clydesdale Creek will remain intact. Sediment will continue to be filtered through a redefined silt pond at the base of the Golden Bar WRS. The margins of the stream will be resown with pasture on the upper slopes of the WRS, while native riparian vegetation will be added to the lower margins.

Whilst overall there will be a loss in the active bed and margins within the upper reaches of Clydesdale Creek, this modification will occur within a landscape which includes grazing, and modification to the existing hydrology through the formation of the existing Golden Bar WRS. It is considered adverse natural character effects on Clydesdale Creek during operation are **low-moderate**, reducing to **low** at closure once rehabilitation has been completed.

9.6.2.2 Golden Bar Creek

Golden Bar Creek is located to the south-east of the Golden Bar pit and effects will remain localised within the proposed Golden Bar Mining Area. During operation, the pit will be dewatered and therefore discharge into the creek headwaters will cease from the pit during operation. The pit footprint will expand to the north-west, resulting in the removal of approximately 200 metres of active bed to the north of the Golden Bar headwaters. The tributary immediately south of the pit will remain largely unaffected in terms of its delineation, however, it will be located within the disturbance area, where it is expected the margins of the tributary will be disturbed through excavation of the adjacent Golden Bar Pit.

At closure, the Golden Bar Pit lake will be re-established and gradually refill over a period of approximately 30 years to 500 masl. The pit lake spillway will be planted in native riparian vegetation before transitioning into the adjacent grazed land. Overall effects on Golden Bar Creek are primarily associated with the modification to the active bed and margins of the upper reaches to the north of the existing Golden Bar Pit. The alignment of the tributary to the south of the pit will largely remain the same, albeit within the disturbance area of the Golden Bar Mining Area. At closure, the level of natural character within Golden Bar Creek will resemble pre-MP4. Adverse natural character effects are therefore considered **low-moderate** reducing to **low** at closure.

9.6.3 Summary of Natural Character Effects within the Golden Bar Mining Area

Natural character effects on the broader Murphys Creek catchment are limited, with disturbance largely confined to the headwaters of Clydesdale Creek and the north-western branch of Golden Bar Creek. The proposal includes the removal of approximately 200 m of Golden Bar Creek headwaters north of the pit; however, effects on the broader active bed and margin of both catchments will remain limited and localised to the upper reaches. In the context of the existing modified tributaries and legacy mining activity within the area, these changes will not materially alter the overall natural character of either catchment. It is however necessary to acknowledge that proposed mitigation measures will not resemble pre-mining condition and will be integrated but engineered landforms and features within the landscape. Proposed planting around the pit lake margins and spillway will provide some beneficial natural character effects to the existing condition, although this will not materially influence the overall natural character of Golden Bar Creek. Overall, adverse effects of the proposal on the natural character of the Murphy's Creek and Golden Bar Creek catchments are considered **low**.

9.7 Visual Effects

9.7.1 Views from local roads

Views from local roads include views from Philip Road to the south, and Golden Bar Road to the north. Philip Road is a local gravel road servicing one property (299 Philip Road) at the base of a local valley near the Waikouaiti River North Branch. Views of the proposed mine expansion will be oblique and similar to those obtained from private properties within the area. Views of activity within the existing Golden Bar Pit will be limited to the expansion of the pit to the north-east. Views of the proposed WRS will also be available as the upper extent becomes established in later years of the expansion. As the feature is progressively rehabilitated throughout the expansion of Golden Bar Pit, the landform will begin to integrate with the surrounding undulating hill country within the broader context. Overall adverse visual effects on road users of Philip Road are considered no greater than **low** reducing to **very low** once operation of the Golden Bar Mining Area ceases, and rehabilitation of the associated WRS has been completed.

Views from Golden Bar Road extend parallel to the proposed expansion area and will afford transient oblique views of the Golden Bar Mining Area when travelling both north and south along the northern extent of Golden Bar Road. This will include the expansion of the Golden Bar Pit during both Stages 2 and 3, the formation of the WRS, and transient use of machinery and trucks within the Site and on the haul road connecting Golden Bar Pit to the haul road network within the Central Mining Area. As the Golden Bar WRS becomes established views of the Golden Bar Pit expansion from the north will become curtailed. Throughout operation, the exposed overburden associated with Golden Bar WRS will be the most legible feature of the Golden Bar expansion area and will gradually become visually absorbed as terracing is recontoured and landcover is re-established.

Views immediately south of the Golden Bar Mining Area will be limited to approximately 800 metre section of Golden Bar Road to the west of Dunback Hill. These views are frontal to oblique and whilst limited, this short section of road will afford the most open views of works within the Golden Bar Pit. During operation, partial views of both the Stage 2 and 3 pit expansion will be available as the expansion moves north towards Golden Bar Road. Views of the formation of the Golden Bar WRS, and machinery operation within the pit will also be available, contrasting with existing rural activity in the environment surrounding the pit. Nevertheless, these views will be limited to this section of the road and will be viewed in the context of existing mining landforms associated with Golden Bar Pit. Once rehabilitated, the proposed Golden Bar WRS will appear assimilated with the broader rural environment, and the pit benching will appear as an extension to the existing Golden Bar pit footprint. Overall adverse visual effects from Golden Bar Road are considered **moderate**, reducing to **low** once operation ceases and rehabilitation has been completed.

No new fixed lighting is envisaged within the Golden Bar Mining Area. Lighting will primarily comprise vehicle, mobile plant and mobile lighting tower use associated with the pit, waste rock stack and haul road. The Lighting Assessment identifies that the only lighting potentially visible to sensitive receivers would be vehicle lighting from part of the Golden Bar Haul Road, principally from Red Bank Road. In landscape terms, this would be a temporary and moving source of night-time light associated with operational mining activity, rather than a permanent fixed lighting element.

9.7.2 Visual Simulations

To better understand the proposed visual change generated by the Golden Bar MP4 expansion a series of visual simulations have been prepared from representative viewpoints and included in a separate **Graphic Supplement**. These have been generated from three representative public viewpoints accessed from Golden Bar Road, and Philip Road. These viewpoints demonstrate the relative visibility of the Site and its relationship with the surrounding landscape and are summarised in **Table 3**.

Table 3: Visual simulation descriptions			
Viewpoint	Distance to closest MP4 element	Viewing audience	Description of view
VS8 Golden Bar Road (north)	1 km	Representative view of road users travelling south-east along Golden Bar Road.	This view is from the northern extent of Golden Bar Road when travelling from the intersection of Macraes Road south. The road is unsealed and primarily used by local residents and light vehicles associated with the Macraes Mine. The existing view affords open views of the rehabilitated Golden Bar WRS which has become assimilated into the broader undulating rural context. From this viewpoint, views of the Golden Bar Pit are unavailable, and the land is primarily used for grazing. During operation, views of the Golden Bar Pit will continue to be curtailed by the proposed extension to the Golden Bar WRS. Throughout operation, open views of the WRS formation will be available, including the reintroduced presence of machinery and trucks required to form this MP4 element, and the associated disturbance of the rehabilitated landform. Whilst resulting in a greater disturbance to the area, the activity will not appear out of context given the broader Macraes Operation and will be progressively rehabilitated so that at closure the proposed WRS will be reintegrated with the local vegetation and undulating landform.
VS9 Golden Bar Road (south)	750 m	Representative view of road users travelling north-west along Golden Bar Road.	This viewpoint is located to the south of the existing Golden Bar Pit from Golden Bar Road. Similar to the viewpoint to the north, the road is unsealed and primarily used by local residents and light vehicles associated with the Macraes Mine. Views of the Golden Bar Pit and WRS are available when travelling north along Golden Bar Road. This includes views of the weathered northern pit face and benches. Views beyond to the north are curtailed by the intervening WRS. During operation views of the Golden Bar Pit and WRS expansion will become available from the 800-metre section of road to the south of the pit. This will include extensive earthworks to expand the pit, reintroduction of machinery and trucks, and increased disturbance within the previously rehabilitated mine Site. In addition to the mining activity, the progressive rehabilitation of the WRS will be visible throughout operation, and at closure the scarification of the pit benches, and rehabilitation of the pit lake margins and stream outlet.

Table 3: Visual simulation descriptions			
Viewpoint	Distance to closest MP4 element	Viewing audience	Description of view
VS10 Philip Road	3.1 km	Representative view of road users only	This viewpoint represents a long-distance view from local rural roads to the south of the Site. Philip Road acts as a driveway to the nearby station and is therefore only used by local residents. The broader context includes a remote network of unsealed roads which allow access to farms and limited residential properties in the area. Existing views of the Site are available when travelling both in an easterly and westerly direction on the road. Views are glimpsed of the existing pit and are viewed in the context of broader undulating rural landscape. During operation, views of the Golden Bar Pit expansion will be limited to the upper extent of the pit, with the WRS expansion and broader works within the lower extent of the pit remaining curtailed from view by the intervening topography. Glimpsed views of truck movements and machinery during operation will be available, and at closure, the pit will appear similar to the existing northern face.

9.7.3 Views from residential and private viewpoints

Dwellings within the vicinity of the Golden Bar Mining Area are located to the south-east of the Site and are accessed from Stoneburn Road and Philip Road. Whilst these properties do not currently obtain any views of the existing mine, limited glimpsed views are likely to become available for some of these dwellings as the expansion of the Golden Bar Mining Area progresses.

Views from properties in proximity to the intersection of Stoneburn Road and Golden Bar Road will be limited. Views of the Site from these dwellings are curtailed by the intervening hill country between the Site and these properties. Therefore, no change in view is expected from these dwellings associated with the expansion to the north.

Glimpsed views at most of the expansion of Golden Bar Pit and associated WRS extension will be available from properties to the south of the Site. Three dwellings are within the vicinity of the intersection of Philip Road, Ainges Road, and Taiari Peak Road, with the properties at 202 Ainges Road and 1473 Taiari Peak Road likely to obtain the greatest views being elevated near local high points. Glimpses of the proposed expansion of Golden Bar will be limited and associated with the southern extent of the pit during the earlier years of operation.

In later years of the expansion, views of the proposed WRS will become more evident as it ascends towards its proposed height of 600masl. This will be reinstated in pasture through the progressive rehabilitation of the landform and gradually recess into the broader undulating hill country surrounding the expansion. Overall adverse visual effects on these properties are considered no greater than **low**, reducing to **very low** once the rehabilitation has been completed.

10.0 Ecological Enhancement Areas

In tandem with the proposed mining activity, the ecological enhancement and compensation package for MP4 comprises three principal areas within the wider Macraes landscape: the Murphys Ecological Enhancement Area, the Mt Highlay Tussock Restoration Area and Cranky Jim's Link Restoration Area. These areas are separate from the primary mining disturbance areas and are intended to provide long-term ecological enhancement, habitat protection and improved landscape connectivity within the broader Macraes Ecological District.

In landscape and natural character terms, the enhancement areas are relevant because they will introduce both physical change and beneficial management outcomes. The physical changes include fencing, access tracks, planting, pest control infrastructure and ongoing management activity. These works will result in some localised change within parts of the rural hill-country landscape, particularly during establishment. However, the scale and character of these works is limited compared with the proposed mining works and is consistent with conservation, restoration and rural land management activity.

The Murphys Ecological Enhancement Area is located within the upper Murphys Creek catchment, within the broader landscape surrounding the Golden Bar Mining Area (see **Figure 13** and **Site Appraisal Photographs X and Y**). The area is characterised by open rural hill country, incised gullies, narrow creek corridors, exposed schist, tussockland, shrubland and rock outcrop habitat. The enhancement works will include predator exclusion, stock exclusion, pest control, and targeted restoration and protection of tussock, shrubland and rock outcrop habitats. The broader Murphys Connection will extend these benefits toward the Red Bank Covenant, improving habitat connectivity across the wider catchment and strengthening habitat values for indigenous lizards, invertebrates and open-country avifauna.

The predator-proof fence around part of the MEEA will be one of the more visible built elements associated with the enhancement works. While the fence is required to achieve predator exclusion and lizard habitat protection, it will introduce a new linear built element into the open rural hill-country landscape. Its landscape effects should therefore be managed through detailed alignment, siting and finish. Where practicable, the fence should follow existing landform patterns, contour breaks, gully edges and vegetation patterns, and avoid prominent skyline positions or unnecessary straight-line expression across open slopes. Associated gates, maintenance tracks, culverts and small site facilities should be limited to what is required for establishment, monitoring and maintenance, and finished in visually recessive colours and materials.

The Mt Highlay Tussock Restoration Area focuses on restoration and protection of tussock-dominated upland habitat. Proposed actions include tussock restoration planting, protection and enhancement of existing tussock, shrubland and rock outcrop habitat, and removal of planted pine forestry to avoid future loss of lizard habitat values. In landscape terms, these works will assist the transition of modified land cover toward a more coherent dryland hill-country character, consistent with the wider schist, tussock and open upland patterns of the Macraes landscape.

Cranky Jims Link Restoration Area will connect existing protected areas, including the Cranky Jim's Wetland Covenant, Cranky Jim's Shrubland Covenant and Island Block Covenant. The area will include dry shrubland / grey scrub restoration planting, protection of existing dry shrubland and rock outcrop habitat, and pest, browser and predator control. Over time, this will strengthen indigenous woody vegetation patterns and improve ecological linkage between existing covenants. The restoration planting is also intended to provide a foundation for longer-

term succession toward podocarp-dominant dryland forest, which is a rare restoration opportunity within the Macraes Ecological District.

Overall, the enhancement areas will result in localised and **very low adverse** landscape effects during establishment, primarily associated with fencing, temporary access, planting works and management infrastructure. These effects will be temporary or capable of being reduced through detailed design and siting. Over time, the enhancement areas are expected to result in beneficial landscape and natural character effects through increased indigenous vegetation cover, improved habitat connectivity, reduced grazing and pest pressure, and reinforcement of the schist, tussock, shrubland, wetland and gully patterns that contribute to the wider Macraes upland landscape.

Where ecological enhancement works occur near recorded historic features, including mining-related features and Ross's Sheep Dip within the Murphys area, final layout and construction planning should take account of those features, with avoidance or physical protection adopted where practicable.

Part C: Cumulative Effects

11.0 Cumulative Effects

Cumulative effects have been considered in relation to the combined landscape, natural character and visual effects of MP4 across the Coronation, Central and Golden Bar Mining Areas, together with associated infrastructure, lighting, rehabilitation and enhancement works.

For the purposes of this assessment, cumulative effects are not simply the sum of effects from each individual mining area. Rather, they relate to the way MP4 would collectively influence the broader Macraes upland landscape, including its physical modification, landscape character, visual amenity and natural character over time, including seeking to incorporate an understanding of effects on the cultural landscape for mana whenua.

11.1 Cumulative Landscape Effects

In landscape terms, MP4 will extend the duration, scale and extent of mining activity at Macraes. However, it will do so within an existing mining landscape that has already been substantially modified by open pits, waste rock stacks, tailings storage facilities, haul roads, water management infrastructure, processing facilities and progressive rehabilitation. The proposal does not introduce mining into an otherwise unmodified rural landscape. Instead, it continues ongoing mining activity within, and immediately adjoining, the established Macraes Operation. For this reason, the proposed rehabilitation, watercourse restoration, ecological enhancement, protection of known heritage features where practicable, and integration of closure landforms are also important to the cumulative landscape effects outcome.

During operation, some mine elements will become larger, some previously rehabilitated areas will be reworked, and the operational mining landscape will remain present for longer. The main cumulative landscape effects relate to the increased extent of exposed mining landforms, the

further modification of existing ridges, gullies and headwater areas, the reactivation of Golden Bar, and the continued presence of large-scale mining activity across several parts of the Macraes Flat landscape. This cumulative activity and continual occupation and modification to the landscape is of significance to mana whenua given the enduring connection to this landscape. These effects will be most apparent during operation, when exposed rock, active machinery, haul roads, and waste rock stacks and tailings facilities will be visible in different parts of the Site.

When operational, MP4 will not be experienced as one single, continuous area of new disturbance. The Coronation, Central and Golden Bar Mining Areas occupy different parts of the wider mine landscape, have different visual catchments, and are partly separated by landform, distance and existing mining infrastructure. In addition, the assessment has adopted a conservative approach by considering the proposed maximum extents and heights of MP4 elements. In practice, mining activity will occur progressively and sequentially across different areas, rather than all elements being active at their maximum extent at the same time.

Cumulative and compounding effects have also been considered from the perspective of mana whenua. It is understood that this landscape has a long history of association and occupation of more than 800 years including strong connections to the headwaters of the Taiari River, Waihemo River, and Waikouaiti River North Branch. Ara tawhito or traditional travel routes formed by tipuna enabled this connection inland to gather important resources through mahika kai practices³³. From this perspective, the established and prolonged presence of mining is itself part of the cumulative change affecting the landscape. MP4 would add to these cumulative effects by extending the duration of mining and its associated modification, with consequences for mana whenua connections with place and the exercise of rangatiratanga and kaitiakitaka.

Alongside its enduring mana whenua associations, the landscape has been shaped since the mid-nineteenth century by pastoral settlement and successive phases of mining. Historic mining patterns and features remain evident, while large-scale modern mining has been a prominent landscape influence since the 1990s. MP4 will further modify parts of this cultural and historical landscape, including areas where historic mining associations and landform legibility remain evident.

Based on the above assessment, the findings relevant to each element of MP4 are set out in **Table 4** below

Table 4: Summary of Landscape Effects within Macraes Flat		
	Landscape Effects during Operation	Landscape Effects at Closure (with mitigation)
Coronation Mining Area	Moderate adverse	Low moderate adverse
Central Mining Area	Moderate adverse	Low moderate adverse
Golden Bar Mining Area	Moderate adverse	Low moderate adverse

At the scale of the wider Macraes Flat landscape, MP4 will contribute to cumulative change by extending the scale and duration of mining and rehabilitation across the Coronation, Central and Golden Bar areas. However, these areas are spatially separated and would seldom, if ever, be experienced together in a single view. Cumulative effects would therefore arise principally through the successive experience of mining activity and the continuation of landscape

³³ Cultural Impact Assessment Macraes Phase 4 (Stage 3) Oceana Gold (NZ) Ltd, Aukaha Limited, 2025.

modification over time, rather than through the combined visual prominence of all MP4 components.

The established mining context, progressive staging and rehabilitation of disturbed areas further moderate these effects. The broader MP4 package will also provide positive landscape and environmental outcomes through the proposed compensation and enhancement areas, including habitat protection and restoration at Murphys, planted-pine removal and tussock restoration at Mt Highlay, and indigenous shrubland restoration and longer-term succession toward podocarp-dominant dryland forest within Cranky Jim's Link Restoration Area. These measures will strengthen indigenous vegetation patterns and increase the naturalness and ecological integrity of the wider landscape over time. Where enhancement relates directly to waterbodies and their margins, it may also improve natural character.

Taking account of these factors, the cumulative adverse landscape effects of MP4 during operation are assessed as **moderate**. This rating reflects the increased scale and duration of mining associated with the extension of open pits, waste rock stacks, tailings storage facilities, haul roads and related operational activity. Effects will be most apparent where disturbance extends beyond the existing and consented disturbance footprint and where earthworks, exposed rock, machinery, vehicle movements and lighting are experienced in combination.

Progressive rehabilitation combined with the proposed compensation and enhancement areas will reduce cumulative effects over time. As waste rock stacks and other disturbed areas are completed and no longer required for active mining, surfaces will be shaped, stabilised and revegetated with pasture, tussock and indigenous planting. Riparian planting will also be established downstream of affected watercourses. These measures will reduce exposed earthworks and assist the integration of disturbed areas with the wider upland landscape. They will not, however, restore the landscape to its pre-mining condition or remove the permanent modification of landforms, waterways and headwater environments.

At closure, cumulative adverse landscape effects are expected to reduce to **low–moderate** overall. Waste rock stacks, backfill areas, tailings storage facilities, pit margins, access tracks, road corridors and other disturbed areas will be subject to closure shaping and revegetation. Retained pits will gradually and partially fill with water, while other modified landforms and waterways will remain permanent features. The post-closure environment will therefore continue to read as a rehabilitated mining landscape rather than a natural or unmodified upland landscape. Nevertheless, the cessation of active earthworks, lighting and vehicle movements, together with the establishment of vegetation and ecological enhancement, will materially reduce the cumulative effects apparent during operation.

11.2 Cumulative Natural Character Effects

Cumulative natural character effects relate primarily to the combined influence of MP4 on stream headwaters, margins, drainage patterns and water management infrastructure across the Taiari, Waihemo and Waikouaiti catchments. These effects include localised changes to Trimbells Gully, Deepdell Creek tributaries, the Waikouaiti River North Branch, Murphys Creek, Clydesdale Creek and Golden Bar Creek. While these waterways already occur within a modified catchment context influenced by mining, pastoral land use, altered drainage patterns and existing water management infrastructure, these waterways are also significant to mana whenua for their ability to exercise kaitiakitaka, rangitiratoka and to continue cultural practices, and whakapapa connections which have occurred for centuries. None of the affected waterways are identified as outstanding waterbodies.

Within the Coronation Mining Area, natural character effects are associated with further modification of upper catchment gullies and drainage patterns adjoining the existing Coronation and Coronation North pits, including Trimbells Gully and nearby headwater tributaries. These effects arise from the extension of mining landforms, waste rock stack and backfill areas, and associated water management works. While the affected stream reaches are already influenced by mining and pastoral modification, MP4 will further reduce the legibility of some remaining headwater patterns and margins during operation.

Within the Golden Bar Mining Area, natural character effects are focused on the upper parts of the Murphys Creek, Clydesdale Creek and Golden Bar Creek catchments. The effects are principally associated with the reactivation and extension of the Golden Bar pit, waste rock stack development, pit lake formation, spillway works and localised modification of headwater drainage. These effects will be concentrated in the upper reaches and will not materially alter the broader active beds and margins of Golden Bar Creek or Murphys Creek. Proposed riparian planting will assist in improving localised natural character outcomes over time, although within a modified post-mining setting.

Based on the above a summary of natural character effects for each mining area is set out in **Table 5** below:

Table 5: Summary of Natural Character Effects		
	Natural Character Effects during Operation	Natural Character Effects at Closure (with mitigation)
Coronation Mining Area	Ranging from low to moderate adverse	Ranging from low-moderate to very low adverse
Central Mining Area	Low-moderate adverse	Beneficial
Golden Bar Mining Area	Low-moderate adverse	Low adverse

The cumulative natural character effects will be greatest where MP4 results in direct or indirect modification of headwater channels and their margins. These effects are localised, but important, because they occur within the upper parts of several catchments. At the same time, MP4 includes rehabilitation, riparian planting, watercourse reinstatement and ecological enhancement measures. In particular, the restoration and daylighting of parts of the Waikouaiti River North Branch headwaters, together with the Murphys Ecological Enhancement Area, will contribute to positive natural character and landscape outcomes over time, acknowledging that daylighting of the Waikouaiti River North Branch headwaters will continue to be an engineered outcome in perpetuity and will not restore the pre-mining state of the headwaters. This beneficial natural character outcome should be understood as a landscape and natural character assessment finding and does not, of itself, determine the extent to which mana whenua cultural values, mauri or whakapapa relationships are restored or enhanced.

Overall, cumulative natural character effects are assessed **moderate** during operation, reducing to no more than **low-moderate** at closure where rehabilitation and enhancement measures are successfully established. A beneficial closure outcome for the Central Mining Area relates to the proposed reconnection of the Waikouaiti River North Branch headwaters and considers it in the context of the existing environment where the headwaters are severed from downstream. The Golden Bar and Coronation ratings reflect more localised effects on upper headwater tributaries, including Trimbells Gully, Camp Creek, Highlay Creek, Clydesdale Creek and

Golden Bar Creek. At a broader catchment scale, effects on the Taiari, Waihemo, Murphys Creek and Golden Bar Creek systems are more limited and subject to suitable downstream rehabilitation.

11.3 Cumulative Visual Effects

Cumulative visual effects will be experienced differently depending on viewing location, distance, elevation and the extent to which existing mining activity is already visible. The most affected viewing audiences are those travelling along local roads near the mining areas, together with some nearby rural properties. For most public and private viewpoints, the separate MP4 components will not be seen together as a single combined view. Instead, the cumulative experience will arise through sequential views of ongoing mining activity seen while moving through the wider Macraes area.

From this perspective, MP4 will reinforce the identity of Macraes as a working mining landscape. The highest localised visual effects are associated with Golden Bar Road, where the Golden Bar Mining Area will be experienced at close range. Elsewhere, visual effects are moderated by distance, topography, existing mining modification and the dispersed arrangement of the MP4 components.

MP4 will also continue the existing pattern of night-time lighting associated with the 24-hour Macraes Operation. The key changes relate to the relocation of fixed lighting associated with the Open Pit Workshop and mobile lighting associated with active mining areas, haul roads and waste rock disposal activities. Lighting will therefore remain part of the operational mining character of Macraes, rather than being introduced into an otherwise unlit landscape. Some additional vehicle and mobile lighting may be visible from surrounding roads and properties, including from parts of Red Bank Road in relation to Golden Bar haul road activity, but this will be temporary, moving and associated with operational activity rather than a new permanent lighting feature.

Cumulative adverse visual effects are therefore assessed as remaining **low-moderate** overall, with localised **moderate** effects where close-range views of mining activity remain available. Cumulatively, MP4 will continue the pattern of landscape change associated with mining at Macraes. That change occurs within a landscape where mining is both a historic association and a contemporary land use. This does not remove the potential for adverse visual effects, particularly where landform modification, loss of rural openness, or effects on remaining historic legibility occur. However, the proposal is experienced within a landscape already shaped by successive phases of mining, pastoral settlement and rehabilitation.

At closure, the cessation of operational activity and lighting, together with landform shaping and revegetation, will reduce cumulative visual effects to **low**. Nevertheless, the rehabilitated mine landforms and permanent pit waterbodies will remain visible as enduring components of the post-mining landscape.

12.0 Recommendations

Several mitigation measures are inherent in the proposed MP4 mine design and closure approach. These measures are set out in the Landscape Mitigation and Closure Plans supporting the application and include the progressive shaping, stabilisation and revegetation of

modified landforms as mining areas become available for rehabilitation as set out in the Landscape Rehabilitation Strategy and Management Plan.

The proposed approach builds on established Macraes rehabilitation principles, including landform modification, drainage design, surface treatment and revegetation to assist with integrating waste rock stacks, backfill areas, pit margins, haul roads, access tracks and other disturbed areas into the broader Macraes upland rural landscape. While rehabilitation will not restore the landform to its pre-mining condition, it is intended to achieve stable, coherent and enduring post-mining landforms that are visually integrated with the surrounding landscape and capable of supporting appropriate rural, ecological and natural character outcomes.

In addition to the mitigation embedded in the project design, the following recommendations are proposed to manage landscape, visual and natural character effects associated with MP4.

1. Landscape Management and Closure Plans

MP4 shall be undertaken in general accordance with the certified Landscape Rehabilitation Strategy and Management Plan and the relevant landscape mitigation and closure plans as per conditions. These plans shall guide the final shaping, drainage, revegetation, monitoring and maintenance of waste rock stacks, backfill areas, tailings storage facilities, pit margins, haul roads, access tracks, disturbed areas, watercourse margins and landscape / ecological enhancements.

2. Landform shaping

Closure landforms shall be shaped to integrate with the broader Macraes upland rural landscape, including by avoiding unnecessarily straight, angular or engineered-looking external batters and by using rounded crests, varied slopes, stable drainage paths and surface treatments that reduce visible linear modification where practicable.

3. Revegetation and surface treatment

Revegetation shall use species and seed mixes appropriate to the relevant closure objective, landform, aspect, soil condition and surrounding land cover pattern. The objective shall be to establish durable vegetation cover that supports erosion control, landscape integration and, where relevant, ecological enhancement.

4. Haul roads, access tracks and redundant infrastructure

Haul roads, access tracks, hardstand areas and redundant mining infrastructure that are not required for post-closure access, monitoring, recreation or land management shall be removed, ripped, recontoured, drained and revegetated to integrate with the surrounding landform and land cover.

5. Lighting

Lighting shall be managed in accordance with the Lighting Assessment. In landscape and visual terms, mobile lighting towers shall not be directed towards nearby residences or public roads where visible; new fixed lighting shall be the minimum output required for safe operation; visible fixed lighting shall be directed downward with no upward tilt; colour temperature shall be limited to 2700K where practicable and relevant; and vehicle lighting shall be managed to reduce unnecessary glare or distraction from public roads.

6. Predator-proof fencing within the Murphys Ecological Enhancement Area

The predator-proof fence and associated gates, tracks, culverts and service facilities within the Murphys Ecological Enhancement Area shall be designed and located to minimise landscape and visual effects while achieving their ecological function. Where practicable, the fence shall follow landform, gully or vegetation patterns, avoid prominent skyline locations, and use visually recessive colours and finishes.

7. Mana whenua and pūkenga input into detailed design

Detailed design of watercourse reinstatement, riparian planting, ecological enhancement works and predator-proof fencing shall be informed by mana whenua input where those works affect culturally significant headwaters, waterways, wetlands or mahika kai values. This shall include, where practicable, the Waikouaiti River North Branch headwaters, Murphys Creek / Clydesdale Creek, Golden Bar Creek and the Murphys Ecological Enhancement Area.

8. Monitoring and adaptive management

Landscape rehabilitation shall be monitored by a suitably qualified landscape architect at regular intervals during implementation and closure. Monitoring shall assess whether landform shaping, surface stabilisation, revegetation, drainage treatment and landscape integration are achieving the certified objectives. Where monitoring identifies material shortfalls, remedial works shall be implemented.

13.0 Conclusion

MP4 represents a further stage of mining within the established Macraes Operation, rather than the introduction of mining into a new or unmodified rural landscape. Its components are largely contained within or immediately adjoining existing mining and disturbance areas at Coronation, Central and Golden Bar, within a zone that provides for mining activity. Although MP4 will extend the scale and duration of disturbance, it will not fundamentally alter the longer-term trajectory of the landscape. Under both the existing and proposed scenarios, the area will be experienced at closure as a rehabilitated mining landscape rather than as an unmodified rural landscape. The coordinated landform shaping, revegetation, watercourse reinstatement and ecological enhancement proposed through MP4 are expected to deliver a more coherent and visually integrated closure outcome than would otherwise occur.

Notwithstanding this, the assessment has identified adverse landscape, natural character and visual effects during operation, primarily associated with increased landform modification, exposed mining surfaces, changes to stream headwaters and margins, and the visibility of active mining from surrounding roads and some nearby properties. These effects are moderated by the established mining context, the existing level of landscape modification, the dispersed nature of the MP4 components, and the fact that mining will occur progressively rather than all at once. The assessment has also adopted a conservative approach by considering the maximum proposed extents and heights of MP4 elements.

At the wider Macraes Flat scale, MP4 will contribute to cumulative effects through the continued reworking of the landscape and the extended duration of mining and rehabilitation. The cumulative assessment considers MP4 as a whole rather than adding together the effects assessed for the individual mining areas. These effects arise principally through the successive experience of mining activity over time, including the reworking of some rehabilitated areas and further modification of landscape patterns and stream headwaters of particular significance to mana whenua. The broader MP4 package will also provide beneficial landscape and environmental effects through ecological compensation and enhancement, which will strengthen indigenous vegetation patterns, naturalness and ecological integrity over time. The established mining context, spatial separation and progressive staging of the three mining areas, together with these enhancement measures, moderate the overall cumulative effects on the wider landscape. During operation, adverse landscape effects within each of the three mining areas

and cumulative adverse landscape effects across the wider Macraes Flat landscape are assessed as **moderate**. Natural character effects range from **low-moderate** to **moderate** where works directly affect stream headwaters, beds and margins, with cumulative natural character effects assessed as **moderate**. Visual effects, as a component of landscape effects, are assessed as **low-moderate** overall, with localised **moderate** effects where mining activity is experienced at closer range.

Progressive rehabilitation and the proposed closure measures will reduce these effects over time. Landform shaping, revegetation, pit-lake formation, dry capping of tailings storage facilities, watercourse reinstatement, riparian planting and ecological enhancement will reduce exposed disturbance and assist the integration of modified landforms and waterways into the wider upland landscape. These measures will not restore the landscape to its pre-mining condition, and permanent changes to landforms, waterways and headwater environments will remain. Following closure and rehabilitation, cumulative adverse landscape effects are expected to reduce to **low-moderate**, cumulative natural character effects to no more than **low-moderate**, and cumulative visual effects to **low**.

Subject to the full and effective implementation of the proposed mitigation, rehabilitation and closure outcomes, from a landscape, natural character and visual effects perspective MP4 overall can be appropriately accommodated within the established Macraes mining landscape.

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 should seek to identify relevant mana whenua (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

This assessment has adopted the following scale applied to relevant RMA circumstances³⁴ (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 significant³⁵.



³⁴ Seven-point level of effect scale. Source: Te tangi a te Manu, Pg. 151

³⁵ 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

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 2021

The key relevant objectives and policies are contained under the Land and Freshwater and the Natural Features and Landscapes chapters of the RPS. These are set out as follows³⁶.

Land and Freshwater Chapter

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) in relation to the extent and diversity of indigenous ecosystem types and habitats;
 - (a) For wetlands outside the coastal marine area there is no net decrease, and preferably an increase, and
 - (b) For natural inland wetlands, there is no decrease, and preferably an increase, other than is provided for by the NPSFM, 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 CE-Coastal Environment andand,
- 2) by applying clause 3.22(1) to (3) of the NPSFM to all natural inland wetlands, and

³⁶ 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.

- 3) to improve ecosystem health, hydrological functioning and extent of wetlands that have been degraded or lost by promoting:
 - i. an increase in the extent and condition of habitat for indigenous species
 - ii. the restoration of hydrological processes
 - iii. control of pest species and vegetation clearance, and
 - iv. the exclusion of stock, except where stock grazing is used to enhance wetland values; and
- 4) To sustain and enhance Maori freshwater 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 APP4A and APP4BAPP4B, and has had regard to the remaining principles in APP4AAPP4A and APP4B, as appropriate, and
 - d) if aquatic offsetting or aquatic compensation is applied, any consent granted is subject to conditions that will ensure that the offsettingoffsetting 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.*

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:

- f) Aesthetic values associated with the lake or river; and
- g) 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.*

Dunedin 2GP Objectives and Policies

Section 16 – Rural Zone

Objective 16.2.2

The potential for conflict between activities within the rural zones, and between activities within the rural zones and adjoining residential zones, is minimised through measures that ensure:

- a. the potential for reverse sensitivity in the rural zones is minimised;
- b. the residential character and amenity of adjoining residential zones is maintained; and
- c. a reasonable level of amenity for residential activities in the rural zones.

Policy 16.2.2.4 Require rural ancillary retail, rural tourism - small scale, working from home, mineral exploration, and mineral prospecting to operate in a way (including hours of operation or, for mineral exploration, use of blasting) that avoids or, if avoidance is not practicable, adequately mitigates noise or adverse effects on the amenity of sensitive activities on surrounding properties.

Policy 16.2.2.5 Only allow rural tourism - large scale, rural research - large scale (outside the Invermay Farm mapped area), rural contractor and transport depots - large scale, community and leisure - large scale, healthcare, sport and recreation, veterinary services, visitor accommodation, cemeteries, crematoriums, intensive farming, domestic animal boarding and breeding (including dogs), rural industry, mining, service stations, or landfills where adverse effects on the amenity of residential activities on surrounding properties will be avoided or, if avoidance is not practicable, adequately mitigated.

Objective 16.2.3

The rural character values and amenity of the rural zones are maintained or enhanced, elements of which include:

- a. a predominance of natural features over human made features;
- b. a high ratio of open space, low levels of artificial light, and a low density of buildings and structures;
- c. buildings that are rural in nature, scale and design, such as barns and sheds;
- d. a low density of residential activity, which is associated with rural activities;
- e. a high proportion of land containing farmed animals, pasture, crops, and forestry;
- f. extensive areas of indigenous vegetation and habitats for indigenous fauna; and
- g. other elements as described in the character descriptions of each rural zone located in Appendix A7.

Policy 16.2.3.3 Require mineral exploration and mineral prospecting to restore land to at least the same standard as before the activity commenced with respect to landform and productive potential.

Policy 16.2.3.5 Only allow intensive farming, rural tourism - large scale, rural industry, rural research - large scale (outside the Invermay Farm mapped area), rural contractor and transport depots - large scale, mining and landfills where adverse effects from large scale development on rural character and visual amenity will be avoided or minimised as far as practicable.

Policy 16.2.3.9 Require activities to be designed and operated to ensure that any adverse effects from light spill on rural character and amenity, and the ability of people to view the night sky, will be no more than minor.

A7.4 Hill Country Rural Zone

Description

The Hill Country Rural Zone is the largest rural zone in Dunedin, forming a significant south west/north east swathe of largely open, rolling, pastoral downland, extending from the high country Lammermoor and Rock and Pillar Ranges, to the Taiari and Waikouaiti Valleys. It includes Lee Downs to the south west, Strath Taiari Hills further north to where this extends into the Taiari Ridge, and the Peat Moss Hills and Waikouaiti Valley further east.

There is considerable topographical and character variety over this extensive area, but the landscape is expansive, open and large scale, with a predominantly horizontal character and few vertical elements, whether natural or human made.

The gently rolling pastures of Lee Downs are increasingly being modified where farming machinery can gain access to the open hill slopes and ridges. Numerous gullies remain with riparian vegetation and small streams feeding into the larger waterways, including Lee Stream and Deep Stream, both of which are important contributors to the Taiari River, a significant river for Kāi Tahu.

Further north within the Strath Taiari Hills the rural character is still predominantly pastoral, characterised by frequent rocky outcrops of schist boulders and tors. This part of the Hill Country Rural Zone is extremely dry, but despite this several waterways cut through the area providing moisture for trees and woody vegetation in the gullies. The Strath Taiari area was likely to have been used for seasonal food gathering by the Waitaha iwi, as well as a transport corridor for Māori traveling between Central Otago and the east coast. Māori needing to avoid the wetlands of the Middlemarch basin would have used the dry hill tops to traverse this land. Numerous relics have been found, along with evidence that the area was once prolific in both moa, and moa-hunters.

Bordering the Strath Taiari Hills to the west, the Waikouaiti Valley to the east, and Silverpeaks to the south, the Peat Moss Hills form another distinctive part of the Hill Country Rural Zone. This is remote interior land that is very sparsely inhabited. It is a harsh and exposed environment that has minimal settlement, few roads and is seldom visited.

The eastern extent of the Hill Country Rural Zone is the Waikouaiti Valley area which has been shaped by a long history of human habitation. The nearby Waikouaiti township became one of the early economic centres of colonial New Zealand. Established in 1830, expansion into the

rural area began in earnest in the 1860s. Given its significant history of successive human interventions this interior landscape has managed to maintain a moderate level of ecological health. This has occurred largely as a result of the steep sided valley systems localising the potential for intensification of pastoral production.

Values

1. A remote, open, expansive, horizontally focused character, dominated by extensive pastoral holdings, with some conservation estate at higher elevations.
2. A significant predominance of natural features over human made features. The zone has a relatively low density of built structures and associated services.
3. Distinctive rural settlement character: human settlement is sparse and consists of isolated farm houses and farm buildings, mixed in age and character, often surrounded by mature exotic vegetation typical of long established rural dwellings.
4. Intact connected waterways with associated riparian links. These provide ecological corridors through the landscape and need to be preserved and enhanced. Given that the zone is primarily an agricultural landscape, protection of the waterways is often necessary through fencing and protecting appropriate vegetation growth along the riparian margins.
5. Appropriate, sustainable land use practices. With increasing intensification of farming practices and replacement of tussock with introduced grasses there is potential for increases in wind erosion in exposed more upland areas, particularly in prolonged dry periods.
6. Pockets of important and varied biodiversity. There are significant areas of indigenous vegetation and habitats for indigenous fauna.

A3.2 Outstanding Natural Landscapes

A3.2.1 High Country Outstanding Natural Landscape

A3.2.1.1 Description of area

The High Country Outstanding Natural Landscape Area extends along the north west boundary of Dunedin City District, incorporating the high country Rock and Pillar and Lammermoor Range ridgelines rising above the Strath Taiari Plain. These have a north-east/south-west orientation typical of Central Otago ridgelines further to the west, and they define the Strath Taiari basin. The area extends towards Deep Stream south of Sutton township and east of the Strath Taiari Plain towards elevated parts of the Taiari Ridge. The eastern boundary runs along the skyline of the eastern ranges and extends north just beyond and to the east of the Hyde-Macraes Road. The area also includes the northern (and most scenic) part of the Taiari Gorge.

This highly significant and visible high country landscape area contains the distinctive and rugged landform features of the Rock and Pillar Range and Taiari Ridge, and is centred around the Strath Taiari Plain. It is characterised by strongly defined landform and minimal influence of human elements. The scale is large and expansive. Although much of the area is grazed and managed under an extensive pastoral regime, the vegetative cover, in the main, retains its natural patterns and character.

The landscape is highly coherent with rock outcrops creating particular interest. The skyline in many places is dramatic on account of these.

The majority of people experience this landscape from State Highway 87 or from the Otago Excursion Train line. The landscape forms part of the skyline visible from the Middlemarch area and the Strath Taiari Plain. Views of the area are generally expansive, particularly from the Strath Taiari Plain area around Middlemarch. The Old Dunstan Road provides a significant internal viewing corridor. Although this is a seldom used route, its heritage and historic significance gives it, and the areas visible from it, added importance.

This is arguably a landscape of national scenic significance. It is definitely of regional significance, particularly because of its actual and potential value for the regional tourist industry.

The vegetation is predominantly grassland, and human elements have minimal apparent influence. This adds to a sense of vast scale and openness and a remote isolated character. The homogeneity of the vegetative cover means that the area is very visually sensitive to change. Most of the area is managed under an extensive pastoral land use regime or the conservation estate. This has resulted in many areas with the substantial modification of the original tussock grasslands. Despite this, the vegetation cover generally retains the tawny colours and characteristic textures of indigenous tussock grasslands.

It is the coherence of the expansive views in combination with the complexity of the detail that makes this an area of unusually high quality. The rugged character of the landform and the large scale of this landscape combine to create an effect which is distinctively Central Otago.

The area includes three areas identified as wāhi tūpuna: Patea (Mt Stoker), Patearoa (the Rock and Pillar Range) and the Taiari River. See Appendices A4.66, A4.67 and A4.62.

A3.2.1.2 Values to be protected

The following features and characteristics have been identified as important to protect:

1. *Natural science values:*

- i. Historic iconic landmark ridgelines including: Rock and Pillar Range; the Lammerlaw Range; the Lammermoor Range; and elevated sections of the Taiari Ridge.
- ii. The lowland tor landscape (listed as a significant landform (NZ Geological Society Geopreservation Inventory for the Otago Region).
- iii. Rock outcrops which give rise to a dramatic skyline and a highly memorable landscape.
- iv. Significant landform features, i.e. Rock and Pillar solifluction features (NZ Geological Society Geopreservation Inventory for the Otago Region).
- v. Highly coherent natural landform under an apparently largely unmodified grassland vegetative cover. This is landmark high country area distinctive in Dunedin, particularly within the Rock and Pillar Range.
- vi. Fragile ecosystems, e.g. cushion bogs.
- vii. Intact scrub and snow tussock vegetation sequences progressing to sub-alpine herbfields. The retention of enough tussock grassland to give the impression of a semi-natural vegetative character.

- viii. Skink habitat beneath rocky outcrops.
- ix. Mt Ross, Gladsmuir Crater, Conical Hill and Mt Stoker, all assessed as being significant.
- x. Distinctive features within the Outstanding Natural Landscape Area including: Bald Hill; Yellow Hill; and Scratchback Hill.

2. *Cultural and historic values:*

- i. Values of significance to Manawhenua. See Appendices A4.66, A4.67 and A4.62.
- ii. Central Otago Rail Trail between Hyde and Tiroiti, which includes heritage engineering features.
- iii. Historic traditional farming stations with associated routes and tracks.
- iv. Human made elements which emphasise local character and contribute to visual quality, e.g. stone buildings, rock fence posts.

3. *Aesthetic and amenity values:*

- i. The large scale, open, expansive, remote wilderness character.
- ii. A skyline which is almost entirely free of human structures when viewed from the Middelmarsh valley or from the Upper Taieri Gorge Railway line.
- iii. Limited visual impact of human imposed elements such as tracks, buildings and exotic tree plantings. The relative visual dominance of the natural landscape elements over these is a fundamental characteristic.
- iv. Snow tussock grassland. The extent and quality of the visual contribution made by these highly significant intact areas.
- v. Recreational values. Sub-alpine tramping and links with Central Otago tracks. Mountain biking and four wheel driving along Dunstan Road, and other access ways; i.e., Department of Conservation tracks within the Rock and Pillar Range.
- vi. A night sky with outstanding capacity to view astronomical features free from light pollution.

A3.2.1.3 Principal threats to values

Threat	Description
<u>Forestry</u> blocks	a. For most of the high country areas, exotic <u>forestry</u> would have an adverse effect on landscape values and should not be located here. b. Where it does occur, inappropriate siting, scale and layout of <u>forestry</u> blocks may diminish the character of the underlying landform and other natural features.

Threat	Description
Wilding trees and weeds	Wilding tree and weed spread, if not controlled, can rapidly extend and threaten existing traditional land use patterns and open landscape values.
Roads and tracks	Roads and tracks can have an adverse effect on visual quality if they are poorly sited; for example if they cut across the landform rather than follow it, or if they are of inappropriate scale and design and become visually dominant.
Quarries and <u>mining</u> activity	Quarries and <u>mining</u> activity can become visually dominant focal points, depending on the scale of operations or the degree of inappropriate siting.
<u>Buildings</u> and <u>structures</u>	<u>Buildings</u> and <u>structures</u> can become visually dominant from public viewpoints if they are inappropriately sited, or if the design, scale and finish of <u>structures</u> conflict with established high country values.
Shelterbelts	Inappropriate siting, scale and design of shelterbelts may diminish the visual coherence of the natural landform character.
Reduction of areas of <u>indigenous vegetation</u>	Reduction of areas of <u>indigenous vegetation</u> threatens patterns which reinforce and reflect landform character and fragile ecosystems that contribute significantly to the values identified for the High Country Outstanding Natural Landscape.
Overgrazing or burning	Overgrazing and burning can threaten the more sensitive high country vegetative cover.
Light pollution	Lighting from development associated with residential and other land use activities, particularly external lights and street lights, significantly diminishes the ability to view and enjoy astronomical features.

Operative Waitaki District Plan

Macraes Mining Project Mineral Zone

6.1 Zone Statement

The Macraes Mining Zone applies to the area of land controlled by Macraes Mining Limited and included in Mining Permit 41-064 at the date of public notification of this Plan. The predominant land use in the zone is the open pit mining and processing of rock to extract a substantial gold resource that exists.

Rural

16.7.1 Objective 6

Extractive industries are given the ability to access minerals but in a way that avoids, remedies or mitigates adverse effects on the environment.

16.7.2 Policies 6

1. *To acknowledge the importance of known mineral deposits in the District by, where appropriately, discouraging the establishment of future activities or developments that are likely to compromise access to these mineral deposits.*
2. *To recognise the potential adverse effects of extractive operations, including mineral exploration, on the rural environment, and to control such operations in order that an assessment may be made as to the sensitivity of an existing area and the degree to which an operation will avoid, remedy or mitigate any adverse effects on the amenity and environment of the rural area.*
3. *To provide for a mining zone at Macraes Flat in recognition of the scale and intensity of the mining operation while ensuring the adverse effects of mining operation are avoided, remedied or mitigated.*
4. *To ensure that after mining, sites are rehabilitated sufficiently to enable the establishment of activities appropriate to the area.*
5. *To avoid, remedy or mitigate adverse effects on the rural amenity and environment by, where appropriate, encouraging extractive industries to continue in existing locations.*

16.8.2 Landscape Objective

Subdivision, use and development are managed so that:

- the values identified for the outstanding or significant natural features, the outstanding landscapes, and the significant coastal landscapes are protected from inappropriate use and development; and
- the overall landscape qualities of the Rural Scenic Zone are retained.

16.8.3 Policies

1. *To adopt a shared values approach which recognises that members of the community can be given the opportunity to consider what are the important landscapes in*

the district and the appropriate means by which to manage these landscapes.

2. To maintain the character of those landscapes identified as being outstanding because of their high degree of openness, naturalness and/or visual coherence, and to avoid subdivision, use and development in those parts which have little or no capacity to absorb change.
3. To manage landscape change in the Rural Scenic Zone in a manner that maintains the overall character of the significant landscape, which forms the basis of the visual amenity associated with this Zone.
4. To manage the effects of use and development within the significant coastal landscapes so that:
 - a. the natural character of the coastal environment is preserved and protected from inappropriate use and development; and
 - b. the visual amenity associated with these landscapes is maintained.
5. To ensure that those characteristics leading to the identification of an outstanding or significant natural feature, are protected from inappropriate use and development.
6. To assist in achieving the outcomes in Policies 2 to 5 above, the following policies are to be considered against any subdivision, use or development applications:
 - a. Production forestry is to be avoided within the outstanding natural features, outstanding natural landscapes, the significant natural features and the significant coastal landscapes.
 - b. Shelterbelts are to be carefully designed and located within the outstanding natural landscapes so that the values associated with those landscapes are not compromised.
 - c. In the Rural Scenic Zone:
 - i. Forestry is to be generally limited to carefully sited and designed woodlots
 - ii. Shelterbelts are encouraged to be sited on land of easy contour; and
 - iii. Shelterbelts are to be sited and designed so that they do not unnecessarily obscure views from State Highways and other main roads.
 - d. Subject to Policies 6.a and 6.b above, any exotic tree planting is encouraged to:
 - i. be located on the lower portions of adjacent slopes, and to use natural features such as river terraces or drainage patterns to achieve a degree of visual coherence within the existing landscape where plantings are in valleys or basins;
 - ii. be located so that mature trees will not obstruct views from main roads or viewpoints;
 - iii. be shaped in sympathy with existing landforms, and where possible be tied to an existing landform or vegetation edge;
 - e. In the outstanding natural features and landscapes and significant coastal landscapes buildings are to be located in areas with higher potential to absorb change and, together with residential units in the Rural Scenic Zone, where possible, are to avoid skylines, ridgelines, prominent places and features within important views and are to be encouraged to be in sympathy with the dominant forms and colours in the landscape;
 - f. Earthworks are encouraged to be located away from visually sensitive areas, and where practicable towards the edges of the landform and vegetation

patterns;

- g. *Earthworks should not compromise any rare or distinctive geological outcrops or any other values associated with an identified outstanding or significant natural feature;*
 - h. *Earthworks, where possible, should be restored and finished to a contour sympathetic to the surrounding physiography and should also, where possible, be revegetated with a cover appropriate to the site and setting;*
 - i. *Use and development is to take into account the effects of indigenous vegetation clearance on landscape character, and in particular, clearance is to be avoided where the values identified for the outstanding or significant natural features or outstanding natural landscapes, or the significant coastal landscapes, would be irreversibly lost.*
 - j. *Farming activities involving irrigation of land for pastoral or crop production are to be avoided within the Outstanding Natural Landscapes.*
- 7. *To manage siting, design, trees species and the management of tree planting within the Rural Scenic Zone in order to prevent wilding spread.*
 - 8. *To recognise that the Rural General Zone is made up of landscapes that have a greater capacity to absorb change because the land has been more intensively developed, and contains a greater range of land uses with a greater dominance of buildings and structures; at the same time acknowledging that the rural amenity of this zone still needs to be managed (refer to Issue 4 and the Associated Objective and Policies).*
 - 9. *To protect site-specific and outstanding geological or geomorphological features that are of scientific importance from inappropriate use and development; further sites that come before the Council will be included by way of a Plan Change at a later date.*
 - 10. *The Cement Policy Area recognises the presence of significant mineral deposits and the importance of the mineral extractive industry to the district. It has been identified as a preferred location for the extraction of limestone and tuff and the manufacture of cement. Extraction of limestone and tuff (mining) and the manufacturing of cement within the Cement Policy Area is anticipated, provided that the characteristics of the Whitstone Significant Natural Feature are protected from inappropriate use and development.*
 - 11. *Any proposal to re-zone land for urban development, or proposed development of an intensity or scale that exhibits urban-like characteristics are required to assess the impacts on landscape character and the policies in this section of the Plan need to be considered against the merits of such a re-zoning proposal.*
 - 12. *To assist in the development and establishment of land management practices that do not adversely affect landscape values, by providing information and guidelines to local landholder groups concerning landscape values.*

Exemptions Version - Proposed Waitaki District Plan

Special Purpose Zone – Macraes Mining

Objectives SPZMM-O1 Purpose of the Special Purpose Zone – Macraes Mining

The economic, cultural and social benefits of accessing the significant mineral resource in the Hyde-Macraes Shear Zone are recognised and the continuation of mining is provided for while ensuring any actual or potential adverse effects on the environment from mining activities are avoided, remedied, or mitigated.

Policies SPZMM-P1 Existing Mining Areas

The Existing Mining Area within the Special Purpose Zone – Macraes Mining applies to those areas within the zone where mining is occurring and has been authorised by way of past or current resource consents for mining-related activities. New mining activities are managed to:

1. maintain any indigenous biodiversity values present due to previous avoidance or mitigation measures; and
2. avoid, remedy or mitigate the effects of noise, vibration, access and lighting on amenity values in the adjoining General Rural Zone.

SPZMM-P2 Potential Mining Areas

The Potential Mining Area within the Special Purpose Zone – Macraes Mining applies to those areas where mining has not previously occurred in the zone, but which may be appropriate for mining activities, provided that they:

1. avoid, remedy or mitigate the adverse effects from noise, vibration, lighting, or from traffic on amenity values in the adjoining General Rural Zone;
2. and in the first instance, avoid locating in:
 - a. Outstanding Natural Features or Landscape;
 - b. places containing historic heritage items; or
 - c. Significant Natural Areas or areas of indigenous vegetation assessed as being significant under APP5 - Criteria for identifying areas that qualify as SNA; and
3. if it is not practicable to avoid locating in those areas identified in 2(a) or 2(b) above because of the functional needs of the activity, then avoid, remedy or mitigate, as necessary, adverse effects on the values in order to maintain the exceptional, significant or outstanding nature of those areas; and
4. if it is not practicable to avoid locating in areas identified under (2)(c) above, then managing the effects in accordance with Policy ECO-P2(2); and
5. do not compromise the identified characteristics and values of any sensitive environment and achieve the relevant objectives and policies for the sensitive environment, except as provided for in 2 and 3 above; and
6. avoid adverse effects on the health and safety of the community; and
7. reducing unavoidable adverse effects by:
 - a. staging development for longer-term activities; and
 - b. progressively rehabilitating the site, where possible; and
8. 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 effects; and
9. where there is a conflict between this policy and other policies in the district plan (except in relation to the Historic Heritage Chapter), this policy shall prevail.

SPZMM-P3 Rehabilitation after mining

Require any new mining activity and quarrying activities to demonstrate how the site will be rehabilitated, having particular regard to:

1. objectives, measures and timescales for rehabilitation; and
2. how the landforms will be shaped and revegetated consistent with the natural character of the locality prior to disturbance; and
3. how the previous vegetation type being removed by land disturbance will be replaced; and
4. how the direct transfer of soil and associated vegetation from areas being disturbed to areas being rehabilitated will be undertaken, where the opportunity arises; and
5. how topsoil for growing conditions will be provided where direct transfer is not possible; and
6. how vegetation will be established, whether by direct planting, or from the broadcasting of seed; and
7. how the vegetation cover will be maintained, including, as necessary, the use of fertilisers and other inputs as well as providing weed and pest control; and
8. measures to ensure that exposed overburden containing soil or fines is covered or revegetated as soon as practicable, to prevent the generation of dust, soil erosion and sediment transport.

SPZMM-P4 Exploration in the Potential Mining Area

Recognise the need to investigate the gold resource through exploration in the Potential Mining Area, while controlling the activity to:

1. avoid, remedy or mitigate the actual or potential adverse effects on amenity values in the adjoining General Rural Zone; and
2. requiring rehabilitation of the disturbed ground; and
3. manage adverse effects related to exploration in accordance with policy SPZMM-P2.

SPZMM-P5 Non-mining activities

Enabling primary production, rural industry, recreational activities, conservation activities, small-scale commercial activities, visitor accommodation and residential activities within the Special Purpose Zone – Macraes Mining where these are consistent with the purpose, character and qualities of the General Rural Zone and minimise the potential for reverse sensitivity effects.

Outstanding Natural Landscape Schedules - Removed

ONL-11 TAIARI RIDGE	
DESCRIPTION	<i>Comprises those parts of the ridge within Waitaki District, between Highlay Hill in the north and Middlemarch in the south. The boundary with Dunedin City zig-zags about, and while parts of the west side descending almost to Hyde are within Waitaki, at other places the boundary follows or is near the ridgeline. The land comprises rugged, dry, undeveloped tor landscapes on west-facing areas and the ridge, and developed farmlands on east-facing areas. On the east side, the current Rural Scenic boundary is at the limit of improved farmlands, variably 5-600m. All areas of the summit and west side</i>

are zoned Rural Scenic and all adjacent areas within Dunedin City are ONL. In the north, the ridge abuts the west side of the extensive Macraes Gold Mine workings, which recently have extended over the ridge and into Dunedin City.			
Identified Values	Description of Values	Assessment	Comment: Threats to Values
Natural Science	Natural Science: Geologically distinctive area of upfaulted tor-strewn schists, with gold-bearing quartz lodes near Macraes. East faces have been developed for farming but above 500m approximately, and along the ridge and west faces, the vegetation comprises dry tussock among large tors. In the Macraes Mine Zone (excluded from this Review) very-large-scale workings have crossed the ridge and extend into Dunedin City. Legibility: The schist terrain, its uplift and erosion are clearly seen in the tors, while the dry tussock clearly demonstrates the exposure to the dry westerly winds off the Rock and Pillar Range.	Very High	The 'Very High' landscape values within the ONL would be lessened by: • Pastoral intensification, cultivation and 'greening' of tussock areas; • Subdivision of the tussock areas by fencing or intensified management, which would break up the visually- extensive expanses of natural landscape; • Earthworks for tracks, quarries or construction; • Removal of remaining tors and rocks;
Aesthetic	Vividness: The ridge is visually striking and of strong character for its skyline, tors, dry vegetation and rugged character, particularly the west side. Memorability: Leaves a very strong impression in the memory. Naturalness: West side appears highly natural in landforms and vegetation despite small semi-modified areas. Coherence: Highly coherent, with continuity of tussock vegetation effectively showing	Very High	• Construction of buildings, services, reservoirs, masts or towers, particularly on skylines and on flat surfaces; • Forestry or shelter trees in any form, which would break up the continuous and open character; • Legal subdivision or leases leading to

	underlying landform patterns and tors. Transience: Relatively unchanging appearance between summer dry and winter cold although wind enlivens the vegetation and the famous 'Taiari Pet' nor' west cloud formation is rare and dramatic.		changes in land use, particularly lifestyle housing;
Cultural	Historic: Macraes and the rugged areas over the ridge to the Taiari have a romance from the harsh days of pioneer farming, schist buildings and 19th Century gold mining. Shared & Recognised: Probably High public consensus as to the romance of the dry, tor-laden ridge and west side.	High	
	Mana Whenua: Taiari is the correct spelling for the Taiari River located in Otago. From its source, the Taiari River flows almost entirely around Pātearoa (the Rock & Pillar Range) before discharging into Te Tai-o-Āraiteuru (the Otago coastline). The wider Taiari area is a major mahika kai resource with the coastal area, inland waterways and surrounding hills providing an abundance and variety of kai. The entire area is ancestral land to Kāi Tahu whānui and, as such, all landscape is significant, given that whakapapa, whenua and wai are all intertwined in te ao Māori. Kāi Tahu whakapapa connections to whenua and wai generate a kaitiaki duty to uphold the mauri of all important landscape areas.		

Overall Assessment: VERY HIGH

The existing Rural Scenic area is reassessed as an Outstanding Natural Landscape for its 'Very High' Natural Science and Aesthetic values.

ONL-012 BILLYS RIDGE

DESCRIPTION	<i>An upfaulted schist ridge, lower than and subsidiary to, the Macraes Ridge. Its northern end is long-established farmlands but the south is lightly-developed or undeveloped for country.</i>
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Identified Values	Description of Values	Assessment	Comment: Threats to Values
Natural Science	Natural Science: The schist terrain and tors are lightly developed in the south, but northwards, farm development has reduced tors to isolated landmarks within farmland. Vegetation in the south-east is unimproved tussock with native scrub on steep east faces, and is, in combination with the torlands, of 'Very High' values. Also as habitat of native skink. The west sides and north of the ridge are of 'High' values as schist lands, lessened by their state as developed farmlands. Legibility: The upfaulted and eroded ridge has a rugged and undeveloped character in the south, which demonstrates the schist-upfault-erosive cycle.	Very High	The 'Very High' landscape values of the ONL would be lessened by: - Pastoral intensification, cultivation and 'greening' of tussock areas; - Subdivision of the tussock areas by fencing or intensified management, which would break up the visually-extensive expanses of natural landscape;
Aesthetic	Vividness: Billys Ridge in the south-east is a visually-dramatic landscape of rugged tors and unmodified vegetation, rising as a clear contrast above developed farmlands in alluvial valleys to the east (Deighton Creek). In the west and north the contrast is less strong and of 'Medium-High' Vividness. Memorability: A clear picture of the rugged naturalness and tors of the south remains in the memory. North less so. Coherence: Undeveloped parts have a clear unity of landform, geology and undeveloped tussock. An attractive wild character emerges. Fragmented to the north, Naturalness: The sense of naturalness is very strong in undeveloped areas, enhanced by wind and sky patterns.	Very High	- Earthworks for tracks, quarries or construction; - Removal of any remaining tors and rocks; - Construction of buildings, services, reservoirs, masts or towers,

	Transience: Not notably different between seasons other than wildlife cycles, but dynamic in (frequent) winds. Notable sky and cloud patterns	High	particularly on skylines and on flat surfaces; • Forestry or shelter trees in any form, which would break up the continuous and open character; • Legal subdivision or leases leading to changes in land use, particularly lifestyle housing.
Cultural	Historic: Part of the Macraes-Moonlight cultural traditions of upland schist dry farming. Many characterful schist-built houses and farm buildings.	High	
	Shared & Recognised: Probably moderate recognition of the above values amongst public and the locals.	Medium	
	Mana Whenua: This area covers part of the source of the Waikouaiti River. The Waikouaiti flows from the mountains of North Otago into a large extended estuary on Te Tai-o-Ārai-te-uru (the Otago coastline). The interface between the marine water and freshwater creates a rich habitat for fish, shellfish, and waterfowl — an important mahika kai (food-gathering site). The area is also renowned for inaka (whitebait), tuna (eels), and pātiki (flounders); as well as shellfish such as tuaki (cockles), and pipi. In 2016 the Waikouaiti River was granted mātaitai status under the Fisheries (South Island Customary Fishing) Regulations 1999. This provides the local Kāti Huirapa ki Puketeraki Rūnanga with greater capacity to enhance the fishery of the river. The entire area is ancestral land to Kāi Tahu whānui and, as such, all landscape is significant, given that whakapapa , whenua and wai are all intertwined in te ao Māori. Kāi Tahu whakapapa connections to whenua and wai generate a kaitiaki duty to uphold the mauri of all important landscape areas.		

Overall Assessment: VERY HIGH

The south of Billys Ridge is assessed as an Outstanding Natural Landscape for its 'Very High' Natural Science and Aesthetic values.

Rural Scenic Landscapes Schedules – Removed

RSL18 NENTHORN – STONEBURN	
DESCRIPTION	This Rural Scenic Landscape area comprises the east side of the Macraes upland, from near Dunback in the north to the Dunedin City boundary in the south, also abutting the Macraes Mining Zone in the north-west. Comprising broad rounded hills, schistose in the south, and is assessed in three sections: i. East side, north sector; ii. East Side, south sector iii. West side.
VALUES	<u>i. EAST SIDE, NORTH SECTOR - NENTHORN-STONEBURN RURAL SCENIC AREA</u> Natural Science: Comprises the upfaulted Dunback Hill Scarp, rising 100 – 200m above the Palmerston hinterlands to the east, between Stoneburn in the north and the deeply incised Waikouaiti River North Branch in the south. The scarp comprises lightly-improved, extensively-managed range lands with few trees, a marked contrast to the improved farmlands immediately to the east. Natural values are 'High' for the large scarp landform and less-developed state of the vegetation. Legibility: Upfaulted origins of the scarp are clear-cut, the large feature rising suddenly above the lowlands to the east. Vividness: Impressive large feature with sudden transition at base. Deeply incised Waikouaiti River gorge a notable feature. Scarp forms the western skyline for many parts of the Palmerston lowlands. Coherence: Reads as a coherent feature with its large size, continuous face, and sharp transitions at top and bottom. The landform change is reflected in the vegetation change. Naturalness: Appears natural due to relatively intact landforms and lightly-modified vegetation, despite formation of Golden Bar Road and Goldmine earthworks above. Memorability: The scarp remains strongly in the memory. Transience: Some but not strong seasonal variation in the landscape. Historic: No site-specific known European history beyond the general taking up of rural land, and ensuing local traditions. Shared & Recognised: General public recognition of the scarp. <u>ii. EAST SIDE, SOUTH SECTOR - NENTHORN-STONEBURN RURAL SCENIC AREA EAST SIDE</u> Natural Science: Between the Waikouaiti River North Branch south and Dunedin City boundary, the upfaulted eastern edge of the Macraes upland gradually

decreases in height eastwards, as a series of rounded, broken ridges and deeply incised river gullies, lacking the defined scarp of the north. The western skyline is a series of prominent high hills and peaks. Although schistose, it lacks the tors found further west. The vegetation is a continuous spread of lightly-developed open grasslands, collectively of 'High' Natural Science values,

Legibility: The erosional origins of the rounded hills, peaks and deeply incised valleys are obvious.

Vividness: Impressive high peaks in the west – 'Lots Wife to 'Swampy Hill', but the ridges and gullies are unseen in total from any one place, but as a series of local hills and gullies.

Coherence: A particularly coherent area for its consistent, open grassland cover.

Naturalness: Appears natural due to intact landforms and lightly-modified vegetation.

Memorability: A picture of the skyline and upper hills remains in the memory. Descending hills and gullies less so.

Transience: Some but not strong seasonal variation in the landscape. Interesting sky patterns.

Historic: Early-settled by European farmers.

Shared & Recognised: General public recognition of the upper hills.

iii. WEST SIDE - NENTHORN-STONEBURN RURAL SCENIC AREA

Natural Science: Area 2Giii comprises the west-facing schistose, tor-studded slopes of the Stoneburn-Nenthorn ridge, between the Macraes Mine zone in the north and the Dunedin City boundary in the south. These are broad, lightly incised surfaces descending to the valley of the Nenthorn Stream. They mostly comprise open, lightly-improved grasslands, with, apart from the Stoneburn area, a general absence of trees. The area contains four scenic or nature reserves or parts of them, collectively amounting to a large part of this area. For its general lightly-developed vegetation, nature reserves and schist geology, Natural Science values are assessed as 'High'.

Legibility: The surfaces descending east-to-west, lightly-incised east-west by streams, clearly demonstrate the uptilted, erosional formative process.

Vividness: Impressive open, wide, large-scale, tor-studded vistas, with wide views westwards.

Memorability: Impressions of the open, large scale landscape remain in the memory.

Coherence: A particularly coherent area for its consistent, open grassland cover and natural character.

Naturalness: Appears natural due to intact landforms and lightly-modified vegetation.

Transience: Some but not strong seasonal variation in the landscape. Very interesting sky patterns.

	Historic: Nenthorn Goldfields Historic Reserve. Shared & Recognised: General public recognition of the rugged, open landscape character and historic goldfield.
RSL19 BILLY'S RIDGE	
DESCRIPTION	An upfaulted schist ridge, lower than and subsidiary to the Macraes Ridge. Its northern end is long-established farmlands but the south is lightly-developed or undeveloped for country.
VALUES	Natural Science: The schist terrain and tors are lightly developed in the south, but northwards, farm development has reduced tors to isolated landmarks within farmland. The west sides and north of the ridge are of 'High' values as schist lands, lessened by their state as developed farmlands. Legibility: The upfaulted and eroded ridge has a rugged and undeveloped character in the south, which demonstrates the schist-upfault-erosive cycle. Vividness: Billys Ridge in the west and north is less strong and of 'Medium-High' Vividness. Memorability: A clear picture of the rugged naturalness and tors of the south remains in the memory. North less so. Coherence: Undeveloped parts have a clear unity of landform, geology and undeveloped tussock. An attractive wild character emerges. Fragmented to the north. Naturalness: The sense of naturalness is very strong in undeveloped areas, enhanced by wind and sky patterns Transience: Not notably different between seasons other than wildlife cycles, but dynamic in (frequent) winds. Notable sky and cloud patterns Historic: Part of the Macraes-Moonlight cultural traditions of upland schist dry farming. Many characterful schist-built houses and farm buildings. Shared & Recognised: Probably moderate recognition of the above values amongst public and the locals.

Appendix 3: Visual Impact Table

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
Individual properties within 5km										
1	1668 Macraes Road	580m	During Operation	Central Mining Area	Negligible (looking north to northeast), Partial (looking east to southeast)	Frontal & Oblique (concealed), Rear	Fixed	Low-Moderate	Adverse	Dwelling located in the Macraes township and appears to be orientated north towards the Central Mining Area. Views looking north and northeast towards the Central Mining Area are concealed beyond intervening landform and vegetation. Available views will be primarily associated with the Frasers West WRS, where partial views looking east and southeast will be available through gaps between vegetation. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS, although not unexpected in the context of the existing mine. This viewing audience will observe the incremental
			Closure	Central Mining Area	Negligible (looking north to northeast), Partial (looking east to southeast)	Frontal & Oblique (concealed), Rear	Fixed	Low	Adverse	

³⁷ Distances measured from the nearest proposed infrastructure

³⁸ Aspects of the proposal that are visible

³⁹ Extent of visibility: Full, Partial, Small Amount, Negligible

⁴⁰ Orientation of Views: Frontal, Oblique, Rear

⁴¹ Level of Effects: Very Low, Low, Low-Moderate, Moderate, Moderate-High, High, Very High

⁴² Nature of Effect: Adverse, Neutral, Beneficial

* OGNZL owned dwelling.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										increase of the landform and prominence of the feature on the skyline. This change in view will however be seen above the existing WRS. At closure, the engineered landform of the Frasers West WRS will be rehabilitated and integrated to the surrounding landscape through the re-establishment of pasture, and contouring to assimilate the landform into the broader landscape.
2*	1700 Macraes Road (OGNZL owned)	790m	During Operation							
			Closure							
3*	1704 Macraes Road (OGNZL owned)	840m	During Operation							
			Closure							
4*	1702 Macraes Road (OGNZL owned)	840m	During Operation							
			Closure							
5*	1720 Macraes Road (OGNZL owned)	1km	During Operation							
			Closure							
6		1km	During Operation		Negligible	Frontal, Oblique	Fixed	-	Neutral	Dwelling located in the Macraes township and appears to be orientated north towards

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
	1726 Macraes Road									the Central Mining Area. Views looking north to southeast towards the Central Mining Area are curtailed by established vegetation within this property. Should vegetation be removed within the property, views will be available of the Frasers West WRS.
			Closure		Negligible	Frontal, Oblique	Fixed	-	Neutral	
7*	1738 Macraes Road (OGNZL owned)	1.1km	During Operation							
			Closure							
8	2 Hill Street	1.1km	During Operation	Central Mining Area	Negligible (looking north and east), Partial (looking southeast)	Oblique (concealed), Rear	Fixed	Low	Adverse	Dwelling located in the Macraes township and orientated northwest.. Oblique views looking north and east towards the Central Mining Area are curtailed by intervening landform and vegetation. Available views of the MP4 are primarily associated with the Frasers West WRS, where views looking southeast will be partially curtailed by existing vegetation. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS. This viewing audience will observe the incremental increase of the landform and its increased prominence on the skyline. This change in view will be seen above the existing WRS.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										At closure, the engineered landform of the Frasers West WRS will be rehabilitated and integrated to the surrounding landscape through the re-establishment of pasture, and contouring to assimilate the landform into the broader landscape.
			Closure	Central Mining Area	Negligible (looking north and east), Partial (looking southeast)	Oblique (concealed), Rear	Fixed	Very Low	Adverse	
9*	1 Hill Street (OGNZL owned)	1.2km	During Operation							
			Closure							
10*	3 Hill Street (OGNZL owned)	1.2km	During Operation							
			Closure							
11*	1756 Macraes Road (OGNZL owned)	1.3km	During Operation							
			Closure							
12*	1755 Macraes Road (OGNZL owned)	1.2km	During Operation							
			Closure							
13*	1757 Macraes	1.2km	During Operation							

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
	Road (OGNZL owned)		Closure							
14*	1760 Macraes Road (Stanley's Hotel) (OGNZL owned)	1.3km	During Operation							
			Closure							
15	11 Hyde Street	1.4km	During Operation	Central Mining Area	Negligible (looking north and east), Small Amount (looking southeast)	Frontal & Oblique (concealed), Rear	Fixed	Very Low	Adverse	Dwelling located in the Macraes township and orientated northwest.. Views looking north and east towards the Central Mining Area are curtailed by intervening landform, vegetation and built structures (houses). Available views of the MP4 are primarily associated with the Frasers West WRS where these views will be glimpsed and are filtered by existing vegetation within the property itself and Macraes township. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS. This viewing audience will observe the incremental increase of the landform and its increased prominence on the skyline. This change in view will be seen above the existing WRS. At closure, the engineered landform of the Frasers West WRS will be rehabilitated and integrated to the surrounding landscape through the re-establishment of pasture,

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										and contouring to assimilate the landform into the broader landscape.
			Closure	Central Mining Area	Negligible (looking north and east), Small Amount (looking southeast)	Frontal & Oblique (concealed), Rear	Fixed	Very Low	Adverse	
16	15 Hyde Street	1.5km	During Operation	Central Mining Area	Negligible (looking north and east), Small Amount (looking southeast)	Frontal (concealed), Oblique	Fixed	Very Low	Adverse	Dwelling located in the Macraes township and orientated northeast towards the Central Mining Area. Views looking northeast towards the Central Mining Area are concealed by intervening vegetation within the property itself and Macraes township. Glimpsed oblique views looking southeast towards the Frasers West WRS may be available through gaps between vegetation. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS. This viewing audience will observe the incremental increase of the landform and its increased prominence on the skyline. This change in view will be seen above the existing WRS. At closure, the engineered landform of the Frasers West WRS will be rehabilitated and integrated to the surrounding landscape through the re-establishment of pasture, and contouring to assimilate the landform into the broader landscape.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
			Closure	Central Mining Area	Negligible (looking north and east), Small Amount (looking southeast)	Frontal (concealed), Oblique	Fixed	Very Low	Adverse	
17	47 Hyde Street	1.2km	During Operation	Central Mining Area	Partial (looking north and northeast), Small Amount (looking southeast)	Oblique, Rear	Fixed	Low	Adverse	Dwelling is located on the western edge of the Macraes township and orientated northwest towards the Coronation Mining Area.. Partial views looking northeast of the Mixed Tailings Impoundment (MTI) are currently available. Views looking southeast towards the Frasers West WRS may also be available through gaps between vegetation. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the MTI and Frasers West WRS, where this viewing audience will experience gradual changes in landform and the subsequent alteration to the skyline. Glimpses of the Coronation WRS may also be available throughout operation. At closure, the lowered MTI will be concealed beyond landform and will not be visible to this viewing audience. The raised Frasers West WRS will be rehabilitated and integrated to the surrounding landscape, visually softening the exposed faces of the WRS and assimilating with the existing WRS on the lower slopes.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
			Closure	Central Mining Area	Negligible (looking north and northeast), Small Amount (looking southeast)	Oblique, Rear	Fixed	Very Low	Adverse	
18	1801 Macraes Road	1.6km	During Operation	Central Mining Area	Negligible (looking northeast), Small Amount (looking east)	Frontal (concealed), Oblique	Fixed	Very Low	Adverse	Dwelling located on Macraes Road southwest of the Macraes township orientated northwest towards the northern extent of the Central Mining Area and Coronation Mining Area. Oblique views looking northeast are curtailed by established vegetation surrounding the dwelling. Glimpses of the Frasers West WRS are likely available. Glimpses of the proposed Open Pit Workshop relocation is likely available on the skyline. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS. This viewing audience will experience an incremental increase of the landform and a change in the sequence of the skyline both in relation to the Frasers West WRS, and establishment of the relocated workshop. This change in view will however be seen above the existing WRS and in the context of a working mining landscape. At closure, the engineered landform of the raised Frasers West WRS will be rehabilitated and integrated to the surrounding landscape, visually softening the exposed faces of the WRS and

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										assimilating with the existing WRS on the lower slopes.
			Closure	Central Mining Area	Negligible (looking northeast), Small Amount (looking east)	Frontal (concealed), Oblique	Fixed	Very Low	Adverse	
19	406 Horse Flat Road	1.9km	During Operation	Central Mining Area	Negligible (looking north), Small Amount (looking southeast)	Oblique	Fixed	Low	Adverse	Dwelling located on Horse Flat Road to the southeast of the Coronation Mining Area and northwest of the Central Mining Area. The dwelling is orientated to the northeast and surrounded by established shelter planting.. Oblique views looking north towards the Coronation Mining Area are concealed by intervening landform. Glimpsed views of the Mixed Tailings Impoundment (MTI) reduction and earthworks surrounding the northern extent of Innes Mills Pit will be available. During operation, the visual impacts on this viewing audience are likely to be influenced by the earthworks, machinery, and vehicle movements associated with the above project elements, where a gradual change in the existing landform will be visible in the context of existing mining operation. At closure, the engineered landforms of the northern extent of the Innes Mills Pit, and lowered MTI will be rehabilitated to pasture with interspersed areas of tussock integrating the final landform into the broader landscape.. While legible changes to the existing Central Mining Area remain, at closure these elements will appear

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										integrated with the broader mining operation.
			Closure	Central Mining Area	Negligible (looking north), Small Amount (looking southeast)	Oblique	Fixed	Very Low	Adverse	
20	53 Horse Flat Road	4.4km	During Operation	Central Mining Area	Negligible (looking north), Small Amount (looking east)	Oblique (concealed), Rear	Fixed	Very Low	Adverse	Dwelling located on Horse Flat Road to the south of the Coronation Mining Area and west of the Central Mining Area. The dwelling is orientated to the northwest. Oblique views looking north towards the Coronation Mining Area are concealed by intervening landform where no views will be available from this property. Available views of MP4 are primarily associated with the glimpsed long distance views of the Mixed Tailings Impoundment (MTI). During operation, the visual impacts on this viewing audience are likely to be influenced by the earthworks associated with the lowering of the MTI. This included an increased presence of machinery within this area, as the landform is gradually reduced. At closure, the upper extent of the lowered MTI will remain visible from this viewing audience. The MTI will be reinstated with pasture and become visually assimilated with the surrounding landscape in the context of existing mining operation.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
			Closure	Central Mining Area	Negligible (looking north), Small Amount (looking east)	Oblique (concealed), Rear	Fixed	Very Low	Adverse	
21	2285 Macraes Road	4.6km	During Operation		Negligible		Fixed	-	Neutral	Dwelling located on Macraes Road to the south of the Coronation Mining Area and west of the Central Mining Area. This dwelling is orientated northeast towards the Coronation Mining Area where views are curtailed by intervening landform. Views looking east towards the Central Mining Area and oblique views looking north towards the Coronation Mining Area are curtailed by established vegetation within this property and broader landscape.. No views of the MP4 will be available from this property.
			Closure		Negligible		Fixed	-	Neutral	
22	41 Hyde-MacRaes Road	4.9km	During Operation		Negligible		Fixed	-	Neutral	Dwelling location on Macraes Road to the south of the Coronation Mining Area and west of the Central Mining Area. This dwelling is orientated to the northeast. Oblique views looking north and rear views looking east are concealed beyond intervening vegetation within this property and vegetation and intervening landform within the broader landscape. No views of the MP4 will be available from this property
			Closure		Negligible		Fixed	-	Neutral	
23*	482 Longdale Road (OGNZL owned)	2.1km	During Operation							
			Closure							

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
24*	540 Four Mile Road (OGNZL owned)	3.4km	During Operation							
			Closure							
25*	497 Red Bank Road (OGNZL owned)	2.6km	During Operation							
			Closure							
26*	546 Red Bank Road (OGNZL owned)	2.6km	During Operation							
			Closure							
27	593 Macraes Road	3km	During Operation	Central Mining Area Golden Bar Mining Area	Small Amount (looking southwest)	Rear	Fixed	Very Low	Adverse	Dwelling located on Macraes Road to the northeast of the Golden Bar Mining Area and east of the Central Mining Area. This dwelling is orientated northeast towards the Central Mining Area. Views looking southwest towards the Golden Bar Mining Area are largely concealed by existing vegetation within this property although glimpses of the upper extent of the Golden Bar WRS will likely be available. Views towards the Central Mining will include glimpses of the upper extent of the Frasers West WRS. During operation, the visual impacts on this viewing audience are likely to be influenced primarily by the earthworks associated with the Golden Bar WRS. This viewing audience will observe an incremental increase of the landform and a change in the sequence of the skyline. This change in
			Closure	Central Mining Area Golden Bar Mining Area	Small Amount (looking southwest)	Rear	Fixed	Very Low	Adverse	

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										landform will be seen above the existing WRS which forms part of the existing skyline. A similar change is likely to be experienced with regard to the Frasers West WRS, albeit at a longer distance. At closure, the engineered landform of the Golden Bar WRS and Frasers West WRS will be rehabilitated and integrated into the surrounding landscape.
28	659 Ritchie Road	4km	During Operation		Negligible	Oblique, Rear	Fixed	-	Neutral	Dwelling located on Ritchie Road to the northeast of the Golden Bar Mining Area and east of the Central Mining Area. This dwelling is located on a southwest-facing slope and is orientated north away from both mining areas. Views looking southwest towards the Golden Bar Mining Area and west towards the Central Mining Area are curtailed by the elevated terrain surrounding the dwelling. No views of the MP4 will be available from here.
			Closure		Negligible	Oblique, Rear	Fixed	-	Neutral	
29	800 Stoneburn Road	3.1km	During Operation	Golden Bar Mining Area	Small Amount	Frontal	Fixed	Very Low	Adverse	Dwelling located on Stoneburn Road to the southeast of the Golden Bar Mining Area is orientated to the northwest towards the Golden Bar Mining Area. Views looking northwest are largely curtailed by established vegetation within this property, however, glimpses of the upper parts of the Golden Bar WRS are possible. During operation, the visual impacts on this viewing audience are likely to be influenced by the earthworks associated with the Golden Bar WRS. This viewing audience will observe an incremental increase of the
			Closure	Golden Bar Mining Area	Small Amount	Frontal	Fixed	-	Neutral	

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										landform and a localised change in the skyline sequence. At closure, the Golden Bar WRS will be rehabilitated and integrated into the surrounding landscape. This will include the resowing of topsoil with pasture.
30	743 Stoneburn Road	3.6km	During Operation	Golden Bar Mining Area	Small Amount	Frontal	Fixed	Very Low	Adverse	Dwelling located on Stoneburn Road to the southeast of the Golden Bar Mining Area and is orientated to the northwest towards the Golden Bar Mining Area. Views looking northwest are largely curtailed by established vegetation within this property, however, glimpses of the upper extent of the Golden Bar WRS are possible. During operation, the visual impacts on this viewing audience are likely to be influenced by the earthworks associated with the Golden Bar WRS, including the reintroduction of machinery and increased vehicle movements within the Site. This viewing audience will observe an incremental increase of the landform and a localised change in the skyline sequence. At closure, the Golden Bar WRS will be rehabilitated and integrated into the surrounding landscape. This will include the resowing of topsoil with pasture.
			Closure	Golden Bar Mining Area	Small Amount	Frontal	Fixed	-	Neutral	
30a & 30b	299 Philip Road	3.1km	During Operation	Golden Bar Mining Area	Small Amount	Frontal	Fixed	Very Low	Adverse	Dwellings located on Philip Road to the south of the Golden Bar Mining Area and are orientated to the north-east towards the mining area. Glimpsed frontal views of the
			Closure	Golden Bar Mining Area	Small Amount	Frontal	Fixed	-	Neutral	

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										upper extent of the Golden Bar WRS will be available from here. During operation, the visual impacts on this audience are likely to be influenced by the earthworks associated with the Golden Bar WRS, where an incremental increase in landform and a localised change in the skyline sequence can be observed. At closure, the Golden Bar WRS will be rehabilitated and integrated to the surrounding landscape. The exposed faces of the WRS will become resown with pasture and will be difficult to discern.
31	202 Ainges Road	4.2km	During Operation	Central Mining Area	Negligible	Oblique	Fixed	Very Low	Adverse	Dwelling located on Ainges Road to the southeast of the Golden Bar Mining Area and is orientated to the north towards the Golden Bar Mining area. Views towards the southern extent of the Golden Bar Pit are likely to be curtailed by intervening vegetation within the property and broader context. Nevertheless, views of the upper extent of the proposed Golden Bar Pit extension are possible mining area. During operation, views of the pit expansion will be limited, and isolated to the upper reaches of the north-eastern face of the Golden Bar Pit. At closure, these views will remain, and will resemble the existing character of the Golden Bar Pit.
			Closure	Central Mining Area	Negligible	Oblique	Fixed	Very Low	Adverse	
32	1473 Taiari Peak Road	5km	During Operation	Golden Bar Mining Area	Small Amount	Oblique	Fixed	Very Low	Adverse	Dwelling located on Taiari Peak Road to the southeast of the Golden Bar Mining Area

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
			Closure	Golden Bar Mining Area	Small Amount	Oblique	Fixed	-	Neutral	and is orientated to the north. Oblique views looking northwest towards the mining area are largely curtailed by existing vegetation within this property, however, glimpsed views of the upper extent of the Golden Bar WRS are possible. During operation, the visual impacts on this viewing audience are likely to be influenced by the earthworks associated with the Golden Bar WRS, where an incremental increase in landform and a localised change in the skyline sequence can be observed. At closure, the Golden Bar WRS will be rehabilitated and integrated to the surrounding landscape, and resown with pasture.
Coronation Hall	1750 Macraes Road	1.2km	During Operation	Central Mining Area	Negligible (looking north and east), Partial (looking southeast)	Frontal, Oblique	Transient	Low	Adverse	The Coronation Hall is located on Macraes Road in the Macraes township. Views looking north and east are curtailed by intervening vegetation within the township. Available views of MP4 are primarily associated with the Frasers West WRS, where views looking southeast will be partially curtailed by vegetation and built structures. The proposed relocated Open Pit Workshop is not visible from here. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the Frasers West WRS. This viewing audience will experience an incremental increase of the landform and a change in the sequence of the skyline. This change in view will
			Closure	Central Mining Area	Negligible (looking north and east), Partial (looking southeast)	Frontal, Oblique	Transient	Low	Adverse	

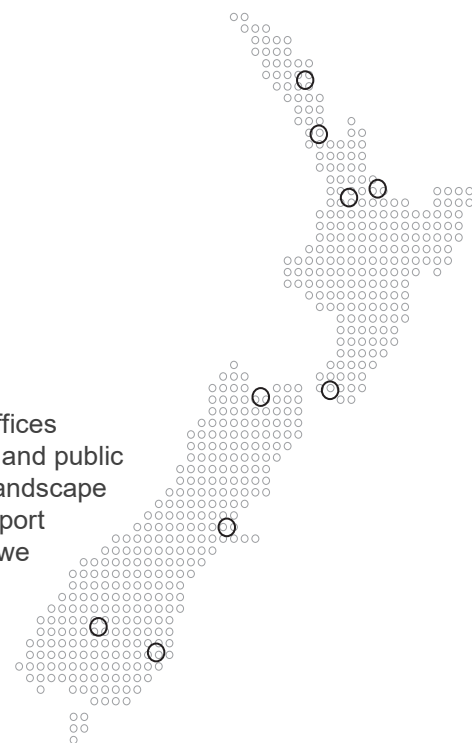
Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										however be seen above the existing WRS. Glimpses of the Coronation WRS are possible throughout operation on the skyline to the north. At closure, the engineered landforms of the Frasers West WRS and Coronation WRS will be rehabilitated and integrated into the surrounding landscape. This will include the re-sowing of pasture on the exposed faces throughout operation and at closure and assimilating the landform with the existing WRSs on the lower slopes.
Cricket Pavilion	16 Hyde Street	1.2km	During Operation	Central Mining Area	Small Amount (looking northeast), Small Amount (looking southeast)	Frontal, Oblique	Transient	Low	Adverse	The Cricket Pavilion is located on southwestern edge of the Macraes township. Views looking northeast are largely curtailed by established vegetation to the north within the property, however glimpsed views of the Mixed Tailings Impoundment (MTI) will be available through gaps between vegetation. Glimpsed views of the Frasers West WRS to the south east, and Coronation WRS to the north west will also be available above the treeline. The proposed relocated workshops are not visible from here. During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the MTI, Coronation WRS, and Frasers West WRS, where this viewing audience will experience gradual changes in landform and the subsequent alteration to the skyline.
			Closure	Central Mining Area	Negligible (looking northeast), Partial (looking southeast)	Frontal, Oblique	Transient	Very Low	Adverse	

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										At closure, the lowered MTI will be largely concealed by intervening landform and vegetation and will not be visible to this viewing audience. The raised Frasers West WRS and Coronation WRS will be rehabilitated and integrated to the surrounding landscape. These landforms will be resown with pasture to mitigate the exposed faces of each WRS and ensure the WRSs appears integrated with the existing landform.
Macraes Moonlight School	6 Hyde Street	1.3km	During Operation	Central Mining Area	Negligible to Glimpsed (looking northeast), Glimpsed (looking southeast)	Frontal, Oblique	Transient	Very Low	Adverse	Macraes Moonlight School is located on southwestern edge of the Macraes township. From the school building, views looking northeast towards the Mixed Tailings Impoundment (MTI) are entirely concealed beyond established vegetation immediately to the northeast. Glimpsed views of the MTI are likely available however from the school tennis court. Views looking southeast towards the Frasers West WRS are largely curtailed by intervening vegetation within the township and the school grounds also glimpses of the upper reaches of the landform remain. The proposed relocated workshops are not visible from here.
			Closure	Central Mining Area	Negligible (looking northeast), Glimpsed (looking southeast)	Frontal, Oblique	Transient	Very Low	Adverse	
										During operation, the visual impacts on this viewing audience are likely to be influenced by large machinery, vehicle movements and earthworks associated with the MTI and Frasers West WRS, where this viewing audience will experience gradual changes in landform and the subsequent alteration to the skyline.

Ref.	Address	Minimum Distance to Views (approx.) ³⁷	Stage	Area Proposed Development is Visible ³⁸	Extent of Visibility ³⁹	Orientation of Views ⁴⁰	Transient / Fixed	Potential Level of Effect ⁴¹	Potential Nature of Effects ⁴²	Notes
										At closure, the lowered MTI will be concealed behind the intervening landform and will not be visible to this viewing audience. The raised Frasers West WRS will be rehabilitated and integrated into the surrounding landscape, and resown with pasture.

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