Oceana Gold (New Zealand) Ltd Macraes Gold Project Coronation North Project

Landscape and Visual Assessment

Oceana Gold (New Zealand) Ltd

Macraes Gold Project
Coronation North Project

Landscape and Visual Assessment

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Date: April 2016
Reference: 3-81043.00
Status: Final

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Abbreviations and Definitions

Abbreviation	Full name
OceanaGold	Oceana Gold (New Zealand) Ltd
The Project	Coronation North Project
WDC	Waitaki District Council
DCC	Dunedin City Council
ORC	Otago Regional Council
Macraes	The village of Macraes
Macraes Flat	The locality of Macraes Flat
WRS	Waste rock stack
RPS	Regional Policy Statement
Macraes Gold Project or MGP	OceanaGold's gold mining operation at Macraes Flat
Macraes Mining Zone	Macraes Mining Project Mineral Zone
MPIII	Macraes Phase III expansion
RMA	Resource Management Act 1991
Coronation Mine	The consented Coronation Mine
OLA	Outstanding Landscape Area
DOC	Department of Conservation
RAP	DOC's Recommended Area of Protection (RAP)
ED	Ecological District
2GP	Proposed Dunedin City District Plan –the 2nd generation plan
ORPS	Operative Otago Regional Policy Statement
Ha	hectares
Mt	million tonnes
Km	kilometre
m	metre
mRL	metres as a relative level

1 Executive Summary

This landscape and visual assessment is based on the Coronation North Project Description, along with the Coronation North Base Plan, which shows the location and extent of the individual components of the Project; this base information is included in the Project's Assessment of Environmental Effects.

The assessment describes the landscape context in terms of the broad Macraes landscape, the Macraes Gold Project landscape and the more specific Coronation North Project landscape; the latter now includes the consented Coronation open cut pit, its haul road and its partial built waste rock stack. This assessment also considers the planning context relative to potential landscape and visual effects, defines the visible aspects of the Coronation North Project, assesses the landscape and visual effects of the Project and their likely cumulative effect and makes the following conclusion.

In this landscape and visual assessment, it has been found that:

- relative to the Waitaki District Plan, the effect on visual amenity values that will arise from the Coronation North Project are minor relative to those effects already consented for the existing Coronation Mine Project and accepted as contributing to the central landscape identity for the Macraes Land Unit. Relative to Dunedin City District Plan, the Coronation North Project will affect a larger portion of the Taieri Ridge section of the High Country OLA under the operative District Plan and what will be Rural High Country Zone under the 2GP;

- with respect to twelve of salient and common public viewpoints considered, the Coronation North Project or aspects of the Project were not visible from five of these viewpoints – Viewpoints 4, 5, 7, 10 and 11, the potential visual effect was negligible or less from a further three viewpoints – Viewpoints 1, 6, and 9, and from a further three viewpoints yet, the potential visual effect would be low – View 2, 3, and 8. All of these are either in the Macraes Flat area – Viewpoints 1, 2, 3, 4, 5, 6, 7, 8, and 9 – or on the Hyde Hill section of the Macraes – Hyde Road – Viewpoints 10 and 11. A small aspect of just the Coronation Pit Extension is visible from some of the former viewpoints, whereas no aspect of the Coronation North Project is visible from the latter two viewpoints.

- In respect to the last viewpoint – Viewpoint 12, the effect will be high as much of the Coronation North WRS, some of the upper pit walls of the Coronation North Pit, along with sections of haul road will be visible from this isolated viewpoint on Longdale Road. Neither the Coronation Pit Extension nor the Coal Creek freshwater storage dam and reservoir will be visible from this viewpoint.

- As with the other components of the Coronation Project, the sections of haul road north of Horse Flat Road will be rehabilitated at mine closure.

- once the final shaping and revegetation of the Coronation North WRS that the photo-simulations illustrate, has been completed, along with that of the redundant haul roads, the general shape, slopes and colour of the completed and revegetated landforms will be in sympathy with the natural slopes of the area. In time, the visual

effect of waste rock stack will reduce moderate-high to moderate and in a much greater length of time the Coronation North Pit void will become a lake.

- In terms of the overall cumulative landscape and visual effect of the Project, the effect will be low to negligible when seen from the southern or Macraes Flat side of the Taieri Ridge. From the north side of the ridge the cumulative effect will be high, but will become moderate with time.

Overall, mitigation measures will be built into the Coronation North Project from the outset. These include:

- careful design of the form of the waste rock stack to integrate it with the existing landform character of the area;
- progressive rehabilitation of the waste rock stack;
- restoration of the areas disturbed around the margins of the Project; and
- removal and restoration of the haul roads used during closure phase of the Project.

These proven measures have been effective in mitigating the potential visual effects of the existing waste rock stacks, being the most visible of the mining elements that have so far been constructed as part of the Macraes Gold Project.

This new mining activity – Coronation North Project - is an extension of previously consented activity and is not unexpected and will be seen in this landscape context as a continuation of the existing mining operation.

2 Introduction

2.1 Purpose of Document

Oceana Gold (New Zealand) Ltd ("OceanaGold") proposes to develop the Coronation North Project ("the Project") as an extension to the Coronation Mine, being the northern-most aspect of the Macraes Gold Project, Macraes Flat, East Otago. The Project will involve the expansion of the existing open cut pit – Coronation Pit Extension – and the creation of a new open cut pit – Coronation North Pit – and its associated waste rock stack – Coronation North Waste Rock Stack, the latter will be in addition to the partially built, western section of the current Coronation Waste Rock Stack; along with a haul road extension. The Project will also involve a topsoil stockpile, a low grade ore stockpile, silt pond(s), an area for pit infrastructure and access roading. The existing Coronation haul road will be the connection to the Macraes Gold Project processing plant.

The Project Area is located predominantly to the immediate north and east of the consented Coronation Mine and is approximately 7 km to the north[1] of Macraes village on the Taieri Ridge in the area of Sister Peaks, which is immediately above and north of Horse Flat Road. At **Appendix 1** the '2016 Coronation North Base Map' provides an overview of the Project Area at a broad scale (1:30,000 @ A3) showing the local topography and stream catchments of the aerial photo base overlaid with district council boundaries, road lines and land tenure aspects, along with the mining-related components of the Project. Also at **Appendix 1**, the 'Figure 2: Zoning of the Site' map[2] shows the Waitaki District Council ("WDC") and the Dunedin City Council's ("DCC") respective planning zones for the Coronation North Project Area.

The purpose of this report is to identify the landscape and visual amenity values of the Project Area and identify the potential effects of the construction and operation of the Project on those values.

This landscape and visual assessment considers the existing landscape context and character as a baseline for assessing the landscape and visual effects of the Project, likely landscape and visual effects, appropriate mitigation measures and makes a conclusion about the visual acceptability of the Project, as well as considering the cumulative effects of the proposed expansion of mine elements in combination with the existing Macraes Gold Project.

Given that the Project Area comes within the jurisdictions of WDC, DCC and Otago Regional Council ("ORC"), the assessment also takes consideration of the expectations of the:

- Waitaki District Plan[3], in particular, the objective, policies, implementation methods and rules relating to mineral extraction within the Macraes Mining Project Mineral Zone ("the Macraes Mining Zone") and district wide objectives, policies and rules relating to the Rural sector, in particular the Rural Scenic Zone;

[1] As all plans generated for the Macraes Gold Project have MGP Local Grid as their datum and are orientated to Macraes North, which is approximately 45° west of Magnetic North, this same orientation is used in the text.
[2] The 'Figure 2: Zoning of the Site' map is from the Coronation North Project's Noise Report.
[3] *Waitaki District Plan*, Waitaki District Council, fully operative 23 August 2010

- Dunedin City District Plan[4], in particular, the objectives, policies and rules defined in Chapter 14, Landscape;
- Proposed Dunedin City District Plan (2GP), in particular objectives and policies defined in Section 16 for the Rural Zone;
- Otago Regional Policy Statement ("RPS")[5] in regard to relevant landscape-related issues as identified in Chapter 5, Land; and
- The Proposed Otago Regional Policy Statement in regard to Chapter 2 and Schedules 3 and 4.

Landscape effects are relevant to Sections 6(a) *("the preservation of the natural character of ... wetlands,... and rivers and their margins...")* and 6(b) *("the protection of outstanding natural features and landscapes...")* of the Resource Management Act 1991 ("RMA"). Such effects can be regarded as the consequence of changes in the natural and physical landscape.

Visual effects relate to Sections 7(c) (*"the maintenance and enhancement of amenity values"*) and 7(f) (*"maintenance and enhancement of the quality of the environment"*) of the RMA. Such effects are concerned with the changes that arise in the composition of a view as a result of changes to the landscape and with people's responses to those changes. People's responses to changes in the landscape are intrinsically linked to visual amenity.

2.2 Background Information

Between 2002 and 2013 OceanaGold have advanced a number of Projects within the overall Macraes Gold Project that have required landscape and visual assessments and, in some cases, preparation of landscape evidence for various resource consent applications and variations. The earlier inputs included:

- Golden Bar mine consent application
- Deepdell mine rehabilitation consent variation
- Expansion of the Frasers West Waste Stack consent variation
- Frasers East Waste Stack consent application
- Macraes Phase III expansion
- Coronation Mine Project

The most recent consented expansion – Coronation Mine - involved the creation of a new open cut pit, a waste rock stack and a haul road and various other related infrastructure on a section of the Taieri Ridge at and immediately to the east of Sisters Peaks.

The closure plan for Coronation Mine comprises of progressive rehabilitation of the Coronation Waste Rock Stack, opportunistic backfilling of the pit during operations, formation of a pit lake within the Coronation Pit, removal of any buildings and other temporary structures, decommissioning of the silt ponds to become stock water ponds, removal of the haul road crossing over Horse Flat Road and rehabilitation of the main haul road from the pit and waste rock stack to Horse Flat Road. On the completion of mining and rehabilitation Golden Point

[4] *Dunedin City District Plan*, Dunedin City Council, fully operative 3 July 2006
[5] *Regional Policy Statement*, Otago Regional Council, fully operative 1 October 1998

Road will be reopened for public access. This closure plan will be adopted and added to in order to address closure of the Coronation North Project elements if and when this new project is consented.

The resource consent application for Coronation Mine was lodged and heard before a joint ORC/DCC/WDC hearings panel in October 2013. The resulting consents were appealed in relation to several conditions but the appeals were resolved by agreement and the consents were commenced by order of the Environment Court and have been given effect to.

2.3 Outline of the Coronation North Project

2.3.1 Project Area Location

The Project Area of the proposed Coronation North Project, as with the Coronation Mine, is located on an elevated part of the Taieri Ridge; the ridge forming the northern skyline when approaching the Macraes Flat locality ("Macraes Flat") from the east. The overall Macraes Gold Project is located approximately 30km inland from Palmerston, East Otago.

Only a small portion of the Coronation North Project 'footprint' will be within the Macraes Mining Zone or Rural Scenic Zone of the Waitaki District and the majority of the footprint of the Project will be within what is currently a Dunedin City Rural Zone High Country Outstanding Landscape Area. As noted previously, the district council and zone boundaries are shown in the maps at **Appendix 1**.

The active Frasers Pit and its current Frasers West Waste Rock Stack are located to the east and south of the Macraes village ("Macraes"). Up until recently, Frasers Pit was the most obvious component of the Macraes Gold Project to be seen when arriving at Macraes Flat from the northeast on the Macraes Road. Now one of the first components that is visible when arriving from the east is the developing Top Tipperary Tailings Storage Facility, which 'sits' in front of Frasers East Waste Rock Stack; both of which were consented in 2006. The Back Road Waste Rock Stack is also visible to the north as the local road rises up past the new tailing storage facility and on towards Frasers Pit and Macraes.

The overall site of the current Macraes Gold Project is owned by OceanaGold and largely has been within the WDC's Macraes Mining Zone. As part of MPIII, activities outside the Macraes Mining Zone were authorised, for instance, the Camp Creek dam and reservoir are in the Rural Scenic Zone. The Coronation Mine Project subsequently brought the overall gold Project into the DCC District and the Taieri River catchment.

2.3.2 Project Description

The main features[6] of the Project are:

1. The Project continues to be located on the ridgeline located to the north of Horse Flat Road along the Shag River and Taieri River catchment divide and is situated between the features known as Sister Peaks and Highlay Hill.

2. Development will continue to be within the upper reaches of Camp Creek (Shag Catchment), Maori Hen Creek and Trimbells Gully Creek (Taieri Catchment)

3. The Waitaki District Council and Dunedin City Council boundary passes through the Coronation site therefore both authorities will continue to be involved in consenting, along with the Otago Regional Council. The Coronation North waste rock stack and Coronation North Pit will be entirely within the DCC District.

4. The Project area is currently identified in the operative DCC District Plan as within a Rural Zone High Country Outstanding Landscape Area but in the DCC's proposed 2GP plan (as publically notified) is Rural Zone without any special overlay.

5. The Coronation Pit extension will be located in both the DCC District and the Waitaki District, but largely in the latter. The area affected is identified in the operative Waitaki District Plan as within a Rural Scenic Zone.

6. The Project area overlaps DOC's Recommended Area of Protection (RAP) which DOC recommends for protection because of identified ecological features.

7. The estimated duration of the operation and rehabilitation phases of the Project will be approximately 5 years and the Project will add approximately 3 years to the overall Macraes mine life.

8. Mining operations will occur 24 hours a day, seven days a week.

9. The existing Coronation Pit, which is currently consented to cover a total area of 62 Ha, and will be extended to about 85 Ha, which will expand with expected ore recovery from 5 Mt to approximately 8.5 Mt (including that which has already been processed). The extension will be primarily to the southern end of the pit, extending from the currently consented edge of the pit. The expanded pit will continue to be opportunistically partially backfilled where practicable and a pit lake, similar to that currently consented, will remain on closure.

10. A resource has been identified within the area of the existing consented Waste Rock Stack which will be mined, and a new open pit (Coronation North Pit) will be developed. The Coronation North Pit is estimated to contain approximately 9 Mt of ore. The Coronation North Pit will be opportunistically partially backfilled where practicable and will be closed as a pit lake.

11. The ore mining rate for the Pits will be approximately 5 Mt per annum, or 20 Mt of material per pit per annum.

[6] Coronation North Project Description V4c, January 2016

12. The existing Coronation WRS will not be constructed to the fully consented extent. The total volume of waste rock will reduce from the currently consented 94 Mt (an area of approximately 105 Ha). The consented maximum height will remain at 730 mRL.

13. A new waste rock stack (Coronation North WRS) will be constructed to the north east of the current consented Coronation WRS. The waste rock stack design is capable of containing the total excavated waste material from Coronation North Pit and the Coronation Pit expansion. It is designed to a maximum height of 695 mRL. With the potential for opportunistic backfill placement within the Coronation pits, the size of the waste rock stacks may reduce proportional to the amount of backfill plausible.

14. The existing haul road will be extended by about 2 km to the north to reach the North Pit. Ore will be hauled from the Pits to the Macraes processing plant via the existing haul road across Horse Flat Road and along the Golden Point Road alignment to the Processing Plant. In other respects the roading will remain the same as for the consented Coronation Project.

15. All water from the new North Pit, the waste rock stack and any overflow from the Coronation Pit lake is expected to report to the Mare Burn catchment, a tributary of the Taieri River.

16. Surface water runoff around the pits, waste rock stack(s) and haul road will be managed with diversion drains and silt control dams located in gullies downstream of disturbed areas. Sediment control will be installed prior to any disturbance within each catchment area.

17. Surface water and groundwater collected in the pits during operations will be pumped out to a water sump adjacent to the pits. Water from the sump will be used for dust control and any surplus water will be discharged via a silt pond.

18. A new freshwater storage dam may be constructed in Coal Creek. This dam would maintain a permanent residual flow in the Mare Burn during dry and low flow periods.

19. The portable diesel storage and refuelling facility installed adjacent to Coronation Pit will remain and be utilised for the Project. Temporary buildings (including toilet facilities and crib room) will remain in place beside Coronation Pit and may also be located adjacent to Coronation North Pit.

20. Mining operations will use the existing fleet of diesel powered mining equipment, including: 12 x CAT 789; 2 x Hitachi 3600; 1 x Hitachi 2500; 1 x CAT 5230B; 2 x Montibert 330CL Drills (Grade Control); 2 x D45 KS Dill Techs (waste); and numerous ancillary equipment.

21. Mining methods will be similar to that already conducted at Coronation and the wider Macraes Gold Project and will involve drilling and blasting operations similar to that undertaken in the existing pits. Blasting will continue to be restricted to the following hours:

    - Monday-Friday 9am to 5.30pm
    - Saturday and Sunday 10am to 4.30pm.

22. The processing rate at the Macraes processing plant of about 6 Mt per annum will be unchanged by the Project.

23. Distances from the Project area to the nearest non-OceanaGold owned residences are 2.0 km for the Howard's residence and 4.8 km for the Vanderley residence, Deepdell Station and 2.4 km for the O'Neil residence.

24. The closure plan will comprise progressive rehabilitation of the Coronation and Coronation North Waste Rock Stacks, opportunistic backfilling of the pits during operations, formation of pit lakes within both Pits, removal of any buildings and other temporary structures, decommissioning of the silt ponds to become stock water ponds, removal of the haul road crossing over Horse Flat Road, rehabilitation of the main haul road from the pits and waste rock stack(s) to Horse Flat Road and reinstatement of Matheson Road on a new alignment. On the completion of mining and rehabilitation Golden Point Road will be reopened for public access.

25. The current numbers of employees at the Macraes Gold Project is expected to remain about the same, but for an extended period of mine life.

3 Landscape Description

3.1 Landscape Context

Macraes sits within a rural upland landscape of fluvially dissected rolling hills of moderate relief and with characteristic broad ridge crests; being the coastal extent of Central Otago' s basin and range topography.

Prominent regional landscape features include the Nenthorn Valley, Taieri Ridge, Taieri Valley and the Rock and Pillar Range, which lie to the south[7] and west, the Shag Valley and Horse Range to the east and the coastal hills and extinct volcanic cones of Palmerston and Waikouaiti to the south.

Pastoral farming is the broad land use in the area, followed by gold mining; the latter has a history in this area that goes back to the nineteenth century. Macraes is off-the–beaten track and on the eastern edge of the schist country and the broader historic goldfields of Central Otago. The presence of the relatively large scale Macraes Gold Project is a noticeable and culturally interesting element in the current landscape. The Macraes Gold Project is the modern 'face' of open pit gold mining and its presence and effect relative to landscape change is now a major feature contributing to the local landscape context.

The long term, focal and cultural landscape feature of Macraes Flat is the Macraes village with its hotel, school, churches, cemeteries and small clusters of houses and various outbuildings and shelterbelts. The village sits in splendid isolation within 'the flat' and various local roads lead to even more isolated farms and homesteads. Scattered and isolated habitation is a feature of the open, rolling, landscape on the edge of basin and range topography that expands through to the upper Taieri and the Maniototo.

The Waitaki Landscape Study[8] provides further information on the landscape context of Macraes under its description of the 'Macraes Land Unit (P2)'; the current Macraes Gold Project lies within this landscape unit as does the southern portion of the Coronation Project that is within the Waitaki District. The full text of this landscape unit description is attached at **Appendix 2**. **Figure 1** provides an overview of the broader Macraes area.

Figure 1 - View of the broader Macraes Flat area as seen from Golden Bar Road looking west

[7] As noted at Footnote 1, the orientation of the geographic features in the broader landscape are given relative to 'Macraes North'

[8] Densem, G, Landscape Architect (2004) *Waitaki Landscape Study*. Prepared for Waitaki District Council

The northern portion of the Coronation Project is within the Dunedin City district and the landscape context of this rural outlier of Dunedin City is described in some detail in the Dunedin Landscape Management Area Review[9] (refer **Appendix 3**) and in the Rural Character Assessment Dunedin City[10] (refer **Appendix 4**).

While there is no distinct landscape change between Waitaki District and Dunedin City within the Project Area, there is a change in landscape 'status' between the two in a planning and District Plan context. The Waitaki District part of the Project Area is mainly within a Rural Scenic Zone and the Dunedin City portion of the Project Area is within a Rural Zone High Country Outstanding Landscape Area under the operative District Plan and a Rural High Country Zone under the proposed 2GP.

The boundary between the two districts appears to follow a convoluted line that is, in part, a catchment boundary and, in other parts, a cadastral boundary along this localised section of the Taieri Ridge. If the boundary 'line' between the two districts did not exist, it would be unlikely that the Project Area would be assessed as two different landscapes.

3.2 Macraes Gold Project Landscape

Many of the more recent expansion phases of the Macraes Gold Project have been located to the east and south of the current Frasers Pit which is the central of the Macraes Gold Project. **Figure 2** shows the Frasers Pit and surrounding mine area relative to Macraes village, Deepdell Creek and the Taieri Ridge beyond.

Figure 2 – View of the central portion of the current Macraes Gold Project looking west. The Coronation Mine and Coronation North Project Area is located in the upper right of photograph as indicated by the red arrow**.**

[9] Boffa Miskell Ltd (2007). *Dunedin Landscape Management Area Review*. Prepared for Dunedin City Council

[10] Forest Environments Ltd (2010) *Rural Character Assessment Dunedin City*. Prepared for Dunedin City Council

The Coronation Mine is located on the Taieri Ridge in the upper left of the photo and its haul road ascends the front slope of the ridge north of Horse Flat Road. A section of Golden Point 'haul road' can be seen in Figure 2 immediately to the right of the larger area of low cloud.

Following are descriptions of the landform and drainage, landcover and land use history of the area of the Macraes Gold Project.

3.2.1 Landform and Drainage

As previously noted, Macraes Flat sits within a rural upland landscape of fluvially dissected rolling hills of moderate relief and with characteristic broad ridge crests; being the coastal extent of Central Otago's basin and range topography. This upland area is defined in the Waitaki Landscape Study as having the 'Macraes Ridge' to the east and south, the eastern extent of the 'Taieri Ridge' to the north with Highlay Hill as the local high point.

'Macraes Ridge' is not a ridge as such, but a series of upper slopes that form the western skyline when looking up from the Shag Valley and from Palmerston and Goodwood – Flag Swamp area. The Taieri Ridge trends west towards Middlemarch and separates Macraes, Moonlight and the Nenthorn Valley from the Taieri Valley; it forms much of the northern skyline when viewed from Macraes Flat.

The Macraes Flat area generally trends or slopes to the west via Moonlight and the Nenthorn Valley to the Middlemarch – Taieri basin. To the south towards the coast are lower hills and then the more distinctive ancient volcanic cones of the Waikouaiti – Palmerston area.

Three named waterways have their sources and/or upper tributaries within the Macraes Gold Project site – Murphys Creek to the south, Tipperary Creek to the east and Deepdell Creek to the north. The headwaters of the North Branch of the Waikouaiti River are contained in the low flats between Macraes village and the Frasers East Rock Stack; these flats drain to the west and then south. Numerous small streams drain the various plateau tops and their scattered small wetlands by short and often steep gullies to the larger creeks. One of these is Camp Creek that has its headwaters below Sister Peaks on the Taieri Ridge and drains to Deepdell Creek. The incised catchment pattern that drains the broader upland area is an important feature of the natural character of Macraes Flat.

The northern aspect of the Taieri Ridge, which is currently outside the Macraes Gold Project site, drains via small creeks and gullies – Maori Hen Creek and Trimbells Gully – and their lesser tributaries to the Mare Burn and then the Taieri River.

3.2.2 Landcover

From the information provided in the MPIII Project's ecological assessment[11], which covered the broader Macraes Flat area, the past vegetation cover of the Macraes Ecological District (ED) within which the Macraes Gold Project lies was *comprised of montane short tussockland grading into subalpine tall tussockland, with areas of hardwood forest (including a podocarp element), kanuka forest and Coprosma-flax scrub. Destruction of the forest cover began with natural fires around 2500 years ago and was exacerbated by Polynesian (800 to 400 years ago) and European settlement (1840 AD).*

[11] Ryder Consulting (2011). *Ecological Assessment – Macraes Proposed Phase III Extension*. Prepared for Oceana Gold (New Zealand) Ltd.

The present vegetation of the Macraes ED is of a highly modified nature with approximately 50% of the district dominated by improved pastureland. This is because of the long farming history associated within the Macraes ED.

Much of Macraes Flat that is in proximity of Macraes village is now flat to undulating improved pastureland and that has been extensively modified by mining. Various steeper gullies within the open paddocks of improved pasture contain remnant tussock grassland and low shrubland and there are occasional wetter, swampy areas on flat ridges and in gully areas. To the north and east are more deeply incised gullies such as that which contains Deepdell Creek. Numerous, scattered, outcrops of schist are a feature of the Macraes plateau.

One of the more obvious vegetation features of Macraes Flat are various pine and macrocarpa shelterbelts, along with some pine forestry plantations. Many of these are associated with the local homesteads and their surrounding paddocks. There are further shelter and ornamental tree plantings around Macraes.

3.2.3 Land use History

As noted in the MPIII Project's Archaeological Assessment[12] there is *limited knowledge or understanding of pre-European land use within the Macraes Flat area. The nearest recorded Maori site is approximately 20 km to the south in Nenthorn. This is not to say Maori did not use the area, however extensive modification of the area by large scale mining in the 19th century has probably resulted in the disturbance or removal of any evidence of such sites. It is possible that evidence of such sites may be found in remote areas. There is also potential for occupation or rock art sites to be present in some of the outcrops.*

As further outlined in the Archaeological Assessment, since the 1860s pastoral farming and both alluvial and quartz mining for gold have taken place in Macraes. Alluvial mining continued with varying intensity until the 1930s and 1940s, with quartz mining being at its peak in the late 1800s and early 1900s. The Department of Conservation's Golden Point Historic Reserve next to Deepdell Creek at the end of Golden Point Road contains remnants of the quartz mining period.

The Macraes village was established at the time of the early gold mining when the population of the locality may have peaked at around 380, but fell away to a much smaller number later. Between the demise of active mining in the 1940s and the start-up of the Macraes Gold Project in the early 1990s, the village was a small, but active, focus of the local farming community consisting of a hotel, a school, two churches and several houses. Not much has changed in more recent years, but, through support from OceanaGold, the hotel and school remain viable. In hand with tourism development in the broader region, the future land use of Macraes will focus on the cultural heritage aspects of gold mining, with continued pastoral farming and gold mining.

3.3 Coronation North Project Landscape

The landscape of the Coronation North Project Area is steep to rolling country, rising steeply from the north-west side of Horse Flat Road to a relatively flat plateau on the Taieri Ridge, adjacent to the Sister Peaks. The southern flank of the Project Area drains to one main north-

[12] Opus International Consultants Ltd (2011). *Archaeological Survey – Macraes Proposed Phase III Extension*. Prepared for Oceana Gold (NZ) Ltd

south oriented gully – Camp Creek - which in turn is fed by numerous other smaller gullies to the east and west. Camp Creek then drains to Deepdell Creek. The northern flank of the Project Area drains to Maori Hen Creek and Trimbells Gully; both of which drain to the Mare Burn.

Portions of the Coronation North Project Area, along with the ridge tops on the west side of Camp Creek, are covered in mature pine plantation; the pine plantation within the Project Area was accidentally burnt through in July 2012 by a tussock burn-off on the farm to the north that got out of hand. The remaining land is generally grazed, modified tussock grassland. This elevated area can be snow-covered for periods of up to a week during the winter.

A now-obvious component of the Project Area is the active Coronation Mine. The completed haul road from Horse Flat Road up to the mine has been in place now for over a year and approximately a third of the consented open cut pit has been excavated. The western extent of the Coronation WRS has started to be formed abutting the Sister Peaks and temporary topsoil and subgrade stockpiles have been form to the immediate north of the waste rock stack, readily accessible for rehabilitation of the rock stack.

Assessments on the aquatic[13] and terrestrial[14] ecology, along with the archaeology[15] of the Project area have been carried out and can be referred to separately.

In terms of natural character and visual amenity value, the Taieri Ridge forms a distinct skyline and visual backdrop to the Macraes area to the south and eastern extent of the Middlemarch-Hyde basin to the north. Its block faulted ridgeline with frequent outcrops of schist is distinctive and its various incised gullies that drain to Deepdell Creek to the south and Mare Burn to the north give the ridge a rugged character. The visual amenity of the Taieri Ridge is further defined by its predominant vegetation cover of tussock grassland, which has been maintained by extensive pastoral farming practices and its elevation and isolation.

The section of the Taieri Ridge that contains the Coronation North Project is defined by the Sister Peaks promontories, the active Coronation Mine, the incised, upper catchment of Camp Creek to the west and south and the more gentle slopes of the upper Mare Burn catchment to the north. On the southern side of the ridge and the Sister Peaks, the landscape character and amenity was previously degraded, somewhat, by the random patterns and arbitrary edge lines of the pine plantations. A further detracting factor was that much of the pine plantation within and adjoining the Coronation Project Area had been burnt through and the blackened remains of the plantation had been left on remains standing along the skyline. Much of the burnt-out pine plantation has now been removed during the ground preparation and topsoil stripping phase of opening up the Coronation Mine.

A cultural landscape factor of the broader landscape is that the Taieri Ridge is the territorial boundary between Waitaki District and Dunedin City. However, this boundary does not consistently follow a natural line in the landscape such as the crest of the ridge, but zigzags from one side of the ridge to the other. Running west from Highlay Hill, the boundary line is on or close to the crest of the ridge and bisects the Coronation Open Pit in the approximate centre of the consented Coronation Project Area. From this central point of the Project, the

[13] 'OceanaGold (New Zealand) Ltd Coronation Project Aquatic Ecology Assessment', April 2016, Ryder Consulting, Greg Ryder, PhD.
[14] 'OceanaGold (New Zealand) Ltd, Macraes Gold Project, Coronation North Ecology Impact Assessment – Vegetation, Avifauna & Herpetofauna', April 2016, ERA Ecology, M.J. Thorsen, PhD.
[15] 'Coronation North Macraes Archaeological Assessment' April 2016, Jackie Gillies and Associates, B Teele

boundary line then runs directly northwest and doglegs round the west side of the highest of the Sister Peaks before descending the northern flank of the Taieri Ridge and crossing Longdale Road. From a point approximately 4 km northwest of the crest of the ridge, the boundary line then runs directly southeast to Hyde-Macraes Road and crosses over onto the south flank of the Taieri Ridge, west of Brother Peaks.

The planning status of the land on either side of the territorial boundary differs, however, on the ground, there is no perceivable change in the quality or character of the landscape from one side of the boundary to the other. This will be elaborated upon in sections 4 and 6 of this assessment.

4 Relevant Statutory and Policy Documents

4.1 Relevant Planning Documents

As noted in the Introduction, the Coronation North Project Area comes within the jurisdictions of WDC, DCC and ORC and therefore, the local and regional planning documents that need to be considered are the:

- Waitaki District Plan, in particular, the objective, policies and implementation methods relating to mineral extraction and the Macraes Mining Project Mineral Zone ("the Macraes Mining Zone") and district wide objectives and policies relating to the Rural sector, particularly regarding Landscapes at 16.8, Issue 7 and the Rural Scenic Zone and relevant Resource Consent Assessment matters at 18.2 xxiii (a) – (d);
- Dunedin City District Plan, in particular, the objectives, policies and rules defined in Chapter 14, Landscape.
- Proposed Dunedin City District Plan (2GP), in particular objectives and policies defined in Section 16 for the Rural Zone.
- Otago Regional Policy Statement in regard to relevant landscape-related issues as identified in Chapter 5, Land.
- The Proposed Otago Regional Policy Statement in regard to Chapter 2 and Schedules 3 and 4.

The Coronation Base Map in **Appendix 1** shows the Waitaki District/Dunedin City boundary on an aerial photo base. The 'Figure 2: Zoning of the Site' map that is also at **Appendix 1** shows the two councils' respective planning zones relative to the Project Area.

The RMA sets out the parameters determining landscape outcomes for the Coronation North Project resource consent applications.

Pertinent landscape matters are to be found in Part 2 of the RMA:

- Section 5: Purpose
- Section 6: Matters of National Importance
- Section 7: Other matters.

4.2 Waitaki District Plan

The Project area falls mostly within the Dunedin City Council area however a small part of the overall Project, being the extension of the consented Coronation Pit, crosses the District boundary and falls within the Waitaki District Council Area. The underlying zoning of the area within the Waitaki District is shown on Map 72 of the Waitaki District Plan. It shows the Project area crosses two zone boundaries that is, the Macraes Mining Zone and the Rural Scenic Zone.

The Waitaki District Plan sets out the issues, objectives and policies for the District's rural landscapes in Part II: District Wide Issues, Objectives and Policies – 16. The matters of most relevance to this assessment of the Project are 16.7 (Mineral Extraction) and 16.8 (Landscapes) and these are outlined below.

Rural Issues – Section 16

Section 16.7 Issue 6 Mineral Extraction discusses the unique amenity of sites like Macraes Flat as well as adverse amenity effects that can arise from mining operations. Section 16.8 Issue 7 - Landscapes discusses the value of the district's landscapes including the schist plateau and hills around Macraes Flat (Section 16.8.1 Explanation). The issue states the need to manage use and development in the district to protect the characteristics of these landscapes. Both of these issues are relevant to the Coronation North Project.

District Wide Objectives – Section 16

Objective 16.7.1 seeks to ensure that extractive industries (such as Oceana Gold's Macraes Gold Project) are given the ability to extract minerals in a manner that avoids remedies or mitigates adverse effects on the environment. Objective 16.8.2 manages the use and development of land so that the overall landscape qualities of the Rural Scenic Zone are retained.

Rural Policies

Policies relevant to the proposal include 16.7.2 (1), (2), (3), (4) and (5), 16.8.3 (3), (6)(f), (6)(h), (6)(i) and (7) which seek to allow for the mining industry within the Waitaki District whilst minimising environmental impacts.

Rural Rules

The Waitaki District Plan at Part III: Zone Rules, Section 6 Macraes Mining Project Mineral Zone outlines rules, activities, site development standards and critical zone standards that relate to the development of the Macraes Gold Project within the zone.

The majority of Coronation Pit Extension, being that which extends south of the existing, consented Coronation Mine pit, will sit within the Macraes Mining Zone. The excavation and construction of pits and haul roads associated with mining are **discretionary activities** under Rule 6.3.2(1).

The remaining small portion of the Coronation Pit Extension that is south of the existing pit is within the Rural Scenic Zone. Section 4.3.1, Rule 13 states that Mineral extraction and processing is a permitted activity in the rural zone subject to a number of performance standards. The Project is unlikely to meet a number of the performance standards listed and therefore will require resource consent as a **Discretionary activity** under Rule 4.3.3.

Waitaki Landscape Study

The broader landscape aspects of the district were defined in the Waitaki Landscape Study which, through Plan Change 2, has now been included within the Waitaki District Plan. Those aspects of the Waitaki Landscape Study that relate to the Macraes Gold Project have been described at Section 4.5.2.1 of this assessment

4.3 Dunedin City District Plan

A second generation plan (2GP) to the current or Operative Dunedin District Plan has been recently notified. Submissions and Further submissions to the Proposed Plan are now closed.

For activities that require a resource consent under the operative District Plan, but is permitted under the 2GP a resource consent will still be required, however the objectives and policies of the 2GP can be considered and may support the granting of that resource consent.

For an activity that is permitted in the current district plan but needs a resource consent under the 2GP where these rules are deemed operative, a resource consent will also be required.

Hence the provisions of the Operative district plan and the 2GP have been assessed for their relevance below:

4.3.1 Operative District Plan

Approximately 40% of the proposed Coronation Pit Extension and all of the Coronation North Pit and all of the Coronation North WRS will occupy land within the Dunedin City District that has an underlying rural zoning and which has been identified, in Chapter 14, Landscape, in the District Plan, as High Country Outstanding Landscape Area ("OLA"). As noted at Method 14.4.2, areas classed as OLA have been assessed as being of particular visual significance and therefore worthy of particular protection from inappropriate use and development. Zone Map 3 identifies part of the Coronation North Project Area as OLA. Accordingly, provisions in the Dunedin District Plan will need to be considered in relation to works within the OLA.

Objectives

Section 6.2 - Rural Zone

Relevant objectives are 6.2.2, 6.2.6 and 6.2.7 which, respectively, seek to maintain and enhance the amenity values associated with the character of the rural area, the life-supporting capacity of land and water resources and the natural rural character and amenity values of the margins of waterbodies such as wetlands and rivers.

Section 14.2 – Outstanding Landscape Area

Relevant objectives are 14.2.1, 14.2.2, 14.2.3 and 14.2.4, which seek to ensure that the District's outstanding landscapes are protected, to ensure that land use and development do not adversely affect the quality of the landscape, and to ensure that the natural landscape characteristics of wetlands and rivers and their margins are preserved and protected.

Policies

Section 6.3 – Rural Zone

Relevant policies are 6.3.6, 6.3.11, 6.3.12, 6.3.14, 6.3.15 and 6.3.16. These policies seek to minimise the environmental effects of development within the rural zone.

Section 14.3 – Outstanding Landscape Area

Policy 14.3.1 is of relevance to the Coronation North Project. It is concerned with the identification and protection of the Dunedin City District's outstanding landscapes. These areas have been identified and it is important that they are given regard to, to ensure that their amenity values will not be eroded. However, it is also noted this does not involve stopping all change from occurring and managing the effects of land use activities and development is necessary to ensure change is integrated into the landscape without adverse effects on the landscape character and quality.

Various named waterways have their sources and/or upper tributaries within the Coronation North Project Area. The Project will affect some very small wetlands and will entail the modification of the upper extent of Coal Creek catchment and Mare Burn and Maori Hen Creek within the Taieri River catchment. Policy 14.3.2 seeks to identify and preserve the important characteristics that create the natural landscape character in wetlands, rivers and riparian margins.

Policies 14.3.3 and 14.3.4 are relevant as they relate to the conservation of characteristics which are important in maintaining landscape quality in the rural area and encouragement of development that integrates with the character of the landscape and enhances landscape quality.

Landscape Management Areas – Section 14.5

Objective 4.2.4 and Policy 4.3.4 refer to the protection of significant natural and physical resources commensurate with their local, regional and national significance. The Dunedin City District Plan achieves this protection by identifying Landscape Management Areas.

Over 80% of the Coronation North Project will be located within a Landscape Management Area, namely the southern edge of the High Country OLA, which is delineated on the maps in **Appendix 1** and also in **Appendix 3**.

Section 14.5.1 (b) (i)-(v) explains the extent and character of the High Country OLA.

At 14.5.1 (b) (i) *Extent*, the extent of the High Country OLA is defined as *including the high mountain and hill country defining the Strath Taieri basin*. The Strath Taieri basin contains the section of the Taieri River from Hyde through to Middlemarch and Sutton with Rock and Pillar Range rising to the geographic west and Taieri Ridge to east.

As noted at 14.5.1 (b) (ii) *Landscape Character*, it is *the strongly defined landform and minimal influence of human elements* that characterise the High Country OLA. This is coupled with an open, pastoral vegetative cover that *retains its natural patterns and character* within a landscape that is *highly coherent with rock outcrops creating particular interest. The skyline in many places is dramatic on account of these.*

At 14.5.1 (b) (iii) *Features and Characteristics to be Protected* lists those landscape aspects particular to the High Country OLA that are protected under the District Plan. From this list of nine landscape aspects, the following three are present and/or are part of the immediate landscape of the Coronation North Project site:

- Highly coherent natural landform under an apparently unmodified grassland vegetative cover.
- Very limited visual impact of any human imposed elements such as tracks or buildings.
- Vegetation patterns which reinforce and reflect landform character.

Many of the other aspects listed are specific to the Rock and Pillar Range, which is higher, more remote and therefore less modified than the Taieri Range. The potential view from the Middlemarch valley is also a consideration; however the Coronation North Project is setback such a distance from the Hyde area of the valley that it is not visible on the eastern skyline. While there are pine plantations and the burnt-through remnants of such on the southern/eastern or Waitaki District aspect of the Coronation North Project, the artificial pattern of these plantations does not affect the view from the north/west or the Dunedin City side of the Coronation North Project.

The *Principal Threats to Visual Quality* at 14.5.1 (b) (iv) are listed as *Forestry Blocks*, *Roads and Tracks* and *Quarries and Other Excavations*. The *Other Threats to Visual Quality* at 14.5.1 (b) (v) are listed as *Structures, Shelterbelts, Areas of Indigenous Vegetation* (means the *removal or diminution of significant natural features such as areas of indigenous vegetation*), *Overgrazing or Burning* and *Wilding Trees and Other Weeds*. Of these potential threats, the open cut pit aspect of the Coronation North Project could be considered a 'principal threat', being an 'excavation. The proposed Coronation North Pit will be within the High Country OLA, but as it is deeply incised, the 'excavation' aspect of the Project will not be visible from points beyond or at a lower elevation to the site. The Coronation North WRS, being a 'structure' could be considered an 'other threat', though it is a result of the excavation, will be visible and will have a larger footprint than the open cut pit.

The *removal or diminution of significant natural features such as areas of indigenous vegetation* is considered to be a very small 'threat' relative to the Coronation North Project, given that much of the site is grazed, modified 'tussock' grassland and that some areas have been cultivated and now in higher producing pasture. Part of the site and its immediate surrounds also contains planation forestry, some of which was burnt through in relatively recent times and all of these areas are now greatly depleted in terms of indigenous vegetation cover. The other listed threats can be disregarded relative to the Coronation North Project, in that the haul road, though having potential as a 'roads and tracks' principal threat, will be a temporary aspects of the mining process and will be reinstated at mine closure.

Rules

Section 6.5 – Rural Zone

Under Rule 6.5.6 (v) any mining activity within a Rural zone is a Discretionary activity and under 6.7.13 when assessing any resource consent applied for under this rule Council may have regard to (but is not limited to) assessment matters of Sustainability, Manawhenua, Amenity Values, Cumulative Effect, Intensity of Activities, Bulk and Location and Visual Impact.

Section 14.6 – High Country OLA

Landscape Management Area rules apply to all the areas identified on the District Plan Maps as Outstanding Landscape Areas. The rules for each area seek to control those "principal threats" which are identified in section 14.5 of the Dunedin City District Plan.

There are no relevant rules regarding the proposed works within the High Country OLA, as rule 14.6.2 relates only to forestry activity.

As the proposed activities are not specifically referred to in 14.6.2, they shall be classified as permitted, controlled, discretionary, non-complying or prohibited according to the underlying zone of the land; Rural Zone in this case. As mentioned above, mining activity within the Rural Zone is a discretionary activity.

Under 14.7.1-5, an assessment of this application will include regard to visibility, adverse effects, sympathetic siting and design, landscape features and characteristics and compatibility of scale and character.

4.3.2 Second Generation Plan (2GP)

The proposed site is located in the Rural High Country Zone in the 2GP. The map also notes the site is within in an Archaeological Alert Layer. The difference between the 2GP maps and the operative district plan maps is the site is no longer covered by an Outstanding Landscape Area overlay in the 2GP. Hence the following assessment is based solely on the 2GP Rural High Country Zone provisions and takes into account the matters in Section 16 the Rural Zone section of the Plan.

Section 16– Rural Zone

Section 16 identifies Appendix A7 as providing descriptions and rural character values for each of the Rural Zones including the High Country Rural Zone.

Appendix 7.1 High Country Rural Zone

The High Country Rural Zone is described as incorporating the high country amongst others the ridgeline rising above the Strath Taieri plain. The area is considered highly significant and visible. The High Country is also characterised by strongly defined land form with minimal influence of human elements. The landscape is also considered highly coherent with rock outcrops creating particular interest with the rugged character and large scale landscape combine to create an effect which is distinctly Central Otago.

Values include:

a. *Large scale, open, expansive character. Highly coherent natural landform under an apparently largely unmodified grassland vegetative cover. The zone covers a high country area distinctive for Dunedin.*

b. *Unique landforms, reminiscent of Central Otago. These include the Rock & Pillar Range (Patearoa), the Lammerlaw Range, the Lammermoor Range and elevated sections of the Taieri Ridge. Rock outcrops and tors are distinctive features.*

c. Predominantly pastoral landuse including intact scrub and snow tussock vegetation sequences progressing to sub-alpine herbfields, as well as some modified grasslands.

d. Takata Whenua values. Historic Māori trail across Taieri Ridge.

e. 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.

f. Human made elements which emphasise local character and contribute to visual quality, e.g. stone buildings, rock fence posts.

Section 6.2 - Rural Zone

Objectives

Relevant objectives are 16.2.3, 16.2.5, which, respectively, seek to maintain and enhance the amenity values associated with the character of the rural area and enabling earthworks while avoiding or adequately mitigating adverse effects on visual amenity and other matters.

Policies

Relevant policies include 16.2.3.1 that require buildings, structures to be setback identified ridgelines and of height that maintains rural character values and visual amenity of rural zones. Policies 16.2.3.3., 16.2.3.4, only allow mining exploration, prospecting mining and landfill where there is reasonable certainty that the land will be restored to an acceptable standard with respect to landform and productive potential.

Policies 16.2.5.1, 16.5.2, and 16.5.3 relate to the effects of earthworks on stability of land and structures, minimise adverse effects on surrounding sites and adverse effects on visual amenity and character.

Rules

Section 16.3 – Activity Status

Under Section 16.3.3 Activity Status table land-use activities, rural activities mining is listed as a Discretionary activity.

Rule 16.11 sets out the assessment matters for discretionary activities. Section 16.11.1, 4 sets out the relevant assessment matters for Mining and Landfill including that there will be:

Consideration of:

- *Land will be restored to an acceptable standard with respect to landform and productive potential (Policy 16.2.3.4).*

  Relevant circumstances that may support a consent application are listed as:

- *The activity will be set back a sufficient distance from its own property boundaries to avoid or adequately mitigate any adverse effects from noise, odour, dust, contaminants or visual effects on surrounding properties.*

Relevant conditions that are listed that may be imposed include:

- *Controls on overall waste volumes for landfills.*
- *Restrictions on aggregate processing activity for mining.*
- *A requirement for buffer areas and bunds.*
- *For quarries, a quarry management plan addressing noise, dust and other amenity effects.*
- *A site restoration plan or bond.*

Under Section 16.3.4 Activity Status table – development activities, site development Rule 16. Earthworks – large scale are a restricted discretionary activity. The matters to which the Council will restrict their discretion to are listed in 16.10. Include amongst others:

- Effects on visual amenity and character;
- Effects on the amenity of surrounding properties

Key Implications relative to the Waitaki and Dunedin City District Plans

The elements of the statutory and policy documents outlined above have implications for an assessment of landscape and visual amenity effects of the proposed mining activity. Implications include:

- Common requirements of the Resource Management Act, Waitaki District Plan and Dunedin City District Plan are the protection of outstanding landscapes from inappropriate use and development, and the maintenance and enhancement of both amenity values and the general quality of the environment.
- The majority of the Coronation North Project lies within the Rural Zone of the Dunedin City Plan, and within a High Country OLA and is therefore subject to Section 6(b) of the RMA (refer to section 1.5.2 of this report). The City Plan recognises that the City's high country OLA is unique and distinctive and has policies to ensure these values are not compromised. The City Plan also recognises that the landscape is constantly evolving through natural processes, farming and other land uses and that the City's high country landscape can be vulnerable to the effects of change, including the visual effects of structures.
- Although the proposed 2GP no longer defines the Project area as an OLA, the zone "Rural High Country Zone" still defines the ridgeline as highly significant and although mining can occur there must be a "reasonable certainty" the land will be restored to an acceptable standard in regard to landform and productive potential.

The majority of the Coronation North Project lies within the Rural Zone of the Dunedin City Plan, and within a High Country OLA and is therefore subject to Section 6(b) of the RMA (refer to section 4.5.2 of this report). The City Plan recognises that the City's high country OLA is unique and distinctive and has policies to ensure these values are not compromised. The City Plan also recognises that the landscape is constantly evolving through natural processes, farming and other land uses and that the City's high country landscape can be vulnerable to the effects of change, including the visual effects of structures. OceanaGold will be progressively

rehabilitating the waste rock stack and restoring the remainder of the site to an acceptable standard at mine closure and this aligns with the expectations of proposed 2GP.

4.4 Otago Regional Policy Statement

The Operative Otago Reginal Policy Statement is under review. The Proposed Otago Regional Policy Statement has been notified and hearings held. Any Council assessing the resource consent applications for the Coronation North Project will have regard to both the Current and Proposed Otago Regional Policy Statements.

Operative Otago Regional Policy Statement (ORPS)

Of relevance to the Coronation North Project, the Land section of the CRPS addresses 'outstanding natural features and landscapes' at Issue 5.3.4, Objective 5.4.3 and Policy 5.5.6. The latter states:

To recognise and provide for the protection of Otago's outstanding natural features and landscapes which:

(a) Are unique to or characteristic of the region; or

(b) Are representative of a particular landform or land cover occurring in the Otago region or of the collective characteristics which give Otago its particular character; or

(c) Represent areas of cultural or historic significance in Otago; or

(d) Contain visually or scientifically significant geological features; or

(e) Have characteristics of cultural, historical and spiritual value that are regionally significant for Tangata Whenua and have been identified in accordance with Tikanga Maori.

These provisions have been given effect or had regard to by the District Councils in the proposed Operative District Plans.

Proposed Otago Regional Policy Statement (PRPS)

Chapter 2 of the PRPS contains a number of issues, objectives and policies that are relevant to the Coronation North Project. The policies also refer to Schedules 3 which outlines a significance threshold when determining whether adverse effects are 'significant' and Schedule 4 which sets out the criteria for the identification of natural features and landscapes. (refer **Appendix 5**)

Issues

The issues are not numbered in the PRPS however the relevant issue in Chapter 2 for objective 2.1 relates to the knowledge of natural systems and the degradation of their values.

The relevant issue for objective 2.2 relates to Otago's outstanding natural features and the risk of these highly valued resources becoming degraded if they are not adequately protected.

Objectives:

Objective 2.1 recognises the value attached to Otago's resources and the need to protect some of these. Objective 2.2 identifies unique landscapes and natural features which are nationally and regionally important. The objective goes on to state these area are have a higher level of protection and consumptive use of resources will be directed to areas where adverse effects are more acceptable.

Policies

Policy 2.1.7 recognises the vales of natural features and landscapes. Policy 2.2.3 identifies outstanding natural features and landscapes using the attributes listed in Schedule 3. Policy 2.2.4 seeks to manage outstanding natural features and landscapes including assessing the significance of adverse effects on values as detailed in Schedule 3.

These matters will be taken into account when the Council are assessing resource consent applications.

4.5 Resource Management Act

The matters contained in Part 2 of the RMA apply to the assessment of all resource consent applications.

In reaching a decision on a consent application, a consent authority must be satisfied that by granting the application, the purpose of the RMA will be achieved.

Section 5 sets out the purpose of the RMA which is to 'promote the sustainable management of natural and physical resources'. In determining what promotes sustainable management in a particular context, decision makers are guided by the various matters listed in Part 2 of the RMA.

Section 6 of the RMA sets out those matters of national importance that are to be recognised and provided for in achieving the purpose of the RMA. The matters of national importance considered to be of relevance to this landscape and visual assessment are:

- *6(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development.*
- *6(b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.*

Section 7 of the RMA sets out those 'other matters' that a consent authority must have particular regard to in achieving the purpose of the RMA; those matters of relevance to this assessment of the proposal are:

- *Section 7(c) the maintenance and enhancement of amenity values.*
- *Section 7(f), the maintenance and enhancement of the quality of the environment.*

4.5.1 Section 6(a): Natural Character of Water Bodies and their Margins

As outlined in section 2.2.1 above, various named waterways have their sources and/or upper tributaries with the Coronation North Project Area. These waterways have had their surroundings modified by farming practices and past mining activities and their flow in the headwaters is intermittent.

The Coronation Project will entail the modification of the upper Coal Creek and Mare Burn Creek catchment and that of Maori Hen Creek within the Taieri River catchment. Furthermore, there are small wetlands within the footprint of the Project. This will trigger consideration of section 6(a) of the RMA and the natural character of these water bodies.

4.5.2 Section 6(b): Outstanding Landscapes

Under Section 6(b) of the RMA it is a matter of national importance to recognise and provide for the protection of outstanding landscapes from inappropriate subdivision and development. An assessment of landscape and visual effects of the Coronation North Project therefore needs to consider whether or not the area proposed for the Project lies within an outstanding natural landscape or contains natural features that are outstanding and if so in what context they are outstanding.

An interpretation of 'outstanding natural features and landscapes' is not provided in the Act but a useful interpretation is to be found in the Canterbury Regional Landscape Study Review[16].

'Outstanding' has been described as meaning conspicuous, standing out from the group, distinguished. Landscapes can be outstanding within a local, regional or national context. The RMA does not state that 'outstanding natural features and landscapes' need to be of national importance before they will be considered under s6 (b), but rather that it is "a matter of national importance" that such resources should be protected. The construction of Section 6(b) of the RMA indicates that 'natural' applies to both features and landscapes and should be read as 'outstanding natural features and (outstanding) natural landscapes'[17].

4.5.2.1 Outstanding Natural Features and Landscapes of the Area

Waitaki District Consideration

A district-wide landscape study was initiated by Waitaki District Council in July 2002 with the purpose of advising Council on the nature and extent of any areas of outstanding landscapes in the Rural Scenic Zone of the District. This study was subsequently extended to provide an analysis of the entire District, including the Rural General zone. The study then formed the basis for a variation to the Proposed District Plan aimed at better identifying and protecting outstanding natural landscapes within Waitaki District.

The assessment findings of the Waitaki Landscape Study for the Macraes Land Unit, within which the Macraes Gold Project lies, are as follows:

- *This unit contains no landscapes that meet the 'Outstanding' criteria.*

[16] Boffa Miskell Ltd (2010). *Canterbury Regional Landscape Study Review*. Prepared for Canterbury Regional Council.
[17] *Ibid.*

- *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 Taieri Ridge are assessed as Significant for visual and natural character reasons;*
- *The reserve containing historic mining activities, and its setting, are assessed as a significant landscape feature.*

The landscape study also notes that*: The Waitaki/Dunedin boundary follows a convoluted course along Taieri Ridge and includes within Waitaki District slopes overlooking the Taieri between Middlemarch and Hyde.* None of these particular slopes within Waitaki District are affected by the Project.

The landscape study found that there are no outstanding natural landscapes within or in close proximity to the Coronation North Project Area; the nearest outstanding feature[18] noted in the landscape study are the Moeraki Boulders, which are approximately 30km to the east. The 'Macraes Ridge area' referred to is the landform 'edge' to the east of the Macraes Gold Project site that marks the change between the Shag Valley and the Macraes upland area. This landform 'edge' is 6-8km east of the site and will not be impacted upon by the Project.

The 'reserve containing historic mining activities' is the Golden Point Historic Reserve and will not be affected by the Project.

The 'parts of Taieri Ridge' considered significant for visual and natural character reasons will be affected by the current Project. The particular 'parts of the Taieri Ridge' affected that are within Waitaki District include the upper slopes of the ridge where the Coronation Pit Extension will be located.

The Waitaki Landscape Study notes at section 4.28, some 'elements' by which Waitaki District is known to outsiders. Of the 14 'elements' noted, the one relevant to the Coronation North Project is *Gold mining at Macraes – New Zealand's biggest 'holes'*.

In summary, according to the Waitaki Landscape Study, there are no outstanding natural features or landscapes in the Waitaki District that require protection, although parts of the Taieri Ridge are considered significant.

Dunedin City Consideration

Dunedin City commissioned a landscape assessment for the Dunedin Landscape Management Area Review ("Dunedin LMAR") that was completed in 2007; the text of Taieri Ridge section of this assessment is replicated at **Appendix 3**. Subsequently, Dunedin City commissioned the Rural Character Assessment Dunedin City that was completed in February 2010; the Taieri Ridge text from this second assessment is replicated at **Appendix 4**.

[18] The Waitaki Landscape Study and subsequently the Waitaki District Plan confines the outstanding landscapes of the District to the Upper Waitaki catchment only. It is also noted that the Waitaki Landscape Study was carried out at least 5 years before the subsequent DCC study that lead to OLA status of land north of the Taieri Ridge.

The Dunedin LMAR recommends that Taieri Ridge be retained as an outstanding landscape (as it was already defined as such in the Dunedin City Plan). Rural Character assessment mentions the zigzagging boundary between DCC and WDC and the need for both authorities to work together on issues such as natural character and water demand. This assessment also notes that further mineral extraction is likely to occur in the area of the Taieri Ridge.

The Coronation North Project will affect a relatively small portion of the Taieri Ridge section of the High Country Outstanding Landscape Area.

4.5.3 Section 7(c) and 7(f): Visual Amenity Values

The RMA Section 7(c) is concerned with the maintenance and enhancement of amenity values which are defined in the Act as those natural or physical qualities of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence and cultural and recreational attributes. Amenity values encompass a broad range of issues. They are also relevant to Section 7(f) because the Act's definition of 'environment' includes reference to amenity values. This part of this report focuses on visual amenity values. Amenity issues concerning noise and cultural matters are covered in the reports prepared by other relevant specialists for the Coronation North Project application.

In the upland area that encompasses the Macraes Gold Project site and its general surroundings the environment is both a working resource, in terms of land-based activities such as farming and mining, and a living environment for its residents. Like many rural areas, it is an environment that is appreciated for the sense of open space, for its lack of buildings and for its degree of 'naturalness[19]'. This appreciation is gained by the users of the local main road from Dunback through to Hyde and its side roads. This rural environment differs from the typical rural scene in the locality, in that large-scale open pit mining activities are a distinct, existing component of this particular environment.

The Waitaki Landscape Study notes under 'Values' for the Macraes Land Unit that: *The central identity derives from the settlement of Macraes Flat which is of national significance as the site of New Zealand's largest goldmine. Open cast hard-rock mining is carried out here at a massive scale, involving possibly the largest earthworks ever undertaken in New Zealand. Besides the large scale modern mine is preserved the historic early workings in this area, providing for a unique comparison of old and new technological development.*

It is understood that many of the current visitors to Macraes actually come to see the mine and its large earthmoving equipment in operation. In 2010 2,400 domestic, 600 international and 2,000 school pupils undertook the locally operated tour to view the mine and its operation.

The mining activity of Macraes Gold Project is now part of the visual amenity of Macraes Flat.

[19] Naturalness in this case is a relative term. The broader area of Macraes Flat has been highly modified by pastoral farming and now gold mining, but the broad, simple, open landscape with its scattered schist outcrops and remnant areas of tussock grassland, albeit grazed, provides a more natural character and amenity than, say, the intensively developed farmland of coastal Otago.

4.6 Summary Consideration

The previous paragraphs 'set the scene' relative to the broader Macraes Flat context. The Coronation North Project will add a small component of further mining activity within the broader area where large-scale open cut mining is currently common place. Relative to the Waitaki District Plan, the effect on visual amenity values that will arise from the Coronation North Project are minor relative to those effects already consented for the existing Macraes Gold Project and accepted as contributing to the central landscape identity for the Macraes Land Unit. Relative to Dunedin City District Plan, the Coronation North Project will affect a relatively small portion of the Taieri Ridge section of the High Country Outstanding Landscape Area, and comprises an activity which has been anticipated in previous Rural Character Assessments of the area.

All of the visual amenity effects of the Coronation North Project will be appropriately mitigated by the progressive rehabilitation of the Coronation North Waste Rock Stack as the waste rock stack is developed and by the completion of the Project's closure plan.

Broadly speaking, the landscape changes implied by the Coronation North Project are in keeping with the landscape, especially given the progressive rehabilitation of the proposed waste rock stack with a vegetation cover that reflects the pre-existing landuse and can withstand the local climatic conditions.

Overall, based on the above, it is considered the proposal is consistent with the objectives, and policies and rules of the local district plans and Otago Regional Policy Statement relating to visual amenity and character.

5 Potential Landscape and Visual Amenity Issues

In general, gold mining, and in particular open pit mining, has direct and often irreversible effects on the landscape in which they are located. These effects result from the stripping of overburden and the extraction of ore from the mine itself, the creation of waste rock stacks to accommodate the overburden, the placement of processing plant to extract the mineral from the ore and the creation of tailings storage facilities to contain the fluid waste from the ore processing process. By necessity, all but the processing phase of open pit gold mining result in large voids, materials stacks and containment areas that have a large physical 'footprint' and are therefore likely to be visible and bring about a distinct change to the local landscape. Examples of these visual effects already exist within the consented Macraes Gold Project site. However, being highly visible does not necessarily equate to an adverse landscape or visual effect or even if it is adverse, it may not be inappropriate in terms of overall sustainable management.

5.1 Permanent Modifications to the Landscape

In terms of the Coronation North Project, permanent modifications to the landscape will result from excavating an expansion of the existing Coronation open cut mine pit, opening-up a new pit, developing a new waste rock stack, and developing a new section of haul road within the immediate mine area and constructing a freshwater storage dam. The Project also entails the continued use of associated ancillary structures and activities, and a number of temporary facilities that are already in place. As with the current operating Coronation Mine, there will be mitigation measures that focus on the Project's closure plan, but in many cases these will be progressive through the life of the Project.

The following discussion relates back to the components of the Project described in the Project Description at Section 2.3.2 (as noted in italics below) in terms of what is being proposed.

The location and plan area of the larger components of the Project are shown in the Coronation North Base Map at **Appendix 1**. The potential effects of these components, and measures to mitigate any adverse effects, are described in Section 6 and in that section's supporting graphics in **Appendix 8** – Photos and Photo-simulations.

5.1.1 Coronation Pit Extension and Coronation North Pit

Refer 2.32 – 9, 10 and 11

The excavation of the proposed open cut pits will start with the stripping of topsoil, which will be stockpiled within the footprint of the to-be-developed waste rock stack during the first year of operation. Low grade ore will also be stockpiled within the waste rock stack's footprint and subsequently hauled to the processing plant in the latter period of the Project's operation before the completion of the waste rock stack.

The final extension open cut pit will form a void; the centre of which will be approximately 1,500 m east of the highest (738 masl) and central promontory of the Sister Peaks. The centre of the coronation North Pit will be approximately 750 m north of the same high point. Opportunistic backfilling of both pits may take place and ultimately the pit voids will become lakes, similar to that currently consented.

Given that much of the surrounding land falls away in all directions, the extension pit itself will only be visible from its immediate edge and the summits of the promontories that make up the residual Sister Peaks. This pit void and future lake will not be visible from local roads to the south, west and northwest. However, it is expected that the upper extent of the western and southern walls of the Coronation North Pit will be visible from Longdale Road and adjoining farmland to the north and west. Due to an intervening section of haul road and the depth of the pit, it is unlikely that the pit lake will be visible from the local road in the foreseeable future.

5.1.2 Coronation North Waste Rock Stack

Refer 2.3.2 – 12 & 13.

Given that the proposed WRS will be the largest visible component of the Project, there has been a landscape input to defining the form of the Coronation North WRS based on the inputs that OceanaGold's consultant landscape architect provided to the existing, now-consented Coronation Mine consenting process in 2013 and the 'landscape' conditions that followed. This collaborative approach has taken into account landscape values and ensured that the form of the proposed WRS will be visually integrated into the landscape as far as practicable.

The following outlines the previous 'landform design' process that was applied directly to the consented Coronation WRS.

In the initial Coronation Mine mine design phase of calculating the excavated volume of waste rock and the space this will occupy as stacked waste rock, a rough geometric form was drafted that had benched side walls and a flat top as shown below in **Figure 3**.

Figure 3 – Draft geometric form of the now-consented Coronation Mine WRS as initially visualised from Longdale Road

This initial form was then redefined to a more natural shape, with a smaller footprint, that is more in keeping with the landscape in the context of the Taieri Ridge and the Sister Peaks. The resultant shaped form will be as shown indicatively in **Figure 4** *below.*

Figure 4 – Final shaped form of the now-consented Coronation Mine WRS as subsequently visualised from Longdale Road

The final form of the waste rock stack was then designed to align with the crest of the Taieri Ridge and run approximately 2,000 m east from the highest of the Sister Peaks promontories. There will be a gradual building-up of the waste rock stack in its final stages, which is currently being progressed. Waste rock will be placed to give the stack a slightly rounded top so that it can shed rain water. The side slopes of the stack will have a similar grade to that of the upper slopes of the ridge and, from a distance, will appear to be part of the ridge.

This design process has been carried through into that of the Coronation North WRS as shown in the photo-simulation of the proposed waste rock stack in its broader context at Appendix 8 - View 12 photo-simulation and also discussed at Section 6.3.12. The factors involved in developing the photo-simulations, such as defining the shape and bulk of the proposed waste rock stack and applying colour and texture to the 'after' image, is outlined at Section 6.2.

At the outset, the base core of the waste rock stack will be built-up and its outer, lower slopes will have the grey colour of freshly dumped waste rock. During the second year of operation of the Project, the stockpiled topsoil will be uplifted and re-spread over the waste rock stack as part of the Project's progressive rehabilitation and will continue to be applied as 'the icing on the cake' until the waste rock stack formation is complete.

As noted previously, with opportunistic backfilling of both open cut pits, the scale of the Coronation North WRS will reduce and OceanaGold will involve its consultant landscape architect in the re-design and final design of the waste rock stack, as required.

5.1.3 Haul Road extension

Refer 2.3.2 - 14.

The northern-most section of haul road on the north edge of the Coronation North Pit will be an obvious feature of the Project when viewed from Longdale Road. However, due to the setback of the northern pit, it is unlikely that the remainder of the haul road will be visible from Longdale Road or any other viewpoint.

5.1.4 Ancillary Structures and Activities

Refer 2.3.2 – 15, 16 & 17

The current Coronation Project silt pond is located in a tributary gully to Camp Creek, immediately west of the pit and will continue to be used. Silt ponds, clean water diversion drains and a culvert will be constructed for the proposed waste rock stack. Silt ponds will be required within Maori Hen Creek, Trimbells Gully and may be required in the tributary to Coal Creek. All of the sediment control features will be low weirs or similar that will be physically and visually contained within their stream channels and gullies.

5.1.5 Coal Creek dam and reservoir

Refer 2.3.2 - 18

The proposed freshwater storage dam and reservoir in Coal Creek will inundate 400-500 m back up two of the local gullies of Coal Creek and act to maintain a permanent residual flow in the Mare Burn during dry and low flow periods. Initial estimates are that the dam will hold approximately 670ML behind a 25m embankment when full.

The dam and reservoir will not be visible from Longdale Road and it is expected the reservoir will have the appearance of an upland farm stock water or duck pond.

5.1.6 Temporary Facilities

Refer 2.3.2 - 19

The activities that will be visible will be the construction of the northernmost section of haul road, the stripping of overburden – topsoil and waste rock, the excavation of the top 'lifts' of portions of both pits and the placement of waste rock. The extraction of ore will not be visible as that will take place within the increasingly incised pits. However, one of the more obvious activities will be the movement of dump trucks between the pit and the waste rock stack and between the pit and the processing plant; the visual effects of the latter were previously considered and consented for relative to the existing Coronation Mine. It is noted that the Coronation North Project will extent the period of time trucks will be operating on the haul road by 3-5 years and this activity will also be directly visible from Longdale Road.

As with the current Macraes Gold Project surface mining activities, the stripping and dumping of waste rock will continue through the night with the excavation and dump sites being floodlit. The actual location of these work sites within the broader mine site will be constantly changing as the mining operation progresses. However, potential night lighting effects will be mitigated by facing the floodlighting inwards, wherever possible, in accordance with existing night lighting procedures. This is already done elsewhere within the Macraes Gold Project and is consented.

5.1.7 Mitigation Measures

Refer 2.3.2 - 24

Existing resource consents for the mining activities at Macraes Gold Project require compliance with a number of consent conditions including a specific landscape rehabilitation condition. The particular 'landscape' condition 4.4 from the current Coronation Mine consents (refer **Appendix 6**) that relates to the rehabilitation of waste rock stacks states:

The consent holder shall design and construct the waste rock stack in accordance with the following principles:

(a) Slopes shall be suitably concave or convex in cross-profile to match nearby natural slopes;

(b) Slope gradients shall be no steeper than nearby natural surfaces;

(c) Transitions between natural and formed surfaces shall be rounded and naturalised.

(d) Contours should be curvilinear in plan form, in keeping with original natural contours in that area.

(e) The skyline shall be variable and curved, simulating natural skylines;

(f) New landforms shall be aligned and located so they seem to continue, not cut across, existing landscape patterns; and

(g) Silt ponds shall be removed and the site rehabilitated or be converted to stock water drinking ponds following completion of mining operations and rehabilitation.

Back Road Waste Rock Stack and the Frasers West Waste Rock Stack are good examples of existing waste rock stacks that meet the principles of the rehabilitation conditions.

It is anticipated that the construction of the Coronation North WRS will have to meet similar conditions to those that have been previously applied to the expansion of the Macraes Gold Project and the Coronation Mine in particular. These conditions have been taken into account in the preliminary design of the earthworks relative to the Coronation North Base Map and carried through into the visualisations referred to in this assessment.

Implementing these principles is governed by the mechanics and economics of shifting vast quantities of dump material with very large earthmoving equipment. However, in general terms, the final form of the waste rock stack will be of a similar character to the existing natural form of the broad local topography, and will closely replicate the surrounding landform.

The final vegetation cover of the Coronation North WRS, as with previous completed waste rock stacks, will be a mixture of pasture grass and pockets of tussock that also matches the colours and finer grained textures of the surrounding landscape. A similar vegetation cover will be established on the restored formation and batters of the haul road.

Overall, mitigation measures will be built into the Coronation North Project from the outset. These include:

- careful design of the form of the waste rock stack to integrate it with the existing landform character of the area;
- progressive rehabilitation of the waste rock stack;
- restoration of the areas disturbed around the margins of the Project;
- removal and restoration of the haul roads used during construction of the Project; and
- formation of lakes within the two open cut pits; and
- considered design of the freshwater storage dam so it ties in with the local gully form and is not visible to public view.

6 Assessment of Landscape and Visual Effects

The following assessment is based upon observation of the existing open cut pits, waste rock stacks, haul roads and other operational aspects of the current Macraes Gold Project, the current extent of Coronation Mine, an understanding of the likely visual effects of creating the proposed Coronation North Project and from experience in defining and implementing appropriate measures to mitigate these types of effects. The latter includes an understanding of how the current consent conditions have been implemented in the development of the various mine components.

A site visit was carried out on 16 February 2016 under clear and sunny weather conditions visiting the active Coronation Mine via the haul road which gave a good understanding of the mining operations going forward to the proposed Coronation North Project. Being 'up on site' also allowed the opportunity to look out over the surrounding landscape and confirm if the representative viewpoints will 'see' aspects of the Project or not. The elevated viewpoint also gave the opportunity through the use of telephoto lenses to see the extent of shelter plantings around the homesteads closest to the site and whether these plantings afford any screening of the site. All the previous 'Coronation Mine' viewpoints were re-visited and current photos taken; a number of which have been used to prepare new photo-simulations for this assessment.

The description and discussion in previous sections about setting, site, planning context and proposed activities forms the baseline discussion to this assessment.

6.1 Coronation North Project Visibility

Macraes Flat as a locality is situated on an elevated plateau that is quite isolated from the main highways and towns of northeast Otago. Only one sealed local authority road – Macraes Road - connects Macraes Flat and the associated Macraes Gold Project with State Highway 85 (SH85, the Pigroot) to the east and State Highway 87 (SH87, the Middlemarch-Hyde road) to the west. The eastern hill section of Macraes Road ascends quite steeply over a distance of approximately 8 km from SH85 at Dunback in the Shag Valley to a point known as Sailors Cutting and the first broad view of Macraes Flat upland from the east. The western section of local road, known locally as Hyde-Macraes Road, also ascends quite steeply from the north to a point known as Hyde Hill and the first broad view of the upper Deepdell Creek catchment and the Macraes upland from the west. Due to the elevated nature of the topography, Macraes Flat has low visibility in a district-wide sense.

With its agricultural history of extensive pastoral farming, the smaller local roads running off Macraes Road are few in number; all are gravel roads and most are no-exit. The farm homesteads are also very few in number; all are sheltered by conifer shelterbelts and are physically and visually isolated from one another. Macraes village is a central feature of the locality and sits on low, sloping land with an outlook to the south and to the west.

In this context, the Coronation North Project will be visible from various points along Macraes Road and the other local roads as an adjunct to existing Coronation Mine. In these instances, the predominant 'viewer' will be motorists travelling along these roads and the extent, direction and focus of their view will be constantly changing. The visibility of the Project Area is also defined by its elevated nature.

With much of the Coronation North Project Area being elevated and, like Coronation Mine, separate from the rest of the extensive Macraes Gold Project site, the potential visual effects of night lighting will be considered relative to neighbours and the local community. However, this consideration will focus just on where these effects differ from those of the night operation of the consented Coronation Mine.

6.1.1 Viewshed Mapping

The two Coronation North Project Viewshed Maps ("Viewshed Map") at **Appendix 7** highlight those parts of the surrounding area from where the Coronation North WRS (being the highest and largest component of the Project) might be seen – Viewshed Map 1 - and from where the southern extent of the Coronation Pit Extension will be seen – Viewshed Map 2.

The Viewshed Maps have been created via GIS using the CAD 3-D model provided by OceanaGold for the Coronation North WRS and the NZDEM15 and LINZ NZTopo50 Series topographic map information for the broader landscape of Macraes. 'Viewshed Map 1' indicates what might be seen from the crest of the proposed waste rock stack looking outwards, whereas 'Viewshed Map 2' shows what might be seen standing in the void within the Coronation Pit Extension.

The visibility area that is mapped is quite conservative as the viewshed mapping does not take into account vegetation such as shelterbelts, subtle landform features such as outcrops of schist, nor does it account for aspect. As well, the contour information in NZDEM15 and NZTopo50, which have contour lines that are 20 m equidistance, are within +/- 10 m. This gives a variance of 20 m.

The pertinent points regarding the viewshed maps are that:

- Viewshed Map 1 – The Coronation North WRS will not be visible from Macraes Flat area or other parts of the locality south of the Taieri Ridge. It will be visible from within the relatively contained Mare Burn catchment.

- Viewshed Map 2 – The southern extent of the Coronation Pit Extension will be visible from the Macraes area directly to the south and will appear as a 'notch' - Pit Extension 'notch' – that the pit extension would cut in the Taieri Ridge. Adjacent ridges on the 'front slope' of the Taieri Ridge will obscure potential views from the southeast and southwest. It is also noted that the 'Viewshed Map 2' does not take into account that the waste rock stack would be built to its immediate north-east.

As noted in Section 6.1 Coronation North Project Visibility, there are various points along local roads, such as Macraes Road, Horse Flat Road and Longdale Road from which the Coronation Mine is visible. A set of viewpoints was previously chosen for the Coronation Mine LVA and these viewpoints are used again as the basis to this current landscape and visual assessment.

The representative viewpoints were indicated by the previous Project's Viewshed Map and confirmed 'on the ground' as having direct views to the Coronation Mine and its immediate area, unobstructed by intervening landform or vegetation. There are also a number of salient viewpoints, such as gateways to local farms such as the Howard and the Roy properties or points that provide an overview of the broader Macraes Flat landscape such as Sailors Cutting or Hyde Hill where visitors to the area will gain their first view of Macraes Flat and where local

residents might commonly meet such as the Macraes Old Cemetery car park. From these salient viewpoints, the Coronation North Project may or may not be visible and, again, this was outlined one way or the other by the Viewshed Map and confirmed from the ground.

These representative and salient views were then considered from the point of view of a visitor to the Macraes Flat area travelling from the Sailors Cutting in the east along Macraes Road, then travelling east along Horse Flat Road, north on Hyde-Macraes Road over the Taieri Ridge and then east again along Longdale Road and stopping at a various points. The reasoning behind considering a particular view and the specific discussion regarding the visibility of the various aspects of the Coronation North Project is provided in Section 6.3 relative to the particular viewpoints.

6.2 Photo-Simulations

Following an analysis of where the main components of Coronation North Project are likely to be visible from, a number of photo-simulations were prepared to assist in assessing the potential landscape and visual effects of the Project. Photo-simulation viewpoints were chosen from a number of public vantage points and were selected to afford a comprehensive and representative range of views of the Coronation North Project's proposed activities.

The visual simulations that have been prepared are photo-simulations, which involve incorporating, into photographs from the selected viewpoints, permanent elements of the proposed mine activities such as the proposed WRS as this element will be both large and/or distinctive relative to the scale of the surrounding landscape.

A statement of the methodology used to prepare the photo-simulations is contained in **Appendix 8** of this assessment.

Photo-simulations, like photographs, can be somewhat limited in their ability to represent some of the subtle details in a landscape, which may ordinarily be seen with the naked eye. Also, variations in atmospheric conditions and light, which are dependent on prevailing weather conditions and the time of day, can affect the visibility and appearance of a large earthworks-type development such as a gold mine. Notwithstanding such constraints, simulations can represent the layout, positions, design and extent of the elements of a proposed development including the effects of sun and shade, precisely.

Site photos, along with photo-simulations from the selected representative and/or salient viewpoints are at **Appendix 8**. The viewpoint images have been formatted in the following order:

- "Before" – This image is the current panoramic view from the particular viewpoint and is the base photograph from which the subsequent photo-simulation has been generated.
- "Intermediate" – This is an 'artificial' photo-simulation image where the base CAD image of the visible mine elements are shown; each in a distinctive colour. This has been done so that it is possible to readily see or 'read' the created image of the mine elements within the simulation and, therefore, clearly define the visible change at the site.

- "After" – The photo-simulation includes the particular aspects of the Project that are expected to be seen from the particular viewpoint. The Project's components, such as the outer slopes of rock stacks, have been coloured and textured to show the components fully revegetated as they will be when the proposed mitigation measures have fully taken effect.

The various local features noted in the description of each view are labelled on the "Before" photograph of the particular view and the larger components of the Coronation North Project are labelled on the relevant "After" photo-simulations. In a number of instances, the image of the WRS and/or the mine site has been enlarged so that the part of the view that will be changed is easier to comprehend, once the landscape mitigation measures are established.

The fact that aspects of the Coronation North Project will be visible and will change aspects of the character of the existing landscape does not necessarily mean that its effects will be inappropriate or unacceptable. Its visibility, the scale, nature and duration of the effect, the visual complexity and scale of the existing landscape, the visual sensitivity of the viewer and the size of the viewing audience influence the significance of the Project's potential effects. Visual sensitivity is a measure of how critically changes to a landscape will be regarded and depends upon a range of viewer and view characteristics.

The photo-simulations have been used to assist in the assessment of the visibility and landscape and visual effects, including cumulative effects, of the Coronation North Project. The assessment that follows endeavours to focus on an objective description of the degree of change to the status quo that a viewer will experience from each particular viewpoint, rather than whether the change represents an adverse or a positive effect.

The photo-simulations show the degree of mitigation that was expected under the previous Coronation Mine 'landscape' consent conditions, i.e. shaping and grassing of rock stack slopes, as described in section 5.1.7, and that it is expected will be replicated in conditions of consent for the Coronation North Project.

6.3 Landscape and Visual Effects relative to Specific Viewpoints

This assessment is based upon observation of existing Coronation Mine and what the development of further, similar, mine features under proposed conditions that will mirror the current consent conditions implies, an understanding of the likely landscape and visual effects of excavating the two open cut pits and constructing the proposed rock stack, haul road extension and freshwater dam and experience in defining and implementing appropriate measures to mitigate these types of effects. The methodology for this assessment is modelled on the NZ Transport Agency's Landscape and Visual Assessment Guidelines[20] and has been framed in response to RMA matters.

The viewpoint locations are shown on the Viewshed Map in **Appendix 7** and associated photographs and photo-simulations follow. The Viewshed Map is best considered in conjunction with the photo-simulations to gain a good understanding of the potential visibility or not of the Coronation North WRS relative to the broader landscape context.

[20] Refer to NZ Transport Agency Landscape Guidelines (Final Draft) September 2014 – Appendix 1 *NZTA Landscape and Visual Assessment Guidelines*; https://www.nzta.govt.nz/resources/nzta-landscape-guidelines/

What has been used to define a potential visual effect ranking is a combination of the extent to which the Coronation North Project is a focus, the extent to which the Project has changed the landscape; both relative to the consented and partial completed Coronation Mine and also the effects of distance.

Based on the environmental and design information available, the nature of the potential effect is described. It is noted that change is not an effect per se. By way of example, it is not the quantity of the earthworks that is relevant, rather the effect of the earthworks on (say) visual amenity values or the natural character of a stream.

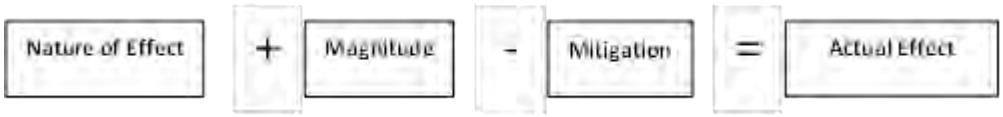
An evaluation of the magnitude of the effect is then provided. Magnitude is influenced by variables[21], for example the dimensions of the waste rock stack, distance from a viewpoint, the effects of intervening landform or vegetation. A relative scale is used to rank magnitude and reasons provided to justify the ranking. The following 7 point scale based on the NZTA LVA Guidelines is utilised. **Table 1** outlines these rankings in descending order.

Table 1: Ranking of Effects Table

Comments	Potential for Visual Effect
The components of the Project can be a very strong visual focus and tend to dominate the landscape	High
The components of the Project can be highly prominent and although the combined components of the Project may not dominate the landscape, it will be a strong visual focus	Moderate-High
The components of the Project can be prominent and very distinctive features in the landscape	Moderate
The components of the Project can be quite noticeable and a somewhat distinctive feature in the landscape, although not prominent	Moderate-Low
The components of the Project can be noticeable and the combined components of the Project appear as a minor feature in the wider landscape	Low
The components of the Project can be discernible and the combined components of the Project appear as a very minor feature in the wider landscape	Negligible
From some salient viewpoints, the Project will not be visible	Nil

[21] In other words an assessment of magnitude can be thought of as an assessment of variables.

The mitigation component that is factored in to the above actual effects 'equation' is a combination of the Projects' mitigation measures previously outlined in Section 5.1.6 and known effectiveness of previous 'landscape' rehabilitation conditions.



In this assessment, the focus is on long term effects of the Coronation North Project post-closure, though mention is made of a number short term effects that will appear and then disappear during the life of the Project. That is, as the Project proceeds, the bulk and the form of the Coronation North WRS will grow within the landscape in that it will start small and then gradually get bigger. The working surfaces will be grey waste rock, which will be progressively shaped, topsoiled and re-vegetated. Both the Coronation Pit Extension and the Coronation North Pit will sink down into the landscape and will initially be outwardly invisible. However the pit extension will open up a 'notch' in the Taieri Ridge that will be visible from the Macraes Flat area and the north pit will expose a western cut face when viewed from the Longdale Road area to the north. The Project's haul road extension will be formed on the north edge of the north pit and will also be visible from the Longdale Road area while it is being actively operated; it will then revert to farmland.

Relative to the WDC's Rural Scenic and Macraes Mining Zones, the DCC's High Country OLA or proposed High Country Rural Zone and the Coronation North Project Area, as shown in the maps at **Appendix 1**, the front or southern flank of the localised area of the Taieri Ridge is encompassed predominantly by the Rural Scenic Zone, with a section of the Macraes Mining Zone forming a 'corridor' up to the ridge. The latter contains the section of the front slope of the Taieri Ridge from just beyond the ridgeline (and includes all of the burnt-through pine plantation on the skyline east of Camp Creek) back down to Horse Flat Road at Golden Point Road and then connects back to the main extent of the Macraes Gold Project site.

All of the proposed Coronation Pit Extension will be within the Macraes Mining Zone, except for a small northwest 'corner' of pit which will be in the Rural Scenic Zone. All of the Coronation North Pit and the Coronation North WRS will be within the DCC High Country OLA or proposed High Country Rural Zone over on the northern flank of the Taieri Ridge.

In viewing the Coronation North Project section of the Taieri Ridge from Macraes Flat; that is from the southeast, south and south west, all of the ridge from beyond Highlay Hill in the east to west of Brother Peaks is within Waitaki District and no aspect of the Dunedin City District, other than highest promontory of the Sister Peaks, will be seen from Macraes Flat. It is only from the northern extent of Longdale Road[22] and within the High Country OLA that that part of the Coronation North Project within the OLA will be seen.

[22] Longdale Road crosses the Waitaki District/Dunedin City boundary at Welshmans Creek, approximately 6 km east of Hyde-Macraes Road

6.3.1 View 1 – Sailors Cutting, Macraes Road

Approaching Macraes Flat from the east via Macraes Road, which is the local main road, there is an elevated point on the north side of Sailors Cutting that is on the crest of the hill when arriving from Dunback. This part of the local road provides a salient view of what is the first broad vista of the Macraes Flat area having ascended the steep hill from Dunback and the Shag Valley. As indicated on the Viewpoint Map, this viewpoint is approximately 12 km from the central high point of the proposed Coronation North WRS.

The **View 1 photo** shows the sweep of this view from the distant northern extent of the Rock and Pillar Range forming the skyline in the left of the photo, then coming forward to the Taieri Ridge in the centre of the photo. The low, rounded promontory at this point on the Taieri Ridge is the highest at 738 masl of the four localised knobs that are the Sister Peaks. These peaks contain the headwaters to Camp Creek and sit approximately 1 -1.5 km north of the main east-west alignment of the Taieri Ridge. Immediately forward of the peak, though barely visible at this distance, are two light grey coloured corners of the consented Coronation haul road.

East along the skyline ridge are the remnant 'tuffs' of burnt-through pine plantation that is located on the eastern slopes of Camp Creek and on the skyline above Horse Flat Road and Bellfield homestead. The active Coronation open cut pit is in this area, being out of sight beyond the ridge line and also behind the remaining un-burnt section of pine plantation east along the ridge. East of the haul road along the 'front slope' of the Taieri Ridge are various access tracks that have been cut as part of OceanaGold's on-going exploration of the broader area.

Continuing further east along the skyline ridge, the land rises up to Highlay Hill. At 820 masl, this peak is the highest and eastern-most promontory on the Taieri Ridge. From this high point, the skyline ridge continues east through another area of pine plantation before dropping down to the Shag Valley.

The middle ground of this view is occupied by the local, rounded, ridge that runs from Macraes Flat east to Shag Valley Back Road and separates the Deepdell Creek catchment from the north branch of the Waikouaiti River and the Tipperary Creek catchments. The various pine plantations and shelterbelts at left of centre in the photo are those in the Glendale homestead area and directly behind is the Back Road WRS.

To the centre right and light grey in colour are the current containment embankment earthworks of the Top Tipperary Tailings Storage Facility; behind and above of which are further light coloured earthworks where land is being stripped and will become included within the tailings storage facility as the embankment height is raised to its full consented height. The south-southeast, rehabilitated and grassed slopes of Frasers East Waste Rock Stack are visible in the centre left edge of the photo with a further rise of waste rock now being placed and shaped at the right end of this rock stack.

The continuation of Macraes Road in the foreground can be seen in the mid right of the photo and the Back Road section of the local road traverses behind the Top Tipperary Tailings Storage Facility along the local ridge and in front of the Back Road Waste Rock Stack.

Viewshed Map 1 indicates that the Coronation North WRS will not be visible from Viewpoint 1, however, Viewshed Map 2 indicates that the proposed Coronation Pit Extension will be visible, in some part, from this viewpoint. Under good light conditions, it is possible to see the existing haul road ascending the mid-slope section of the front slope of the Taieri Ridge. It is therefore expected that the grey coloured, western cut face of the pit will be visible, but the pit cut will not form a 'notch' in the ridge from this angle of view as the cut face will be back-dropped by the consented Coronation Mine WRS.

In essence, from the View 1 viewpoint, the visible landscape effects (i.e., changes to the natural and physical landscape) of the Coronation North Project will potentially be limited to one or two small cut sections of the pit extension being visible on the front slope of the Taieri Ridge. The visible cut(s) of the pit extension will be within the Macraes Mining Zone. Therefore, relative to this viewpoint, there will be no effect on the WDC Rural Scenic Zone or the DCC High Country OLA.

No photo-simulation has been generated relative to this particular viewpoint as the distance from the Coronation North Project is such that the scale of the pit extension image would be too small to see with any clarity. The next viewpoint – View 2 –provides a clearer understanding of the extent of the Coronation North Project from a second, closer southern viewpoint. A photo-simulation has been generated for View 2 and the terrain modelling for this photo-simulation indicates that the proposed waste rock stack will not be visible from this closer viewpoint. This, then, confirms that the Coronation North WRS will not be visible from the more distant View 1 viewpoint.

The resultant visual effect of the Project in View 1, however, is that the southern extent of Coronation Pit Extension will be seen in the distance under favourable light conditions in the centre left of the view. Due to the distance, the broad scale of the view and the context of other mining activities, the potential visual effect of the pit cut on this view will be negligible.

6.3.2 View 2 – Back Road Section, Macraes Road

Continuing towards Macraes, an elevated view towards the Horse Flat Road section of the Taieri Ridge can be gained from the 'Back Road' section of Macraes Road. As indicated on the Viewpoint Map, this viewpoint is approximately 8.5 km from the central high point of the proposed Coronation waste rock stack.

The **View 2 photo** shows the sweep of this view with the distant northern extent of the Rock and Pillar Range in the distant background at the centre left of the photo. Forward of this is the local section of the Taieri Ridge, which occupies the entire central portion of the photo. The rounded, high point of the Sister Peaks is just visible on the skyline to the immediate right of the eastern end of the background range. As previously described for View 1, the burnt-through pine plantation that is located on the eastern slopes of Camp Creek can be seen in front, and to the right, of the Sister Peaks. An area of unburnt pine plantation can also be seen below and to the left of the Sister Peaks; this plantation is on the western slopes of Camp Creek. Continuing east along the skyline ridge, there is the further section of un-burnt pine plantation and then the land rises up to Highlay Hill.

The pine shelterbelt on the west side of the Bellfield homestead is an obvious feature in the centre left of the photo and Horse Flat Road traverses the flats in front of these trees. The Coronation Mine haul road can now be seen above the pine shelterbelt as it takes its serpentine course up the 'front slope' of Taieri Ridge

The eastern slopes of Back Road WRS are visible in the left extent of the photo and remnant tussock pasture occupies the immediate foreground.

The Viewshed Map 1 indicates that the proposed Coronation North WRS will not be visible from the View 2 viewpoint. The **View 2 photo-simulation**, which is based on more detailed contour information for the proposed mine area, being detailed LIDAR contour information provided by OceanaGold, than the NZTopo50 map series topographic information used for the viewshed maps, also indicates that the proposed Coronation North WRS will not be visible from this viewpoint.

The Viewshed Map 2 does indicate some part of the pit extension will be visible and this is confirmed by the View 2 photo-simulation. This image shows two sections of cut being visible on the front slope of the Taieri Ridge within two, separate small gullies and these open to the western pit wall of the cut pit. As with the more distant View 1, these two pit cuts will not form 'notches' in the skyline ridge from this angle of view as the cut face will be back-dropped by the consented Coronation Mine WRS.

In essence, the only visible landscape effect of the Project in View 2 will arise from two relatively small aspects of the Coronation Pit Extension. The visibility of the two cut voids will be countered by being contained by the local gullies, and 'back-dropped' by the consented Coronation WRS, which, in turn, will be shaped and vegetated under the current Coronation Mine consent conditions. Distance and the broad scale of the view will also limit the visual effect, so implying that the potential overall effect of the Project on this view will be low.

6.3.3 View 3 – 'Evacuation Point B', Golden Point Road

Progressing 'west' and closer to the Coronation Mine, an elevated and relatively direct view towards the local section of the Taieri Ridge can be gained from Golden Point Road at a location known as 'Evacuation Point B'. Golden Point Road runs north from Macraes Road, past the Macraes Gold Project site office and 'Evacuation Point B' and then descends to the Golden Point Historic Reserve and also to Horse Flat Road. The latter part of the local road traverses what was the Deepdell Mine haul road, which has been re-activated as the initial section of the Coronation Mine haul road. As indicated on the Viewpoint Map, the 'Evacuation Point B' viewpoint is approximately 7.5 km from the central high point of the proposed Coronation North WRS.

The **View 3 photo** shows the localised section of the Taieri Ridge from where Hyde Macraes Road crosses the ridge at the left edge of the photo, passed Station Hill in the centre left and on to the rising flank of Highlay Hill in the right. Three of the rounded high points of the Sister Peaks, the highest being within the High Country OLA, form the skyline above Camp Creek and its associated sections of pine plantation in the centre of the photo. The initial built form of the consented Coronation Mine WRS can be seen extending to the right from in front of the highest of the Sister Peaks as a grey plateau of rock fill.

A section of the deeply incised course of Deepdell Creek can be seen in the centre of the photo and then the Coronation Mine haul road traversing the 'front slope' of the ridge. To the right of the lower stretch of the haul road is the Bellfield homestead pine shelterbelt, the established Deepdell Waste Rock Stack and a portion of the Mixed Tailings Storage Facility embankment can be seen at close hand in the centre right of the photo.

Viewshed Map 2 indicates that an aspect of the proposed Coronation Pit Extension will be visible from the View 3 viewpoint and this is verified by the **View 3 photo-simulation**. The photo-simulation shows that the southern extent of the cut pit extension will be visible in two locations above the haul road, cutting back the head of a small local gully and also the upper portion of a small ridge immediately beyond a larger ridge to the right of the initial gully cut.

From this viewpoint, the consented Coronation Mine WRS will be visible and currently a smaller, temporary topsoil stockpile is also visible (between the foreground power pole and the adjacent communications pole) on the skyline. The proposed Coronation North WRS will not be visible from this viewpoint. Various recent mining exploration tracks can also be seen ascending the front slope of the ridge.

The only visible landscape effects of the Coronation North Project on View 3 will be two sections of cut being visible on the front slope of the Taieri Ridge; both within small, local gullies and both open to the eastern pit wall of the cut pit. The western of these cut pit voids may open to a section of the eastern pit wall where the pit wall forms the skyline, but this section is not expected to appear lower than the natural skyline. The eastern of the two cut pit voids will open to a section of pit wall that is back-dropped by the natural ridge and, again, will not form a 'notch' in the skyline.

The visual effects on View 3 will be countered, to a degree, by being contained within two small, separate gullies, by distance and the broad scale of the view implying that the potential visual effect of the Coronation Pit Extension on this view will be low.

6.3.4 View 4 - Macraes Flat Old Cemetery

In considering the potential effect of the Coronation North Project on Macraes Flat, the majority of the village has a southerly aspect with the outlook from most residences being 'down the flat' to Red Bank Road and beyond. Two locations within the village from where it is possible to see to the north, to varying degrees, are the Macraes Flat Old Cemetery and Hyde Street from north of the Macraes Flat School (refer to View 5).

The **View 4 photo** is from the turning circle and car park area for the Macraes Flat Old Cemetery at the end of Hill St. Large macrocarpa trees obscure the northward view from the cemetery itself. This viewpoint is approximately 6 km from the nearest point of the proposed Coronation Pit Extension.

In the photo a small portion of the Rock and Pillar Range is visible in the distance at the left edge of the photo and Station Hill is visible to the right of this. A long, pine shelterbelt that expands into a small pine plantation at the right of the photo obscures much of the Taieri Ridge to the east of Station Hill. Station Hill and the other parts of the skyline ridge that are visible above the shelterbelt are within the WDC's Rural Scenic Zone.

Viewshed Map 2 implies that the proposed Coronation Pit Extension will not be visible from the central portion of the village and from land to its immediate south and the View 4 photo confirms this, so the potential visual effect of the Project on this viewpoint is nil.

6.3.5 View 5 – Hyde Street, Macraes Flat

In the **View 5 photo**, the same pine shelterbelt described in the View 4 discussion also obscures almost all of the Taieri Ridge from the viewpoint at the north end of Hyde St adjacent to the O'Connell residence. As indicated on the Viewpoint Map, this road-end viewpoint is approximately 5.5 km from the nearest point of the proposed Coronation Pit Extension.

There is a gap in the shelterbelt through which a small section of the ridge can be seen, along with an upper curve of the existing consented Coronation Mine haul road. This part of the ridge is between Camp Creek and the section of the front slope of the ridge that the Coronation Pit Extension will cut into and appears to be within WDC's Rural Scenic Zone. As indicated in Viewshed Map 2 and confirmed by comparing this potential view to the View 3 photo-simulation, an aspect of the southern end the proposed pit extension will be visible on the skyline from this viewpoint, but will be obscured by the pine trees to the right of the gap in the shelterbelt.

The pine shelterbelt is on private property and could be felled if the landowner desired to do so, which would open up the view towards the Project. However, given the shelterbelt provides northerly shelter to the adjoining farmyard it is unlikely that this will happen. As things stand, the potential visual effect of the Project on this viewpoint is nil. If the shelterbelt was felled then it will be possible to see a small portion of the Coronation Pit Extension, but distance would limit its potential visual effect to a low ranking.

6.3.6 View 6 – Frasers Road to Nenthorn Road, Macraes Road

Progressing further 'west' beyond Macraes Flat and towards Horse Flat Road and the Taieri Ridge, a relatively broad view of the local, eastern extent of the Taieri Ridge can be gained from Macraes Road from Frasers Road through to the 'pigskin fence' area north of Nenthorn Road. As indicated on the Viewpoint Map, the viewpoint for the View 6 photo is approximately 6 km from the proposed Coronation Pit Extension.

The **View 6 photo** shows the eastern section of the Taieri Ridge from Station Hill in the left to the rising flank of Highlay Hill in the right with Kakanui Peak and the tops of Horse Range to the left and right of Highlay Hill, respectively. Camp Creek is the wide gully in the centre of the photo and Bellfield pine shelterbelt can be seen below and to the left of Highlay Hill, with Deepdell Waste Rock Stack below and to the right of Highlay Hill. The high points of the Sister Peaks, being set back at the head of Camp Creek, are not visible in this view and therefore, no aspect of the DCC High Country OLA will be visible from this viewpoint. The pine plantation in the centre of the photo is within the Howard farm in the foreground and the grazed slope to the right of the photo rises up to the north side of Macraes village. The almost full length of the existing consented Coronation Mine haul road rising from Horse Flat Road up to the skyline above Camp Creek can be seen in this view. The western end of the consented Coronation Mine WRS is visible on the skyline at the top of the haul road.

Viewshed Map 1 indicates, as with other view points on the Macraes Flat side of the Taieri Ridge, that the Coronation North WRS will not be visible from this point. However, Viewshed Map 2 indicates that a portion of the proposed pit extension may be visible and this is verified by the **View 6 photo-simulation**. The photo-simulation shows that a small section of the upper edge of the pit extension's eastern pit wall will be visible to the right of the upper extent of the Coronation Mine haul road through the cut pit voids in the two gullies that have been previously described. The Coronation North Pit will not be visible as this pit will be incised behind the eastern slopes of Camp Creek, which are demarcated by the pine plantations on the skyline to the left of the haul road.

In essence, the visible landscape effects of the Coronation Pit Extension will be countered, to a reasonable degree, by the consented mining context it sits within, by the 'backdrop' formed by the local ridges, by distance and the broad scale of the view implying that the potential visual effect of the Coronation Pit Extension on this view will be low to negligible.

6.3.7 View 7 – Howard's Gateway, Horse Flat Road

Travelling east along Horse Flat Road, the front slopes of the local section of the Taieri Ridge rise to the north beyond a series of flat to rolling, relatively intensely grazed paddocks that bound the road. Approaching the area of the proposed Coronation North Project from Macraes Road, Horse Flat Road undulates through open farmland crossing various small creeks that drain down off the ridge to Deepdell Creek. The land also rises somewhat to the south obscuring potential views back towards Macraes Flat.

The recently built homestead and the original Deepdell Station farm buildings on the Vanderley property are located to the north of Horse Flat Road about a kilometre from the Macraes Road intersection. Both the Viewshed Maps indicate that neither the Coronation North WRS nor the Coronation Pit Extension will be visible from this homestead. **Photo 7a** from the road confirms this as the new Vanderley residence has a sheltering ridge to its immediate east that screens any views east along the front slope of the Taieri Ridge.

As indicated on the Viewpoint Map, the View 7 viewpoint is approximately 4 km along Horse Flat Road from Macraes Road. At the driveway entrance to the Howard homestead, the view opens to the Camp Creek gully on the left. In the centre distance of the **View 7 photo** is the shelterbelt on the west side of the Bellfield homestead and beyond the second shelterbelt on the right is Golden Point Road. The consented Coronation Mine haul road can be seen traversing across in front of the 'Bellbird' shelterbelt and rising across the lower slopes of the front slope of the Taieri Ridge. A small portion of the consented Coronation Mine WRS is visible at the head of Camp Creek at the skyline in the left of the photo. This viewpoint is approximately 2.2 km from the nearest point of the Coronation Pit Extension.

Viewshed Map 2 indicates that the proposed pit extension will not be visible from the View 7 viewpoint and this has been confirmed by the photo-simulation in that the view from this viewpoint was modelled in 3D, but no aspect of the Coronation Pit Extension was found to be visible. The potential visual effect on Viewpoint 7 will be nil.

The Howard homestead is the closest private residence to the Project. While the View 7 photo-simulation process indicates that no part of the pit extension will be seen from the property's gateway, given that the homestead is set back by approximately 200 m from the gateway, an upper edge of the pit face of the pit extension may be visible from the homestead. However as

the homestead is surrounded by amenity tree and shelter plantings as shown in **Photo 7b** and the nearest edge of the pit is approximately 2.4 km away, the visual effect on the homestead will be negligible to nil.

6.3.8 View 8 – Golden Point Road Intersection, Horse Flat Road

Travelling further east along Horse Flat Road to just beyond the intersection with Golden Bar Road affords a direct view of the front slope of the local section of the Taieri Ridge that is now traversed by the consented Coronation Mine haul road. As indicated on the Viewpoint Map, the **View 8 photo** shows the mouth of the Camp Creek gully to the left beyond a foreground shelterbelt and the Bellfield shelterbelt on the right. This viewpoint is approximately 1.5 km from the nearest point of the proposed Coronation Pit Extension.

Viewshed Map 2 indicates that no aspect of the proposed pit extension will be visible from the View 8 viewpoint, which is understandable given the height and steepness of the front slope and the set back to the front edge of the pit extension. However, as shown in **View 8 photo-simulation** the western pit cut void that was seen in the View 3 photo-simulation will be visible at the head of the small, central gully in this view. This void opens to the pit wall behind it at what is currently a low point in the skyline ridge.

The proposed open cut pit will be an extension of that activity which is already provided for within the WDC Macraes Mining Zone. The relatively small section of the pit extension that can be seen in this view, being within the mining zone is not unexpected and represents slightly more of what is already seen and permitted. The visual effect on this viewpoint will be low, especially in the context and proximity of the existing consented haul road.

6.3.9 View 9 – Roy's Gateway, Hyde-Macraes Road

Progressing 'north' beyond Macraes Road and Horse Flat Road intersection and ascending the Taieri Ridge on the Hyde – Macraes Road, the view to the east initially is of the Deepdell homestead area with Station Hill rising above. As can be seen in the **View 9 photo**, Station Hill is on the skyline in the left of the photo and in the centre of the photo, the upper portion of the eastern slopes of Camp Creek form the skyline. The crest of Highlay Hill can be seen above this. The shelterbelts associated with the Deepdell homestead can be seen in the near midground, along with local ridge mentioned at 6.3.7 regarding the Deepdell homestead. A section of the upper extent of the consented Coronation Mine haul road is just visible through the tree tops to the right of the foreground power pole.

As indicated on the Viewpoint Map, the View 9 viewpoint is at the road entrance to the driveway to the Roy homestead and is approximately 5.5 km from the nearest edge of the proposed Coronation Pit Extension. The farmland in the foreground and Station Hill and the slopes beyond are all within the WDC's Rural Scenic Zone.

Viewshed Map 2 indicates that no aspect of the proposed pit extension will be visible from the View 9 viewpoint. However, as the pit extension will open up a pit void beyond the haul road and the remnant section of pine plantation on the skyline, removing the section of hill slope where the burnt-out section of plantation has been windrowed, it is likely the upper edge of the eastern pit face will be visible.

The likely visual effect of the Project on this viewpoint will be diminished by a distance to being negligible to nil.

6.3.10 View 10 – Hyde Hill east, Hyde-Macraes Road

Progressing further up Hyde Hill section of the Hyde – Macraes Road and looking back to the Macraes Gold Project and Macraes village in the east to southeast, the view shown in the **View 10 photo** takes in the broad panorama of the upper Deepdell creek catchment and the rolling country of Macraes Flat. As indicated on the Viewpoint Map, the View 10 viewpoint is approximately 6 km from the nearest point of the Coronation Pit Extension. The farmland in the foreground and Station Hill beyond are all within the WDC's Rural Scenic Zone; the distant farmland towards Macraes village is Rural General and the land and mine workings at and beyond the Mixed Tailing Storage Facility are within the Macraes Mining Zone.

In the View 10 photo, Station Hill is on the skyline in the centre left of the photo and to its left is an unnamed highpoint that is 721 masl. 'Hill 721' obscures the remainder of the Taieri Ridge, with the high points of the Horse Range to either side. In the centre of the photo are a pine plantation and various shelterbelts that bound or run perpendicular to Horse Flat Road; the second of the shelterbelts shelters the Howard homestead and the more distant one bounds Golden Point Road where it intersects with Horse Flat Road. In the middle distance to the right can be seen the Macraes Gold Project processing plant and also the surface of the Mixed Tailings Storage Facility. To the right of the tailings area are the pine plantation and shelterbelts that are just to the north of Macraes.

Both Viewshed Maps indicate that the proposed Coronation North WRS and the Coronation Pit Extension will not be visible from the View 10 viewpoint. This can be confirmed, having checked this 'on the ground', as 'Hill 721' obscures the area of the Project from this section of Hyde – Macraes Road. The likely visual effect of the Project on this viewpoint will be nil.

6.3.11 View 11 - Hyde Hill west, Hyde-Macraes Road

Progressing further 'north' along the Hyde – Macraes Road and starting to descend into the Taieri Valley, the view to the east in the direction of the Project is of a broad sweep of 'back' slopes (that is, relative to Macraes Flat and the existing Macraes Gold Project) of the eastern end of the Taieri Ridge. The View 11 photo provides a broad panorama from the distant Maniototo extent of the Kakanui Range at the left through to the Brother Peaks on the Taieri Range on the right. As indicated on the Viewpoint Map, the View 11 viewpoint is approximately 6.5 km from the nearest point of the Coronation Pit Extension.

In the **View 11 photo**, the high points of the Kakanui Range can be seen rising above the valley that contains The Pigroot section of SH85. In the centre left of the photo to the right of an extensive area of developed pasture are the tops of large pine trees around Longdale homestead. To the right of this, the land rises up past a pine plantation to 'Hill 721', which obscures the Sister Peaks from this viewpoint. To the right of 'Hill 721', Highlay Hill is visible in the distance as is the western edge of the pine plantation that sits above the western slopes of the Camp Creek catchment. A section of Longdale Road can be seen passing below the plantation on 'Hill 721' and east towards the plantation above Longdale homestead.

Station Hill sits in the centre right of the photo and in the centre right foreground is an area of mixed tussock and pasture interspersed with schist outcrop. This 'outcrop country' increases on both sides of the road on the descent to the Taieri River and Hyde. Beyond the brow of the hill on the road at the right side of the photo is one of the high points of the Brother Peaks. All of the foreground and midground of this view is within WDC's Rural Scenic Zone, with a portion of DCC's High Country OLA beyond the pine plantation south of Longdale Road.

Viewshed Map 1 indicates that the proposed Coronation North WRS will not be visible from the View 11 viewpoint, nor from the rest of Hyde - Macraes Road down to the Hyde-Middlemarch Road (SH87) in the Taieri Valley. However, Viewshed Map 2 indicates that the Coronation Pit Extension may be visible from this viewpoint. In magnifying the central portion of the view, the remnant pine plantation beyond the burnt-out pines that will be removed by excavation the pit extension is just visible. However, due to intervening flat landform and the effect of distance, it is unlikely the pit edge will be visible. The likely visual effect of the Project on Viewpoint 11 will be nil.

6.3.12 View 12 - Longdale Cattleyards, Longdale Road

Travelling 'east' from Hyde – Macraes Road along Matheson Road, which becomes Longdale Road north of Station Hill, the area of the Project does not become visible until just past the conifer plantation beyond 'Hill 721' and then as the traveller descends to Longdale homestead.

The **View 12 photo** provides a broad view of the upper catchment basin of the Mare Burn that drains much of eastern 'back' slopes of the Taieri Ridge. As indicated on the Viewpoint Map, the View 12 viewpoint is approximately 3.5 km from the central high point of the proposed Coronation North WRS. This viewpoint is indicative of what will be seen of the Coronation North Project Area from the nearest public point on the DDC side of the Taieri Ridge.

In the View 12 photo the Kakanui Mountains can be seen in the distance in the centre left edge of the photo. Highlay Hill is on the skyline in the middle left of the photo and high points of the Sister Peaks are in the centre right of the view. The conifer plantations above Longdale homestead are in the right of the photo. The land falls away to Coal Creek in the foreground, which flows to the Mare Burn. Part of the proposed Coal Creek freshwater storage reservoir will not be visible from the viewpoint. Maori Hen Creek and Trimbells Creek drain the slopes between the Sister Peaks and Highlay Hill and also flow to the Mare Burn.

The Longdale homestead is the closest residence to the Coronation North Project on the north side of the Taieri Ridge; being approximately 3.2 km northwest of the central point of the proposed waste rock stack. The proposed haul road around the northern edge of the Coronation North Pit will be approximately 1.8 km from the homestead. However, there are shelterbelts and rising land immediately to the southeast of the homestead that will obscure the waste rock stack from the homestead. The Longdale property is owned by OceanaGold and has been leased back to the previous owner who will continue to farm that part of the property that is not within the Coronation North Project area.

Approximately 1.5 km further north on Longdale Road is the Mount Highlay homestead (the O'Neil residence). This homestead is set within a sheltered gully that drains to the Mare Burn and the Taieri River to the north and west. There is a sizable local ridge that rises up to 658 masl immediately southeast of the Mount Highlay homestead that obscures the Coronation

North Project area from the O'Neil residence. Consequently there will be no visual effects that will potentially affect this isolated residence.

Viewshed Map 1 indicates that an aspect of the proposed Coronation North WRS will be directly visible from the View 12 viewpoint and this is verified by the **View 12 photo-simulation**. The photo-simulation shows that the northern faces and a portion of the western flank of the proposed Coronation WRS will be visible in the middle ground of the view with Highlay Hill rising behind it. The proposed Coal Creek freshwater storage dam and reservoir will not be visible, but will be within the incised gully system in the middle ground between the local road and the proposed waste rock stack. The western portion of the consented Coronation WRS will be seen to the left of the highest of the Sister Peaks and the northern-most of the peaks will be removed by the excavation of the Coronation North Pit. Aspects of the upper western, southern and eastern cut slopes of the proposed Coronation North open cut pit will be visible, as will sections of the proposed haul road run across the north end of the pit and then running between the pit and the waste rock stack to the south. The southern extent of the haul road and the land it traverses will obscure the Coronation Pit Extension from this viewpoint.

Viewshed Map 2 implies that the Coronation Pit Extension or at least aspects of its upper cut slopes will be visible from this viewpoint. However as mentioned above, this pit will be obscured by the unmined section of land between the two pits. This section of land will be within the working mine and is likely to be used as a stockpile area for lower grade ore and for topsoil. It would then be rehabilitated to pasture at mine closure.

As shown in the photo-simulation, the elevated southern portion of the Coronation North WRS will occupy a portion of the skyline to the west of Highlay Hill. The waste rock stack will grade into the Taieri Ridge with the natural ridge line visible in the centre of the view. The ridgeline will then grade into the consented Coronation WRS that then grades into the highest of the Sister Peaks.

The proposed Coronation North WRS, having a maximum footprint that is approximately 2.8 km long by 1 km long and being up to 200 m high in parts, will form a distinct landform within the upper Mare Burn 'basin'. As shown in the photo-simulation, this new 'central ridge' will have a similar 'stepped' configuration to, but will be more pronounced, than the natural ridge to its immediate east; being immediately east of Trimbells Gully. It will, however, be somewhat smaller than the natural ridge to the east of that; being the elevated landform that sits between two, larger eastern tributaries to the Mare Burn.

The natural drainage pattern of the local ridges in this 'quarter' of the upper Mare Burn 'basin' has become more pronounced as a result of the flatter areas above and the sloping headlands between the side gullies having been cultivated and established in higher yielding pasture. The result of this is that their green pasture cover stands out from the un-improved 'tussock' grassland in the gullies and on other ridge tops and headlands. This further emphasises the natural drainage pattern.

The flanks of the Coronation North WRS will not be as dissected as those of the natural ridges or headlands and will be smooth and uniform by comparison. The vegetation cover of the waste rock stack will also be uniformly green at the outset. As the grazing regime on the waste rock stack will be managed to ensure the grass swale thickens up to protect the flanks of the stack from erosion, the waste rock stack will stay 'green' for quite some years. As has been required by past conditions, *tussock species, which are as far as practicable sourced from the*

Macraes Ecological District are to be included in the revegetation process, but it will take considerable time for the tussock plantings to become distinguishable from a distance, especially in the face of on-going grazing.

In time, this vegetation cover will mature to a similar colour to that of the cultivated and grazed slopes in the left and right middle ground of the view as occurs elsewhere in the Macraes Gold Project site. With a greater length of time, it is expected that the consented Coronation WRS, being above and set back from the land in the Mare Burn basin that is more intensively grazed, will re-colonise with tussock and return to a colour and texture that will be similar to that of the Sister Peaks.

The proposed Coal Creek freshwater storage dam and reservoir will be confined within the local, incised gully section of Coal Creek and not visible from this viewpoint. From closer proximity, it is expected the reservoir will have the appearance of an upland, stock water or duck pond and will be in context with the farming activities around it.

The proposed Coronation North Pit will create a void that will be approximately 1 km in diameter at its upper edge and result in a landform that is not commonplace in the upper Mare Burn 'basin'. In the excavation of the pit void the north-eastern of the four Sister Peaks promontories will be removed.

As shown in the Viewpoint 12 photo-simulation, there will be sections of new haul road traversing around much of the upper perimeter of the Coronation North Pit. The northern section of haul road will have the effect of blocking a portion of the potential view into the pit and will be retained as a visual buffer at the end of mining operations. However, the majority of the haul road sections and formation will be broken down as part of site rehabilitation, shaped and grassed and, like the slopes of the waste rock stack, returned to productive use.

Locally, both the landscape and visual change brought about by excavating the open cut pit and the immediate landform change that creates, along with the formation of sections of haul road and the more gradual building–up of the Coronation North WRS will be very obvious. The landscape mitigation of the waste rock stack and the redundant sections of haul road will limit the effect of these two mine components, with time. The pit void will remain and over a long period of time will fill with water and become a steep sided lake. The mitigating factor for the pit void relative to potential views from Longdale Road is that much of the pit will be obscured by land along its northern or near edge, though the upper extent of the side and back walls of the pit will remain visible.

As with the previous Coronation Mine conditions, OceanaGold will locate, form and shape all earthworks so that their profiles, contours, skylines and transitions closely resemble and blend with the surrounding natural landforms with the intent of maximizing their integration into the surroundings. As is the expectation of Dunedin City's 2GP, the disturbed land will be restored to an acceptable standard.

In essence, the combined landscape and visual effects of the Coronation North WRS and the Coronation North Pit as seen from this viewpoint will be high in the first instance. In 10 – 15 years, these effects will be countered, to some degree, by the established rehabilitation of the slopes of the waste rock stack. Given that these mine elements are relatively close to the viewpoint and the open cut pit will be a lasting feature, the visual effect on this view will remain, but in the longer term will reduce to moderate-high to moderate.

6.4 Night Time Visibility

With much of the Coronation North Project Area being elevated and separate from the current Macraes Gold Project site, though 'attached' to the consented Coronation Mine, the potential visual effect of night lighting has been considered relative to neighbours and the local community. The two Viewshed Maps indicate areas to the north and south of Taieri Ridge from where it may be possible to lights from night time activity 'up at the mine'.

The current Coronation Mine consent condition 10.1 Lighting states that:

All flood lighting luminaires that could potentially cause a glare nuisance or a traffic hazard shall be fitted with shields and, as far as is practicable, orientated so that the principal output is directed away from residences and traffic.

It is anticipated that the same or a very similar condition will be applied to the Coronation North Project and therefore mobile flood lights on the waste rock stack will be positioned to face inward with no outward light effect. However dump truck and other mine traffic movement will result in some light shining out from the waste rock stack and parts of the haul road. It is also noted that lights in isolated and elevated locations attract the eye, therefore it is expected that night light from the Coronation North Project will be more visible than what the Viewshed Maps imply.

Obviously the potential and amount of light visible from the Coronation Project will change relative to the phase of the mine operation. For instance, with the pit being excavated and the waste rock being carted out, the excavator will descend down into the pit and become invisible and the dumping operations will 'rise up' and become more visible. There will be not as many machines working at night on the Coronation North Project as there are currently or have been working Frasers Pit, so the potential amount of light being emitted from the Coronation North Project will be less than from consented parts of the Macraes Gold Project site within the lower Macraes Flat area.

The distance between the elevated portion of the Coronation North Project Area and Macraes Road, which is the main 'public' view point in the local area, will also limit the potential effect of night lighting from the proposed Project. The only 'direct' traffic effect will be at the Horse Flat Road and Golden Point Road intersection where the Project's haul road meets the only section of public road in proximity to the Project. This activity is already consented, though the Coronation North Project will extend the length of time this activity will continue for by approximately 5 years. Haul trucks will travel to and from the processing plant during daylight hours only and other mine traffic at night will be low. It is also considered that the traffic volumes at night will be so low on Horse Flat Road that the potential for glare nuisance or traffic hazard issues will be very limited.

The Howard homestead is the closest private residence to the Project on the Macraes side of the Taieri Ridge. While it may be possible to see a small aspect of the Coronation Pit Extension from the gateway to the Howard homestead on Horse Flat Road, as shown in the View 7 photo-simulation at Appendix 8, the actual activity in the pit will be enclosed within the pit itself and not visible from the homestead, which is set back by approximately 200 m from the gateway.

The only other residences within reasonable proximity of the Coronation North Project are the Longdale homestead and the Mount Highlay homestead on the north side of the Taieri Ridge. The Longdale property is now owned by OceanaGold and is also surrounded by shelterbelts and other tree planting that will obscure the proposed mine's night time operations. The Mount Highlay homestead has intervening landform that will obscure the Coronation North Project and consequently there will be no night light or other visual effects that will potentially affect this isolated residence.

6.5 Summary of Landscape and Visual Effects

The following summarises the potential landscape and visual effects of the Coronation North Mine Project relative to the specific viewpoints.

This assessment relative to the various 'viewpoints' that have been considered, endeavours to focus on an objective description of the degree of change to the status quo that a viewer will experience from each particular viewpoint, rather than whether the change represents an adverse or a positive effect.

The fact that the Project will be visible and will change aspects of the character of the existing landscape does not necessarily mean that its effects will be adverse, inappropriate or unacceptable. Its visibility, the scale, nature and duration of the effect, the visual complexity and scale of the existing landscape, the visual sensitivity of the viewer and the size of the viewing audience influence the significance of the Project's effects. Visual sensitivity is a measure of how critically changes to a landscape will be regarded and depends upon a range of viewer and view characteristics.

In regard to the twelve viewpoints discussed at section 6.3, **Table 2** summarises the level of potential landscape and visual effect for each. It is noted, however, that some views are broad and all encompassing, others are quite focussed and others, such as Roy's gateway, have been considered to confirm that little or nothing of the Project will be seen from the particular viewpoint.

Once the final shaping and revegetation of the proposed Coronation North Waste Rock Stack that the photo-simulations illustrate has been completed, the general shape, slopes and colour of the completed and revegetated landforms will be in sympathy with the natural slopes of the area. Overall for the majority of viewpoints considered, the potential visual effect does not exceed what is considered to be a low effect. In the one instance where the effect is high, the particular viewpoint on Longdale Road is considered to be quite isolated on a small, local road that is infrequently used. It is also expected that once site rehabilitation has been completed at mine closure and the revegetation of the waste rock stack has become well established, the effect will be moderate-high to moderate in the longer term.

Table 2: Ranking of Effect relative to Specific Viewpoints

View point	Location	Visual Effect
1	Sailors Cutting, Macraes Road	Negligible
2	Back Road section, Macraes Road	Low
3	'Evacuation Point B', Golden Point Road	Low
4	Macraes Flat Old Cemetery	Nil
5	Hyde Street, Macraes Flat	Nil
6	Frasers to Nenthorn Road, Macraes Road	Low-Negligible
7	Howard's Gateway, Horse Flat Road	Nil
8	Golden Point Road Intersection, Horse Flat Road	Low
9	Roy's Gateway, Hyde-Macraes Road	Negligible to Nil
10	Hyde Hill east, Hyde-Macraes Road	Nil
11	Hyde Hill west, Hyde-Macraes Road	Nil
12	Longdale Cattleyards, Longdale Road	High in the short term; Moderate-high to Moderate in the longer term. Nil relative to the O'Neil residence

There will be night light effects associated with the operation of the Coronation North Project, but complying with existing night light conditions will adequately mitigate these effects. There are not expected to be any night light effects on private residences in proximity of the Coronation North Project.

The Coronation North Project will entail the extension of mining activity, both in extent and in time, within an elevated part of the local landscape – Taieri Ridge – and this activity will extend further into the Dunedin City District. Part of the Project will be within the Macraes Mining Zone, but also within the WDC's Rural Scenic Zone.

7 Cumulative Effects Assessment

Cumulative landscape effects are considered to be those that affect the physical landscape such as caused by earthworks for the haul road, site works, topsoil stripping, excavating the open cut pit and the progressive development of the waste rock stack. Cumulative visual effects can affect visual amenity values and it is generally recognised that this can occur in three ways[23]. These are:

- **Combined effects** – resulting from two or more waste rock stacks, for instance, being seen from one viewpoint in the human field of vision (i.e., spanning 124° horizontally).
- **Succession effects** – resulting from two or more waste rock stacks being seen from one viewpoint but not in the human field of vision, i.e., the viewer has to turn to see one or other waste rock stacks.
- **Sequential effects** – resulting from the observer moving to another viewpoint and then seeing one or other waste rock stacks. Sequential effects are most commonly experienced along regularly used routes such as roads and cycle/walkways.

As implied by the Viewshed Maps and discussed relative to a number of the representative and salient viewpoints, cumulative effects of the combined, succession and sequential type relate to possible visual effects caused by the proposed Coronation North Project and the consented aspects of the existing Macraes Gold Project, which includes the currently operating Coronation Mine.

From the viewpoints considered to the south of Taieri Ridge, from which aspects of the Coronation North Project will potentially be seen - Viewpoints 1, 2, 3, 6, 8 and 9, the additional mining component that will be seen is one or two small aspects of the proposed Coronation Pit Extension. In all cases, the singular or pair of pit voids and their pit face backdrop that will be seen will be at or just below the skyline and some considerate distance away. In relation to Viewpoints 1, 2, 6 and 9 that distance will be such that the scale of void(s) will be reduced to the extent that does not equate as a cumulative effect from these particular viewpoint.

For Viewpoints 3 and 8, there is likely to be a cumulative effect on Viewpoint 3 as from this point the existing, consented Coronation WRS and haul road are clearly visible, along with aspects of the Deepdell WRS and a portion of the Mixed Tailings Storage Facility embankment. Seeing two aspects of the Coronation Pit Extension in this particular view will add another mining component to the view, but, again the scale of these two pit voids within this expansive view will limit the degree of accumulated effect. From Viewpoint 8, the addition of a portion of the Coronation Pit Extension will be a cumulative effect, but small scale of this additional mining element will limit the degree of accumulated effect.

From the one viewpoint on the north side of the Taieri Ridge where existing and proposed mining elements will be visible – Viewpoint 12 – there will be a definite cumulative effect as there will be the addition of another waste rock stack to this view and the proposed

[23] Scottish Natural Heritage (2005). *Guidance Note: Cumulative Effects of Windfarms.*

Coronation North WRS will be larger and closer to the viewpoint than the consent Coronation WRS.

In this case, the effects of scale and distance, combined with established mitigation measures, will limit the visual effect of the consented waste rock stack and similarly, with time, will limit the visual effect of the Coronation North WRS. The landform change brought about by the additional waste rock stack and the excavation of the Coronation North Pit and the Pit Extension will remain and be cumulative.

In terms of the overall cumulative landscape and visual effect of the Project, the effect would be negligible to low from Macraes Flat looking north to Taieri Ridge, but the effect will high to moderate from the one viewpoint on Longdale Road looking south to Taieri Ridge.

8 Conclusion

The current and recent mining activities of the Macraes Gold Project are a transient element within the Macraes landscape that starts with the raw and large-scale transformation of low production farmland into the open pits, waste rock stacks and tailings storage facilities. Given the depth of the pits, the height of the stacks and the length and height of the tailings containment embankments; this is considered an extreme landscape transition in New Zealand. However, this process in itself is transient and moves on to the rehabilitation phase of naturalised landforms of shaped and grassed hills and of open lakes; the former replicating the scale and shape comprising existing hills at Macraes. While the mining activities involve large scale earthworks, they occur within a large scale landscape. It is this scale and simple forms of the Macraes Flat landscape that means the mining activities are capable of being assimilated into the landscape once rehabilitation is complete.

The Coronation North Project will bring further mining activity to an elevated location –the Taieri Ridge – on the northern edge of the Macraes Gold Project site within Waitaki District and extending further into the Dunedin City District than does the existing, consented Coronation Mine Project.

In this landscape and visual assessment, it has been found that:

- relative to the Waitaki District Plan, the effect on visual amenity values that will arise from the Coronation North Project are minor relative to those effects already consented for the existing Coronation Mine Project and accepted as contributing to the central landscape identity for the Macraes Land Unit. Relative to Dunedin City District Plan, the Coronation North Project will affect a larger portion of the Taieri Ridge section of the High Country OLA under the operative District Plan and what will be Rural High Country Zone under the 2GP;
- with respect to twelve of salient and common public viewpoints considered, the Coronation North Project or aspects of the Project were not visible from five of these viewpoints – Viewpoints 4, 5, 7, 10 and 11, the potential visual effect was negligible or less from a further three viewpoints – Viewpoints 1, 6, and 9, and from a further three viewpoints yet, the potential visual effect would be low – View 2, 3, and 8. All of these are either in the Macraes Flat area – Viewpoints 1, 2, 3, 4, 5, 6, 7, 8, and 9 – or on the Hyde Hill section of the Macraes – Hyde Road – Viewpoints 10 and 11. A small aspect of just the Coronation Pit Extension is visible from some of the former viewpoints, whereas no aspect of the Coronation North Project is visible from the latter two viewpoints.
- In respect to the last viewpoint – Viewpoint 12, the effect will be high as much of the Coronation North WRS, some of the upper pit walls of the Coronation North Pit, along with sections of haul road will be visible from this isolated viewpoint on Longdale Road. Neither the Coronation Pit Extension nor the Coal Creek freshwater storage dam and reservoir will be visible from this viewpoint.
- As with the other components of the Coronation Project, the sections of haul road north of Horse Flat Road will be rehabilitated at mine closure.

- once the final shaping and revegetation of the Coronation North WRS that the photo-simulations illustrate, has been completed, along with that of the redundant haul roads, the general shape, slopes and colour of the completed and revegetated landforms will be in sympathy with the natural slopes of the area. In time, the visual effect of waste rock stack will reduce moderate-high to moderate and in a much greater length of time the Coronation North Pit void will become a lake.
- In terms of the overall cumulative landscape and visual effect of the Project, the effect will be low to negligible when seen from the southern or Macraes Flat side of the Taieri Ridge. From the north side of the ridge the cumulative effect will be high, but will become moderate with time.

Overall, mitigation measures will be built into the Coronation North Project from the outset. These include:

- careful design of the form of the waste rock stack to integrate it with the existing landform character of the area;
- progressive rehabilitation of the waste rock stack;
- restoration of the areas disturbed around the margins of the Project; and
- removal and restoration of the haul roads used during closure phase of the Project.

These proven measures have been effective in mitigating the potential visual effects of the existing waste rock stacks, being the most visible of the mining elements that have so far been constructed as part of the Macraes Gold Project.

This new mining activity – Coronation North Project - is an extension of previously consented activity and is not unexpected and will be seen in this landscape context as a continuation of the existing mining operation

Appendix 1 – Coronation Base Map

66,000 mE
68,000 mE
70,000 mE
72,000 mE
74,000 mE
26,000 mN
24,000 mN
22,000 mN
20,000 mN
18,000 mN
16,000 mN
14,000 mN
12,000 mN

Waitaki District Council
Dunedin City Council
Fullarton Stream
Welshmans Creek
Filly Burn
Mare Burn
Coal Creek
Maori Hen Creek
Trimbells Gully
Bushy Creek
Cranky Jims Creek

O'Neill
James Peddie (Longdale)
Vanderley (Deepdell Station)
C & M Howard
O'Connell

O'Neill
Howard
Peddie
O'Connell, R.
O'Connell, B.

MACRAES NORTH
EP 40 576

COAL CREEK
FRESHWATER DAM

OXIDE
STOCKPILE

CORONATION
NORTH
PIT

CORONATION NORTH
WASTE ROCK
STACK

TOPSOIL
STOCKPILES

CORONATION PIT
EXTENSION

MACRAES EXTENSION
MP 41 064

ROUND HILL
MP 52 738

OCEANAGOLD

MACRAES GOLD PROJECT
CORONATION NORTH

- Recorded archaelogical site
- Properties (houses) of interest
- WDC / DCC boundary
- WDC Macraes mining zone
- Land donated for heritage protection
- OGNZL property boundary
- OGNZL-owned land parcel
- Leased land parcel
- Other land parcel
- OGNZL mining / exploration permit

PROPOSED MINE ELEMENTS

- Access road to / within open pit
- Open pit boundary
- Open pit extension boundary
- Waste rock stack
- Additional pit infrastructure
- Coal Creek dam

Macraes North
True North
Magnetic North

0 500 1,000m

Scale: 1:40,000 @ A3
Datum: MGP Local Grid
Aerial Surveys Photography: 11 Jan 2016
LINZ RGB Photography: 2013 - 2014

Created by R.McLelland 20160420. Workspace: M_CoroNorth_ConsentingBasemap_20160420.wor

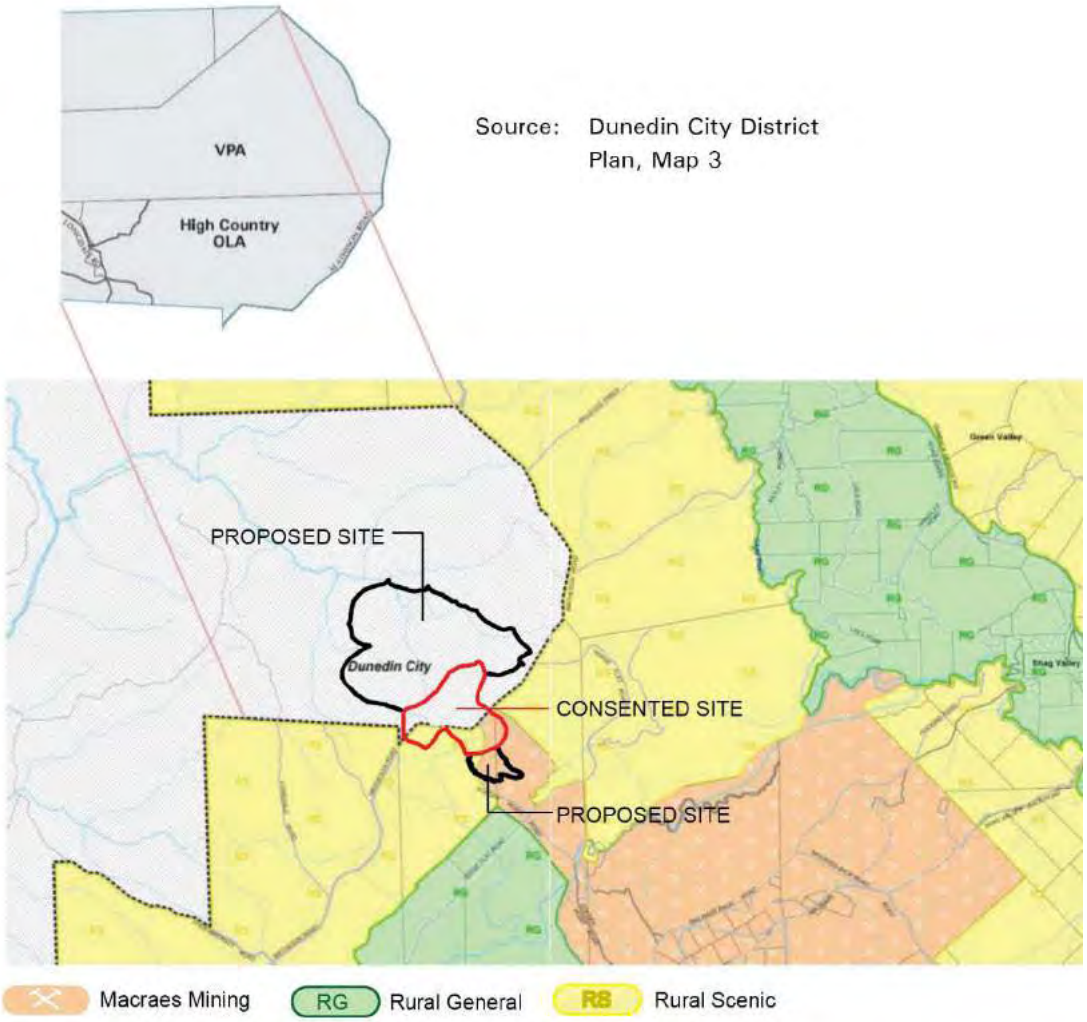


Figure 2. Zoning of the Site

Source: Waitaki District Plan, Maps 30, 31

Appendix 2 – Waitaki Landscape Study – Macraes Landscape Unit Description

"6.20 MACRAES LAND UNIT (P2)

6.20.1 Values

i) The Macraes Land Unit is a complex and sometimes rugged upland block of land forming the western boundary and visual skyline of the Palmerston group of land units, and part of the boundary of Waitaki District bordering the Dunedin City territory.

ii) The central identity derives from the settlement of Macraes Flat which is of national significance as the site of New Zealand's largest goldmine. Open cast hard-rock mining is carried out here at a massive scale, involving possibly the largest earthworks ever undertaken in New Zealand. Besides the large scale modern mine is preserved the historic early workings in this area, providing for a unique comparison of old and new technological development.

iii) The central and western portion of the Macraes Land Unit consists of a complex pattern of open upland valleys and ridges between 550-650m with rugged upstanding hardrock 'tor' features and tussock grasslands, much of which has now been 'smoothed' into pasturelands. The rugged landscape features make this a visually interesting area, and of landscape value due to its uniqueness within Waitaki District.

iv) Another significant value of the Macraes Land Unit is its northern and eastern margin, which forms a western skyline for the lowlands of the Palmerston Land Unit. The boundary between these two land units is more of a transition than the firm line shown on Map 7, the skyline consisting of a dissected and visually-open rolling edge.

v) The southwestern portion of this land unit consists of the Moonlight valley, a typical farmland landscape, and the more rugged Nenthorn area. These are unique in Waitaki in being raised areas with wide south-facing views, aligned firmly to the Taieri catchment of Dunedin City.

vi) The Waitaki/Dunedin boundary follows a convoluted course along Taieri Ridge and includes within Waitaki District, and therefore the scope of this study, slopes overlooking the Taieri between Middlemarch and Hyde.

6.20.2 Assessment

- *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 Taieri Ridge are assessed as Significant for visual and natural character reasons;*

- *The reserve containing historic mining activities, and its setting, are assessed as a significant landscape feature;*

6.20.3 Recommendations:

i) That the above Significant areas be adopted for inclusion in the Plan variation;

ii) That further discussions be held aimed at identifying an area of 'tor and tussock' landscape in the Macraes Flat to Nenthorn area, capable of becoming a 'no change' area that represents this increasingly rare landscape type."

Appendix 3 – Dunedin LMA Review

Taieri Ridge Landscape Unit Description

Landscape Character Description

The Taieri Ridge defines the eastern edge of Middlemarch Basin, with the Taieri River at its feet, and directly opposite the parallel block faulted Rock and Pillar range. From a smooth ridgeline profile ranging between 600-700 masl, the barren western face if the Taieri Ridge is strongly fissured with drainage gullies and striated with rocky outcrops and is essentially uninhabited. The eastern face drops sharply down to the Moonlight Flat at the top of Billys Ridge. The Moonlight flats landscape to the east of the ridge extends around the southern base of the Taieri Ridge, to the south-east of Middlemarch. Although a large part of the prominent Taieri Ridgeline falls within the Waitaki District boundary, it is a complete landform. Towards Hyde, as the Taieri Ridge veers eastwards into the Waitaki District, the western face of the ridge becomes increasingly contorted around the Mare Burn catchment. This undulating landscape of broad flat-topped hills, and scrub filled gullies extends around the north of Tiroti to the base of the Rock and Pillar range on the Dunedin City Border. The lower terrain of the Mare Burn catchment provides an important historical connection with the gold rich Macraes and Nenthorn areas to the west. There are also many small historic gold mine workings within the Taieri landscape around Hyde and Tiroti. The SH87 and Central Otago Rail Trail both carve passages through the Mare Burn landscape. There is a focal historic rail viaduct between Hyde and Tiroti.

Defining Elements

- Remote exposed barren landscape with a strong ridge profile
- Deeply fissured slope faces with rocky outcrops amongst a short tussock cover
- Traditional farm settlement confined to the leeward flats and Mare Burn catchment.

Sub-units

- Taieri Ridge
- Mare Burn

Visibility and Inter-visibility

The Taieri Ridge forms a prominent skyline and dramatic visual backdrop to the Middlemarch-Hyde basin, as well as representing a territorial boundary with Waitaki District to the east. The west face of the ridge may be panoramically viewed from within the Strath Taieri Plain, including from SH87 and the railway alignment. The Taieri Ridge landform is also viewed from numerous angles within the surrounding Strath Taieri Hills.

Sense of Place / Identity

Although significantly lower than the opposing Rock and Pillar range, the Taieri Ridge is an important landmark is defining the eastern boundary of the Taieri Plain and the territorial boundary of Dunedin City with Waitaki. The Mare Burn landscape links the foothills of the Taieri

with those of the Rock and Pillar and the upper valley of the Taieri River towards the northern boundary of Dunedin City.

Landscape Evaluation

Landscape values have been assessed as follows for the Taieri Ridge:

Natural features and legibility: High

- Block faulted ridgeline feature, with frequent rocky outcrops
- Fissured superficial drainage gullies, with occasional scrub vegetation
- Remnant lowland snow tussock and short tussock grasslands, cushion bogs, sedge and rush swamps along the ridgeline crest
- Skink habitat beneath rocky outcrops

Importance: Regional-Citywide

Cultural and Historic: High

- Historic traditional farming stations with associated routes and tracks
- Mining activities within Mare Burn
- Historic Maori route access Taieri Ridge
- Central Otago Rail Trail between Hyde and Tiroti, includes heritage engineering features

Importance: Citywide Regional

Aesthetics and Amenity: Medium-High

- Iconic landmark framing gateway into the Central Otago High Country and Waitaki District to the north. Defines Strath Taieri Plain
- Central Otago Rail Trail between Tiroti and Hyde
- SH87 Scenic corridor

Importance: Citywide-Regional

Overall Significance: High of Citywide-Regional importance

The Taieri Ridge is a significant landform that symbolically represents Dunedin's borders with both the Central Otago High Country and the Waitaki Districts. It has many cultural and historic associations with both European and Maori histories.

Landscape Issues (Threats and Opportunities)

The Taieri Ridge landscape is most suited to extensive pastoral farming. Whilst the siting of structures or planting on the Taieri Ridge or its western slopes will be entirely inappropriate, this seems an unlikely scenario given the remote, exposed nature of this landscape. The encroachment

of development activities and inappropriate structures from within the foothills on the boundary with the Strath Taieri Plain should however be prevented. The Mare Burn landscape in the vicinity of SH87 has a greater capacity to accommodate rural residential and lifestyle development that the exposed foothills of the Taieri Ridge. The remote upper reaches of the Mare Burn landscapes towards Highlay Hill and Sister Peaks are visually contained, although they are also physically exposed landscapes. It is most likely that they will continue to be traditionally farmed, but should be protected from any future development activities that could potentially detract from the scenery and inherent natural and cultural values of the High Country landscape.

Planning Status

The Taieri Ridge is currently included within the existing High Country Outstanding Landscape Area that extends to the Rock and Pillar and Lammermoor Ranges. It is classed as entirely visually prominent. A significant swamp habitat, with natural conservation values has been identified on the immediate ridge, whilst the underlying zone is rural.

Recommendations:

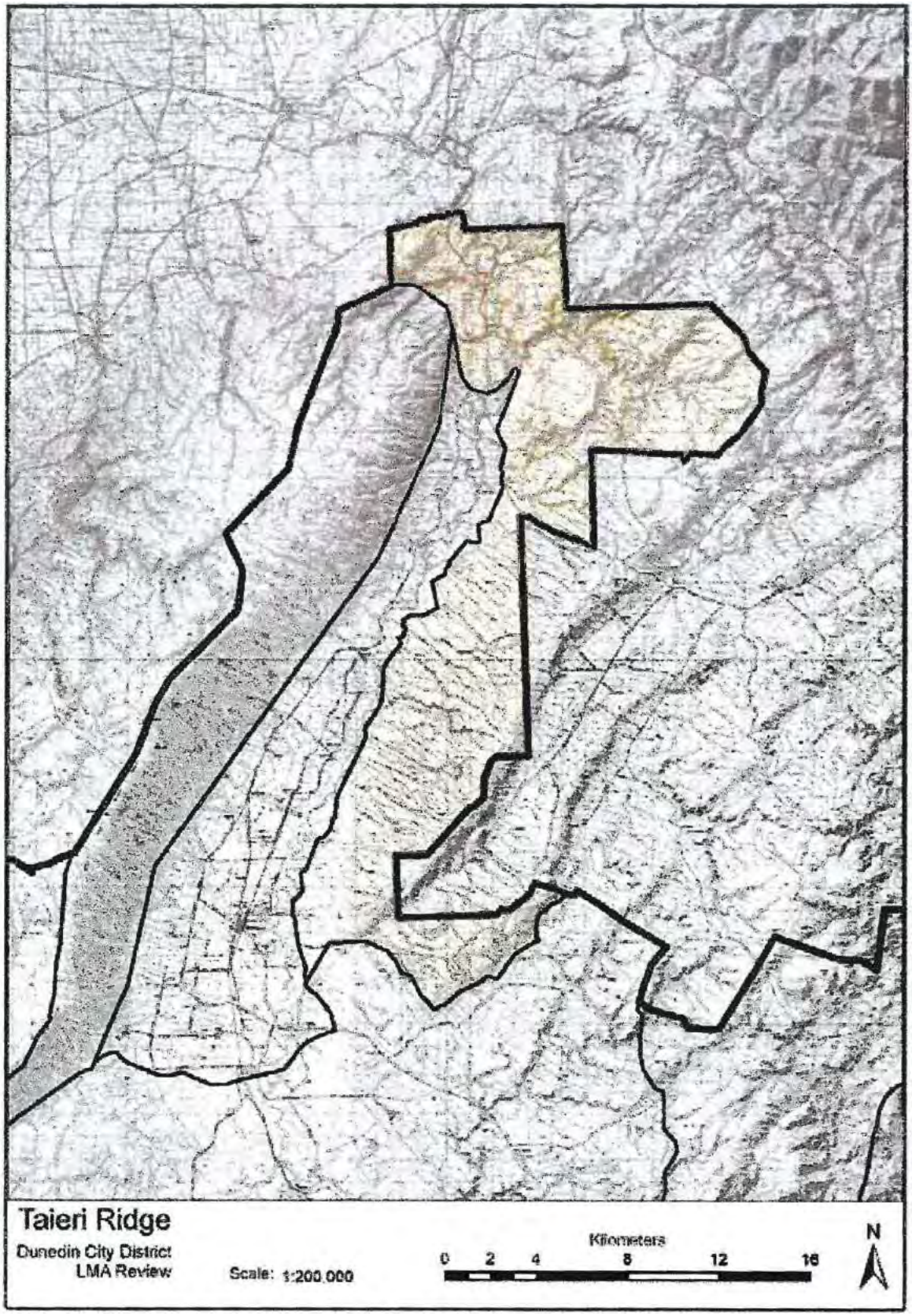
- Retain Taieri Ridge as a Outstanding Landscape
- Identify Taieri ridgeline as significant Landmark Feature
- Identify Mare Burn area as Rural Amenity Landscape
- Identify SH87 and Central Otago Rail Trail as Strategic Scenic/Historic Corridors
- Identify Taieri River as a significant natural feature/corridor

Landscape Objectives	Possible Strategies
Maintain the existing natural, historic and aesthetic values of the Taieri Ridge through appropriate protection and management	• Reserve Management Plan • Restricted development activities
Protect the ridgeline profile of the Taieri Ridge as a significant landmark feature and cultural route	• Protected landmark status, with appropriate development restrictions • Viewshaft protection controls
Protect and promote visual amenity qualities of identified scenic corridors	• Visual controls on activities within viewing range of scenic routes • Identify key view/points/lookouts
Integrate and manage extensive pastoral activities as part of management of Taieri Ridge and Mare Burn areas	• High Country Management and practice guidelines • Sustainable development objectives

Retain the traditional character and historic features of the valley landscapes between Hyde and Tiroti	• Protected heritage landscape features • High Country Management practice guidelines
Protect and promote natural, aesthetic and amenity values of the Taieri River and Valley through Mare Burn	• Catchment Management Plan
Integrate with adjacent landscapes and Districts	• Cross boundary considerations

Key Stakeholders Include:

- Landowners and Federated Farmers
- Residents
- NZHPT
- DoC
- Central Otago Rail Trail
- Transit NZ
- NZGPS
- Waitaki District Council
- Central Otago District Council


Taieri Ridge
Dunedin City District
LMA Review
Scale: 1:200,000
Kilometers
0 2 4 8 12 16
N

Appendix 4 – Rural Character Assessment Dunedin City – Taieri Ridge Landscape Unit Description

5.17 Taieri Ridge

Taieri Ridge rises from the Taieri River on the eastern side of the Middlemarch basin and forms a smaller yet parallel ridge to the Rock and Pillar Range. Facing north east, this is a dry schist landscape dotted in tors and rock outcrops, with distinctive features clearly visible from the Strath Taieri Plain. The sloping faces of the range are largely inaccessible – utilised for set stocking by farms spanning both the ridge and the more fertile river flats. On the more gentle sloped rolling tussock land is incised by deep rocky gullies dividing the landscape, showing bare rock and marginal woody vegetation.

The entire area is dry, but increasingly so further north. Density of schist outcrops decreases towards the north ad well and the land flattens out somewhat, encouraging farming despite the dryness of the area. Sheep and beef farming is the predominant land use in the Taieri Ridge character area with a small part under plantation forestry. The farmland is a mixture of rock and tussock over sown with pasture, as well as areas of modified pasture where cultivation is possible. In these areas large groups of tussock remain around rock outcrops and in gullies. Overall the area appears in moderate health, with extensive pastoral farming being suited to the vicinity. Much of the area is protected from conversion into intense pasture as a result of the rocky underlying geology, landforms, and a lack of available water for irrigation. Keeping marginal lands in tussock will help to both maintain and generate water retention for the surrounding areas, as well as creating ecosystems important for the retention of local biodiversity and wildlife.

Traditional methods of farming in these marginal areas have included removing excess tussock and browntop pasture, resulting in a reduction of pasture growth over time, as well as destroying the overall ecology, quality of organic matter and invertebrate populations. In more recent times, over-sowing has commonly replaced the method of burning. Similar to the Rock and Pillar Range and other uplands of the Taieri Ridge.

Irrigation of the lower sloped bounding the Taieri River allows the development of more intensive farming units. Currently this combination of river flats and hill country provides a farming system that is sited to this land. However, future farming changes in this area could potentially see the lower irrigated flats subdivided to generate more intensive farming units. If this were to occur, the upper slopes will become uneconomic and marginal units, affecting the feasibility of the remaining farmland, and the character of the area.

The Taieri Ridge landscape area also includes the more northern Mare burn catchment, as well as Hyde and it surrounds. This area is separate from the Taieri ridgeline itself, and has a much lower undulating landscape. Its character slips back into that of the pastoral farming activity found on the Strath Taieri valley floor. Testimonies to these activities include cattle yards, farmsteads and shelterbelts. Subdivision for lifestyle block development could take place on the more undulating slopes around Hyde and Mare burn. While this area could absorb such development within its landscape, any such activities should be carefully planned and controlled.

The presence of minerals such as gold in the surrounding area has also played its part in the development and use of this landscape and encouraged settlement and mining for a brief period. Current day exploration for minerals in the north eastern corner of the Taieri Ridge area would suggest further extraction is likely to occur in the future. Historic relics of gold mining activities can still be found within the foothills area, encouraging heritage tourist activities, as well as providing another point of transition into the neighbouring Central Otago District. Other tourist involvement in this region includes the Central Otago Rail Trail, which passes through Hyde, as well as State Highway 87 – carrying both tourists and nationals along this scenic corridor. This increase in tourism will have flow-on effects to those landowners wishing to take advantage of this emerging industry.

Given the interwoven territorial boundary zigzagging across the eastern Taieri Ridge, between Dunedin District and the neighbouring Waitaki District, management of the area could benefit from local authorities working together to ensure the character and ecology is considered as a whole. Given the possibility of further resource-hungry extraction industry occurring, the cross-boundary demand for water resources will also require attention from local and regional councils.

The Taieri Ridge character area is perhaps less affected by the rapid change that is occurring in other parts of the Dunedin City. The availability of moisture underpins the sustainability of farm practice in this dry land environment, its steep hill land position restricting the potential for irrigation. In many instances this limitation is offset by these landowners having areas of irrigated flats bouncing the Taieri River. Achieving economies of size has become necessary for farmers otherwise constrained by their physical environment. This has led to changing far ownership patterns in recent years, creating larger and consolidated farms. Such a trend is likely to continue, with an associated change in rural community.

Changing societal demands will provide both costs and opportunities for farmers in this area. The impending Emissions Trading Scheme will be difficult for farmers to effectively manage, with limited options for on-farm mitigation in this dry environment. The added cost to these farmers will further decrease farm profitability, increasing the likelihood of changes in farm ownership patterns. Innovative farmers will capitalise on the unique landscape within which they farm, seeking to add value to livestock products which are currently export-based commodities. Shifting to marketing outlets that encourage local support of low-input farming systems is one possibility of increasing profitability.

Appendix 5 – Proposed Otago Regional Policy Statement – Schedule 3 and 4 Matters

Schedule 3

Significance Threshold

When determining whether adverse effects are 'significant', consider matters including;

1.	Nature of the effect	A detailed description of the effect that is occurring, or might occur. This forms the basis for accurate assessment of significance.
2.	Status of resources	The importance of the resource – locally, regionally or nationally (Effects on rare or limited resources are usually considered more significant than impacts on common or abundant resources).
3.	Proportion of resources affected/area of influence	The size of the area affected by the activity will often influence the degree of impact (i.e. affecting a large area will generally be significant). Affecting a large proportion of a limited area or resource will tend to be significant.
4.	Persistence of effect	The duration and frequency of effect. (For example, long-term or recurring effects as permanent or long-term changes are usually more significant than temporary ones. The ability of the resource to recover after the activities are complete is related to this effect).
5.	Sensitivity of resources	The effect on the area and its sensitivity to change (The sensitivity and vulnerability of the resource and its capacity to accommodate change without compromising the values of the feature or area. Impacts to sensitive resources are usually more significant than impacts to those that are relatively resilient to impacts).
6.	Reversibility or Irreversibility	Whether the effect is reversible or irreversible. Irreversibility will generally be more significant (depending also on nature and scale), and reversibility the converse.
7.	Probability of effect	The likelihood of an adverse effect resulting from the activity. Unforeseen effects can be more significant than anticipated effects. (Adopting a precautionary approach may reduce the likelihood of adverse effects occurring.
8.	Cumulative effects	The accumulation of impacts over time and space resulting from the combination of effects from one activity/development or the combination of effects from a

	number of activities. Cumulative effects can be greater in significance than any individual effect from an activity (for example, loss of multiple important indigenous sites).
9. Degree of Change	The character and degree of modification, damage, loss or destruction that will result from the activity. Activities that result in a high degree of change are generally more significant.
10. Magnitude of effect	The scale and extent of possible effects caused by an activity (for example on the number of sites affected, on spatial distribution etc.). Activities that have a large magnitude of effect are generally more significant.

Schedule 4

Criteria for the identification of natural features and landscapes

The identification of natural features and landscapes will be based on, but not limited to, the following factors:

1. Biophysical attributes	a) Natural science factors, including geological, topographical, ecological and dynamic components.
	b) The presence of water including in seas, lakes, rivers and streams.
	c) Vegetation (native and exotic).
Sensory attributes	a) Legibility or expressiveness – how obviously the feature or landscape demonstrates its formative processes.
	b) Aesthetic values including memorability and naturalness.
	c) Transient values including presence of wildlife or other values at certain times of the day or year.
	d) Wild or scenic values.
2. Associative attributes	a) Whether the values are shared and recognised
	b) Cultural and spiritual values for takata whenua, identified by working, as far as practicable, in accordance with tikanga Maori: including their expressions as cultural landscapes and features.
	c) Historical and heritage associations

Appendix 6 – **Previous 'Landscape'** Condition(s)

Following are the 'Landscape' condition(s) from the consented Coronation Mine Project; being 5 conditions from a set of 19 conditions

OCEANAGOLD
DCC & WDC CONSENT AND CONDITIONS
22 NOVEMBER 2013

Waitaki District Council and Dunedin City Council

LAND USE CONSENT "CORONATION" – OCEANA GOLD (NZ) LTD

WDC Reference: 201.2013.360
DCC Reference: LUC-2013-225

4. REHABILITATION

4.1 The rehabilitation objectives to be achieved by the consent holder are:-

(a) To ensure short and long term stability of all structures and works and their surrounds:

(b) To avoid maintenance after completion of rehabilitation requirements:

(c) To protect soil from erosion and to protect water from contaminants affected by mining operations;

(d) To stabilise and rehabilitate the banks and surrounds of any waterbodies;

(e) To return land as closely as possible to its original condition, including any exotic pastoral and indigenous species appropriate to the area; and

(f) To visually integrate finished structures, land-forms and vegetation into the surrounding landscape so they appear to be naturally occurring features; and,

(g) To control invasive environmental wees, including wilding conifers, in the Disturbed Land for the Life of the Macraes Gold Project.

Earth Shaping and Visual

4.2 The consent holder shall locate, form and shape all earthworks so that their profiles, contours, skylines and transitions closely resemble and blend with the surrounding natural landforms. If earthworks cannot be fully naturalised, the consent holder shall minimise the extent of their visibility and maximise their integration into the surroundings.

4.3 The consent holder shall use a Landscape Architect in the planning and design of all permanent earthworks and structures.

Waste Rock Stack

4.4 The consent holder shall design and construct the waste rock stack in accordance with the following principles:

(a) Slopes shall be suitably concave or convex in cross-profile to match nearby natural slopes;

(b) Slope gradients shall be no steeper than nearby natural surfaces;

(c) Transitions between natural and formed surfaces shall be rounded and naturalised.

(d) Contours should be curvilinear in plan form, in keeping with original natural contours in that area.

(e) The skyline shall be variable and curved, simulating natural skylines;

(f) New landforms shall be aligned and located so they seem to continue, not cut across, existing landscape patterns; and

(g) Silt ponds shall be removed and the site rehabilitated or be converted to stock water drinking ponds following completion of mining operations and rehabilitation.

4.5 Where practicable the waste rock shall be backfilled into pits in order to minimise the size of waste rock stack.

4.6 Prior to the commencement of the Coronation waste rock stack, the consent holder shall in consultation with the Councils, design the shape and construction details of the stack. The final design and construction details shall be lodged with the Councils and include a report prepared by a Landscape Architect that includes, but is not limited to, the following:

(a) A detailed description of the adjoining landforms; including their slopes and transitions; and

(b) A detailed discussion on how the proposed waste rock stack meets the principles set out in condition 4.4 (a) – (f)

4.7 If after commencement of the construction of the Coronation waste rock stack, the consent Holder wishes to change the design or construction details it shall design the changes in consultation with the Councils. The design or construction changes shall be lodged with the Councils. The change document shall include a report by a Landscape Architect that details the proposed changes and reassess whether the design changes better meet the principles set out in condition 4.4 (a) – (f).

Soil

4.8 The consent holder shall, as far as practicable, stockpile soil from any disturbed land, unless the soil is required to be left in place to protect water and soil values.

4.9 All salvaged soil shall be used on disturbed land for rehabilitation purposes.

Revegetati11on

4.10 The consent holder shall in accordance with the rehabilitation objectives undertake progressive rehabilitation of disturbed land as operational activities allow. It shall be revegetated with:

(a) Exotic pastoral species; and

(b) Tussock species, which are as far as practicable sourced from the Macraes Ecological District.

4.11 The consent holder shall maintain vegetation cover until the expiry of this consent and ensure that the vegetation, including any vegetation established on disturbed land, shall be self-sustaining after expiry.

Soil and Vegetation Monitoring

4.12 At three yearly intervals, the consent holder shall complete a review of all soil and pasture on land that has been rehabilitated. The first review shall be not later than the third anniversary of the commencement of this consent. The review shall include, but not be limited to, the following;

(a) Monitoring for ground cover, species components, plant nutrition status, soil organic matter and concentrations of exchangeable nutrients in the soil;

(b) Analysis and interpretation of the monitoring results by a suitable qualified soil or agricultural scientist;

(c) Evaluation of the vegetation and its potential to be self-sustaining for pastoral farming after mining ceases; and

(d) Any necessary recommendations for future rehabilitation, including plant species or varieties to be used, cultivation and seeding methods to be introduced, or fertilisers to be used; and,

(e) A copy of the review will be forwarded to the Councils and Department of Conservation within three months of the review being completed.

10 LIGHTING

10.1 All flood lighting luminaires that could potentially cause a glare nuisance or a traffic hazard shall be fitted with shields and, as far as is practicable, orientated so that the principal output is directed away from residences and traffic.

12 FINAL PIT LAKES

12.1 The pit lake shall, at all times, have sufficient freeboard to fully contain waves induced by landslides and earthquakes.

12.2 No less than twelve months prior to commencement of filling of the pit lake, the consent holder shall provide the Councils with a Closure Manual for the lake. The manual shall include, but not be limited to;

(a) Details of how Condition 12.1 shall be achieved;

(b) Details of the lake filling, including but not limited to mean flow-rates, location of inflows and the quality of the discharge; and

(c) Details of the long term pit wall stability.

12.3 The consent holder shall exercise this consent in accordance with the Closure Manual. The consent holder shall review the manual annually and if necessary update it. Confirmation

of the review shall be included in the Project Overview and Annual Work and Rehabilitation Plan. The consent holder shall provide the Councils with any updates of the plan within one month of any update occurring.

15 NATURE CONSERVATION AND LANDSCAPE VALUES

15.1 Prior to exercising this consent the consent holder shall engage a suitably qualified and experienced ecologist to prepare and submit to the Councils a Coronation Project Ecological Management Plan ("EMP"). The purpose of the EMP is to ensure compliance with conditions of this consent and otherwise to minimise the actual and potential adverse effects on the threatened species and general ecological values. The EMP shall be developed and prepared in consultation with the Department of Conservation and the consent holder shall provide a copy to the Department of Conservation, ORCand Councils. The EMP shall;

(a) Include sections covering vegetation management, lizard management, avifauna management and aquatic management;

(b) Have the following objectives;

(i) To minimise the adverse effects from the implementation of the Coronation Project on indigenous vegetation; resident lizard populations; indigenous avifauna and aquatic biota;

(ii) To protect and enhance indigenous flora and vegetation types; resident lizard populations, indigenous avifauna and aquatic fauna;

(iii) To maintain and enhance riparian systems and man-made waterbodies.

(c) Detail the methods by which the objectives set out in Condition 15.1(b) shall be achieved, including;

(i) Protection and enhancement of Cranky Jims wetland area.

(ii) transplanting of threatened plants.

(iii) rehabilitation planting of Disturbed Land with species including *Chionochloa rigida subsp*. *Rigida* (narrow-leaved snow tussock). *Festuca nz* and *Poa cita;* and

(iv) fencing of areas to be protected (if any);

(v) environmental weed control, including wilding conifer;

(vi) minimisation of construction effects;

(vii) monitoring;

(viii) mammalian herbivore control;

(ix) relocation of lizard species, if necessary;

(x) investigation of existing waste rock stacks for potential lizard habitat.

(d) Address aquatic mitigation required to ensure the objectives set out in condition 15.1(b) are achieved, , including;

(i) Identifying populations of aquatic fauna that are to be protected. This shall include, but not be limited to, freshwater crayfish (Koura) and flathead galaxiids.

(ii) identifying the threatening processes that are affecting the identified populations, including assessing whether reduced flows arising from the exercise of this consent will adversely affect galaxiid populations between the Project area and monitoring point MB01;

(iii) identifying the location of the new habitat that the populations will be translocated to. Preference will be given to translocating Koura to within the Maori Hen Creek catchment unless in the expert opinion of the ecologist this would result in a poorer outcome for the Koura than translocating them elsewhere;

(iv) identifying threats to any translocated populations in their new habitat, such as predation and seasonal flow variations;

(v) providing a detailed methodology that identifies how and when the identified populations are to be protected or how adverse effects on identified populations will be mitigated;

(vi) providing a framework for the monitoring and reporting of mitigation activities; and

(vii) providing a methodology to allow for the evaluation of the effectiveness of the mitigation activities.

(e) The consent holder shall implement the programme of activities specified in the EMP and in any subsequent EMP reports created pursuant to condition 15.2(c).

(f) Any translocation of species undertaken shall not adversely affect any existing population of native fish.

15.2 The consent holder shall engage a suitably experienced and qualified ecologist, to prepare and annual report.

(a) Describing the works and other actions completed by the consent holder in the previous twelve months in order meet the purpose and objectives of the EMP; and

(b) Evaluating the progress of the rehabilitation planting of disturbed land and enhancement planting of offsite areas, and its potential to be self-sustaining after mining ceases.

(c) Describing what methods are to be implemented in the following 12 months in order to meet the purpose and objectives of the EMP.

The consent holder shall provide the Councils and Department of Conservation with a copy of the report by no later than 31st July each year.

15.3 The consent holder shall set aside one area of approximately 95ha of indigenous vegetation and wetlands in the Cranky Jims wetland area (as indicatively shown marked in red on the Cranky Jims wetland area (plan annexed as appendix 2) and protect, fence and manage these as appropriate to provide:

(a) Protection and enhancement of Cranky Jims wetland though the control of exotic rushes, fostering of rare species characteristic of the Macraes Ecological District and through plantings of indigenous plants such as *Carex tenuiculmis, Isolepsis basilaris, Gratiola concinna, Tetrachondra hamiltonii, Cardamine "Tarn", Crassula speciss* and *iphegenia nz;* and

(b) Protection and enhancement of rare and endangered plants including *Celmisia hookeri, Olearia bullata, Chionochloa rubra subsp. Cuprea* as appropriate; and

(c) Protection and enhancement of bird and lizard habitat; and

(d) For grazing by cattle and sheep to be limited to no more than one stock unit per hectare and for farming activities that would adversely affect the area, namely ploughing, fertilising, burning and vegetation clearance, to be prohibited.

(e) The area may be sown with pasture seed, but the decision as to how much area is to be sewn, and pasture type shall be made in consultation with the Department of Conservation.

(f) All plantings shall be maintained and mortalities above 20% within 12 months of planting shall be replaced.

15.4 The Department of Conservation shall be consulted over the location of any fence lines required to achieve the objectives contained in condition 15.3 above.

15.5 The final boundaries of the areas to be set aside in accordance with 15.3 above shall be determined, in consultation with the Department of Conservation, by the ecologist engaged under Condition 15.2 and a plan showing the areas shall be submitted to the Consent Authority within 6 months of the commencement of this consent. The required fencing work shall be completed within 12 months of the consent holder exercising this consent.

15.6 In relation to the areas set aside under 15.3 above, within 12 months of completion of fencing, in order to control invasive environmental weeds in the areas the consent holder, in consultation with the Department of Conservation, shall develop and implement a monitoring and management programme for the control of invasive environmental weeds during the life of the Macraes Gold Project. The purpose of the programme will be to ensure that invasive environmental weeds are targeted for control. To achieve this, the consent holder shall identify and document the extent of invasive environmental weeds within the site at the commencement of the consent and target the environmental weeds to zero density using manual and/or herbicide treatment. Thereafter, each spring, during the term specified within this condition, the consent holder engage a suitably experienced and qualified ecologist, who is familiar with the Macraes Ecological District to survey the extent of invasive environmental weed species and recommend control measures as appropriate. A copy of the recommendations shall be forwarded to the Councils and the consent holder shall carry out the recommended control measures.

15.7 In relation to the areas set aside under conditions 15.3 above, within 12 months of completion of fencing, to control mammalian herbivores the consent holder in consultation with the Department of Conservation, shall engage a suitably qualified and experienced ecologist to recommend a mammalian herbivore control programme. The consent holder shall carry out a mammalian herbivore control programme in accordance with recommendations made by the ecologist. Control measures may include but will not be limited to trapping and baiting. The purpose of the programme will be to ensure the density of mammalian herbivores such as rabbits, possums, pigs and deer are at the following densities during the life of the Macraes Gold Project.

(a) Rabbits- Modified McLeans scale 2 or less

(b) Possums- residual trap catch of 4% or less

(c) Pigs and deer- zero density

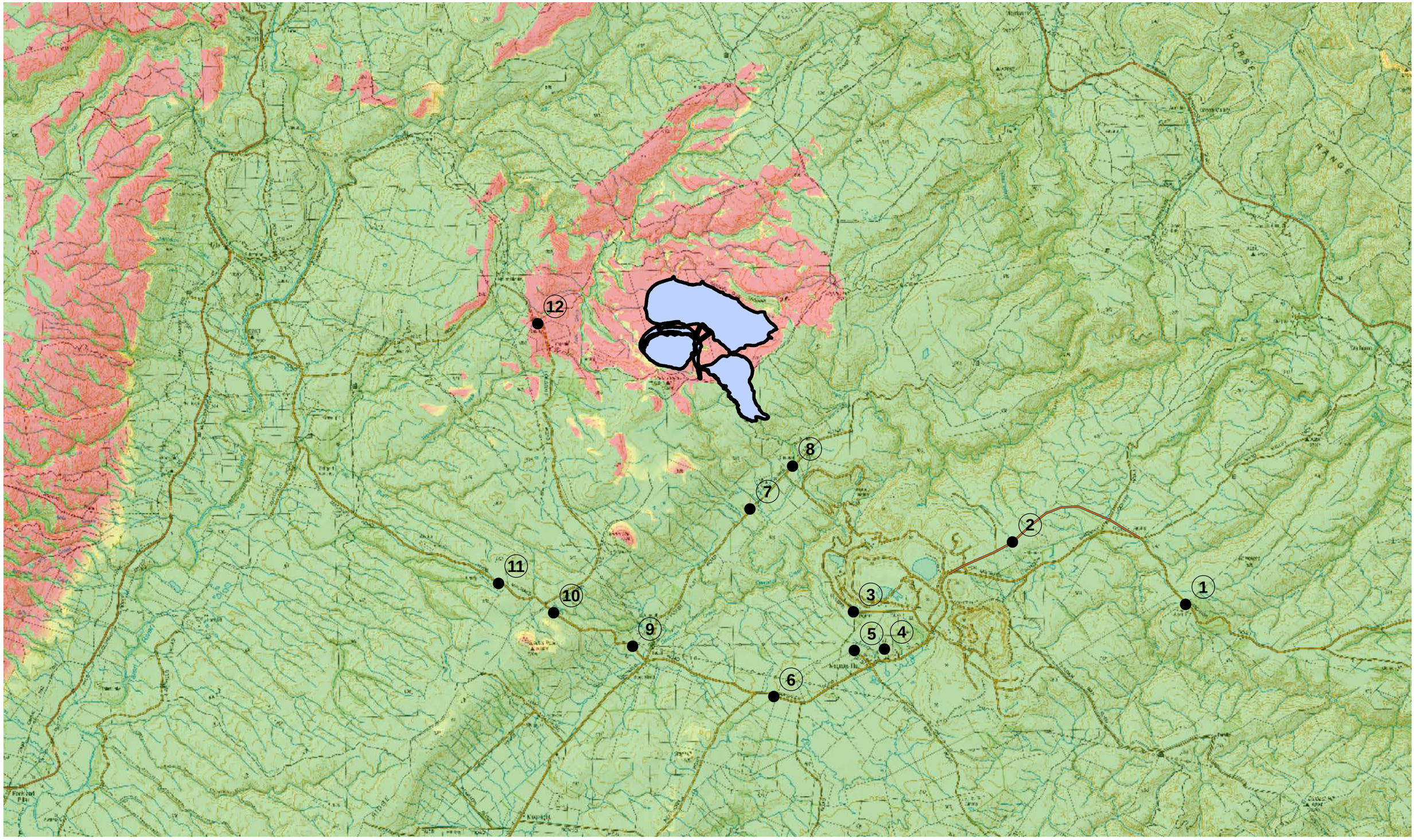
15.8 The consent holder shall within 36 months of exercising the consent register of QE11 covenant, or equivalent covenant approved by the Councils such as a conservation covenant under the Reserves Act 1977, against the relevant land titles, recognising the protection of the areas referred to in Condition 15.3 above.

16 FENCING

16.1 Stock-proof fencing shall be used to keep livestock away from all working areas.

16.2 On the completion of mining operations the consent holder shall ensure that all fences, required to restrict people and/or stock for safety purposes, are installed and maintained. This shall include fences to be installed and maintained around Coronation pit lake.

Appendix 7 – Viewshed Map



Viewshed Map 1

OPUS

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Legend

Site

Viewpoints

Areas that are visible:

Directly visible

Less visible

Not visible

Macraes Mine North

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SCALE: N/A

DATE: April 2016

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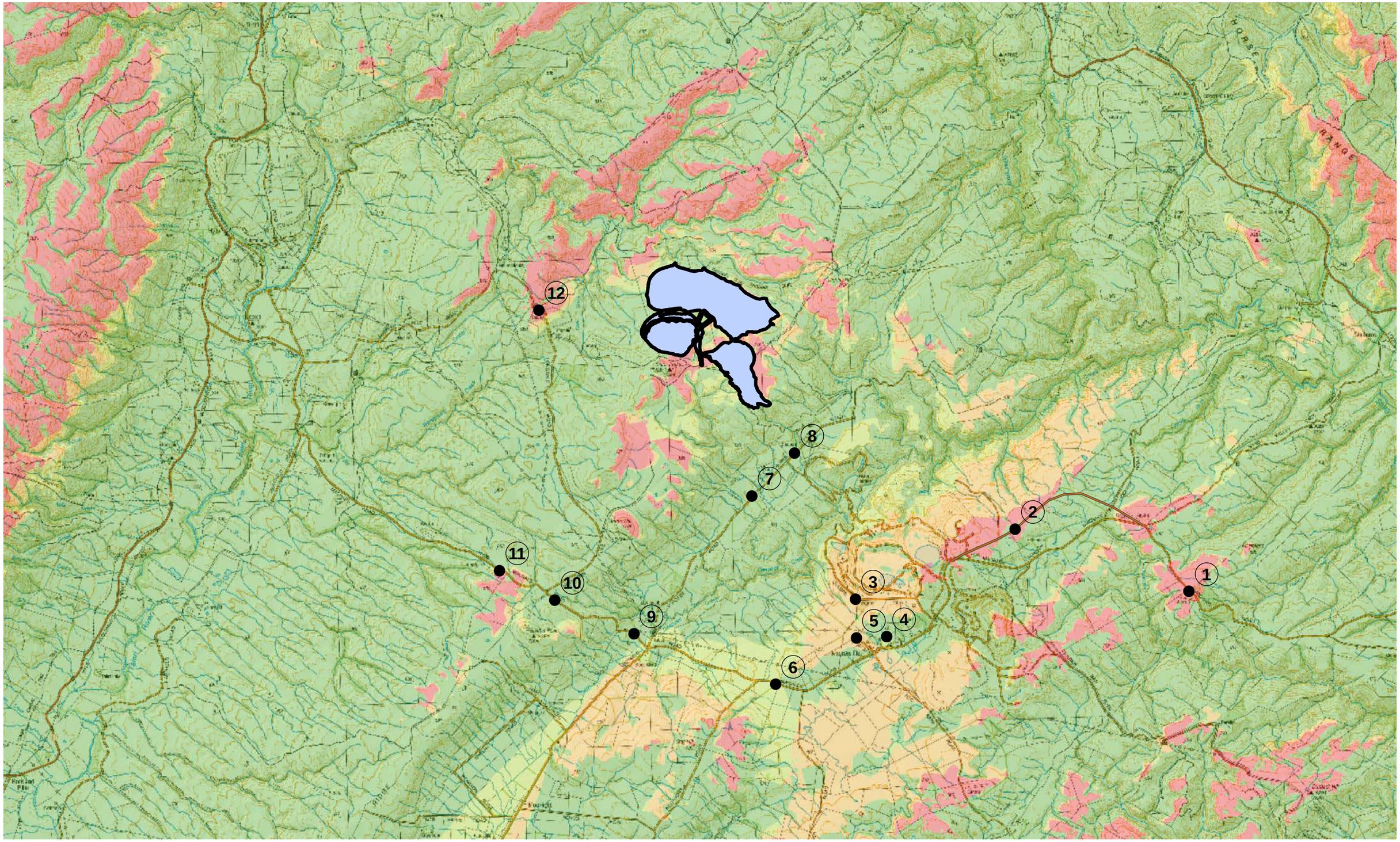

Viewshed Map 2

OPUS

Oceana Gold: Coronation North Project - Landscape and Visual Assessment

Legend

Site

Viewpoints

Areas that are visible:

Directly visible

Less visible

Not visible

Macraes Mine North

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DATE: April 2016

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Appendix 8 – Photos and Photo-simulations

Preparation of Photo-simulations

Introduction

The photo-simulations or visualisations were prepared by Jutta Horn, Graphic Designer, using best visualisation practices. The photographs were taken by David McKenzie, Technical Principal, Landscape Architecture and Jack Earl, Landscape Architect; all of Opus.

Methodology

Viewpoint locations were decided, marked and surveyed to later tie into the mine design CAD model. Local visual reference points, such as local roads and shelterbelts were also identified and surveyed for location and level for use as height and location checks in later modelling.

Photographs have been taken using a DSLR camera (Pentax K-r) with a 50 mm lens setting and this focal length was used consistently for all the photographs taken. The 50 mm setting was used as this produces a reasonably focussed representation of what is seen by the human eye. It is also our understanding that by using a 50mm lens an image is achieved that is of the same size as seen by the human eye, as opposed to a 38mm lens (wide angle) which reduces the size of the image.

As a wide field of view was required to best represent particular components of the Project over a relatively wide area of view, each view was made up of a series of photographs tiled together to form a panoramic simulation with the individual images 'stitched' or digitally merged in "Adobe Photoshop".

A computer model was created in "Autodesk Civil3D" using topographical data as part of the overall roading design for the Project. This model was then transferred to "'3D Studio Viz" (a 3D visualisation programme) and was used as a basis for illustrating the waste rock stack formation and associated haul road alignment components of the Project depicted in the visualisations.

The viewpoint position, height and focal length of the lens of the original photo images were used to define a representative camera setting in 3D Studio Viz model at the same position, height and focal length. The 3D Studio Viz software has camera matching capability and by using the photo panoramic image as a background and by employing utilities within the programme, the model was orientated, sized and positioned to best represent how each component of the Project will look against the panoramic background.

Rendered images of the roading model were produced in 3D Studio Viz as a reference for the graphic designer. These rendered images were to the same height and width proportions as the base photo panorama.

The image of the rendered model alone was then brought into "Adobe Photoshop" as a unique layer and overlaid on the base photo panorama.

Using "Adobe Photoshop" effects and tools, the graphic designer then enhanced the combined image. For instance, brought foreground objects to the front, erased background objects that would be hidden or removed, and added a visual representation of the indicative landscape mitigation measures. Further digital manipulation has been carried out to provide "realistic" effects to the modelled simulation and rendered materials.

Conclusion

The visualisations provided show the Project's waste rock stack and haul road digitally placed into photo backgrounds in proportion to landforms and objects in the same location. They have been manipulated in an attempt to produce a "realistic" impression and they should be treated as artist's impressions only.

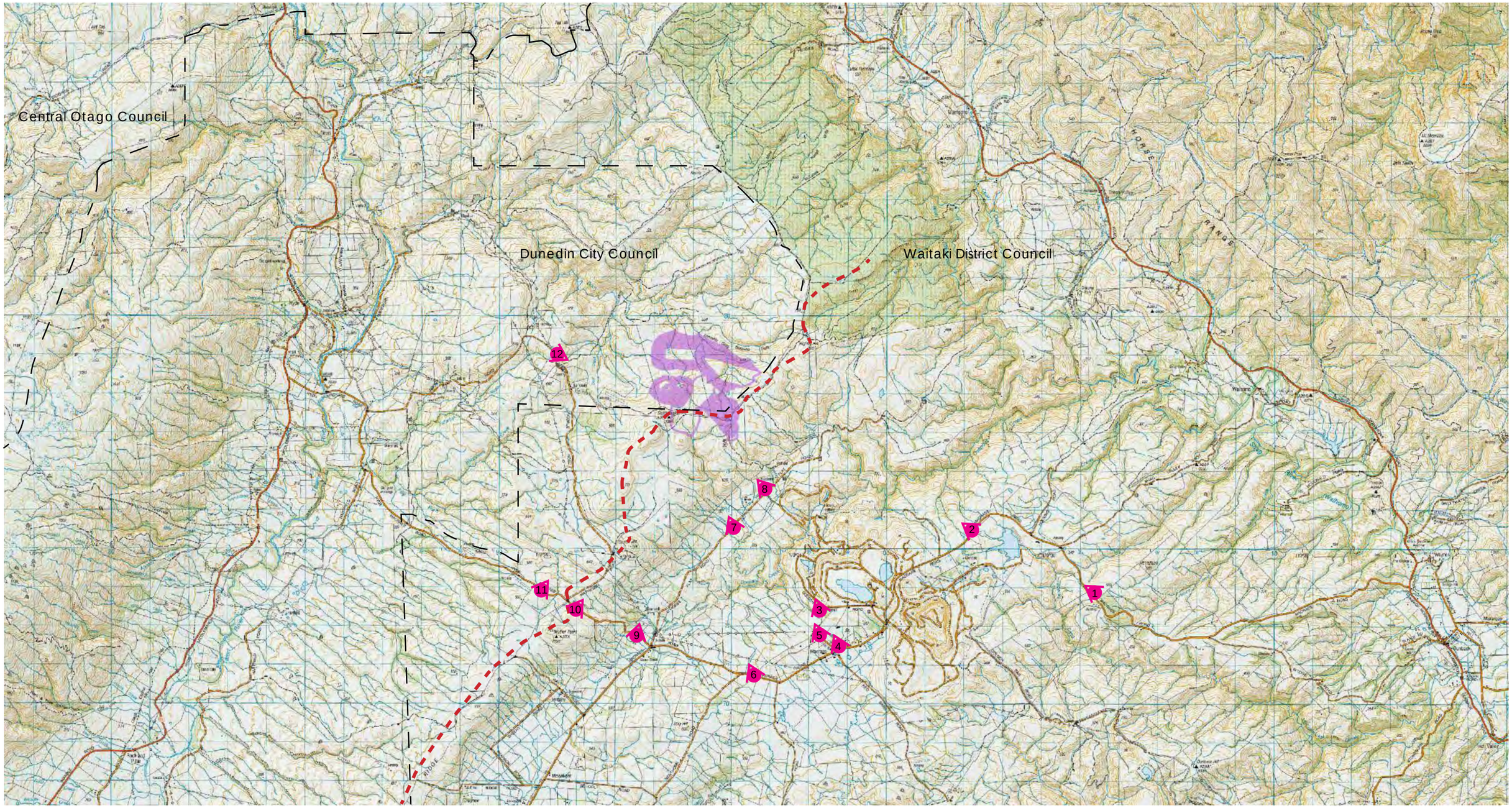

Photo Viewpoints

Legend

Ridge line

District boundary

Proposed Coronation North pit, pit extension, WRS and consented works

Photo viewpoints

Macraes Mine North

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0km 1km 2km
.5km 1.5km 2.5km

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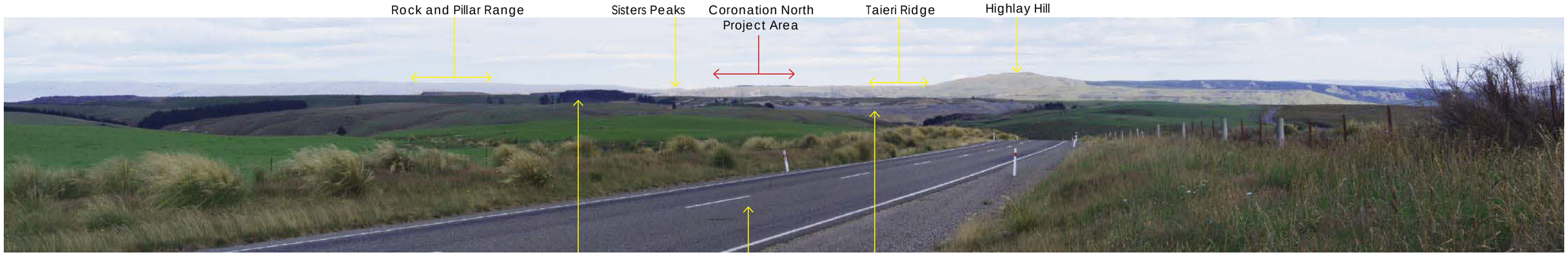

Viewpoint 1 - Sailors Cutting, Macraes Road

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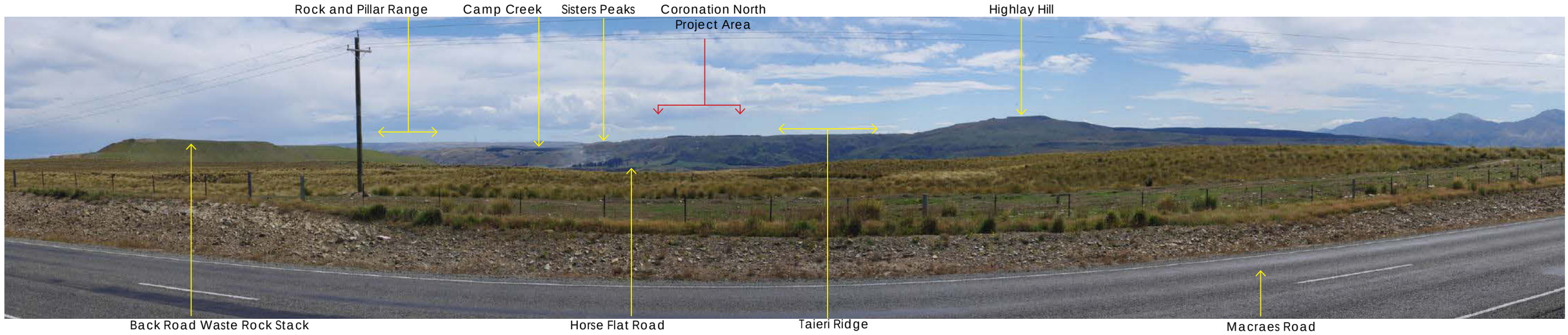
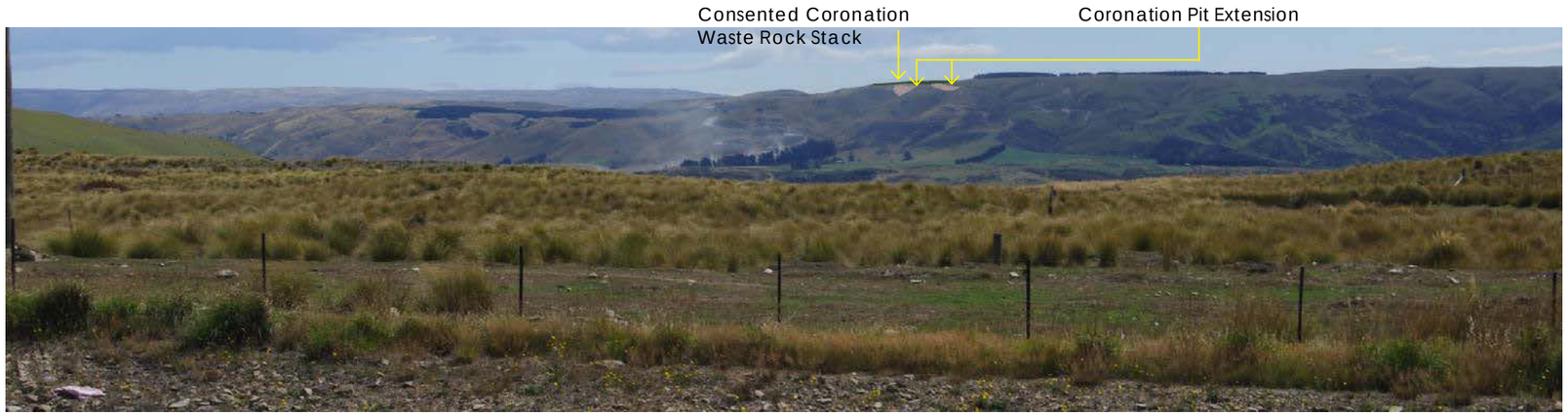
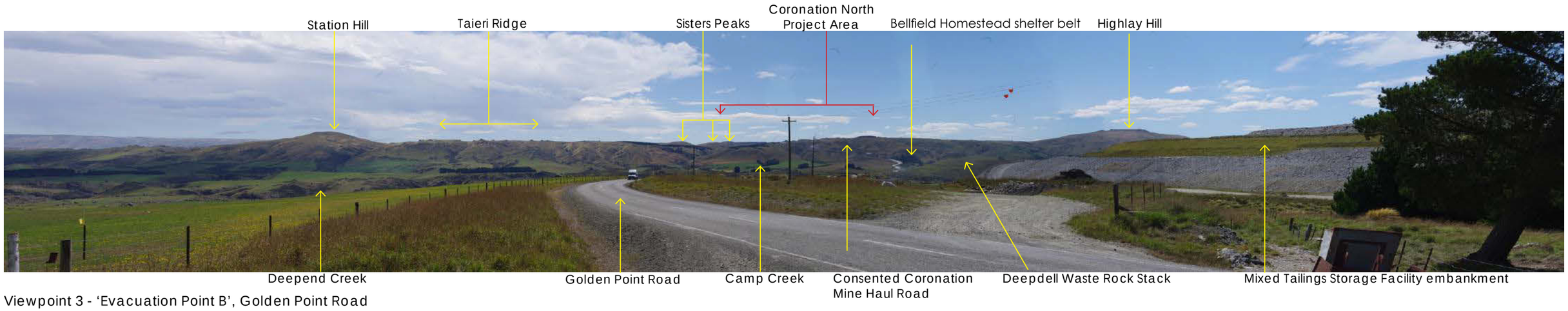


Viewpoint 2 - Back Road section, Macraes Road



Viewpoint 2 Enlargement- Photo simulation (False Colour)

Viewpoint 2 Enlargement- Photo simulation



Viewpoint 3 - 'Evacuation Point B', Golden Point Road

Viewpoint 3 Enlargement- Photo simulation (False Colour)

Viewpoint 3 Enlargement - Photo simulation

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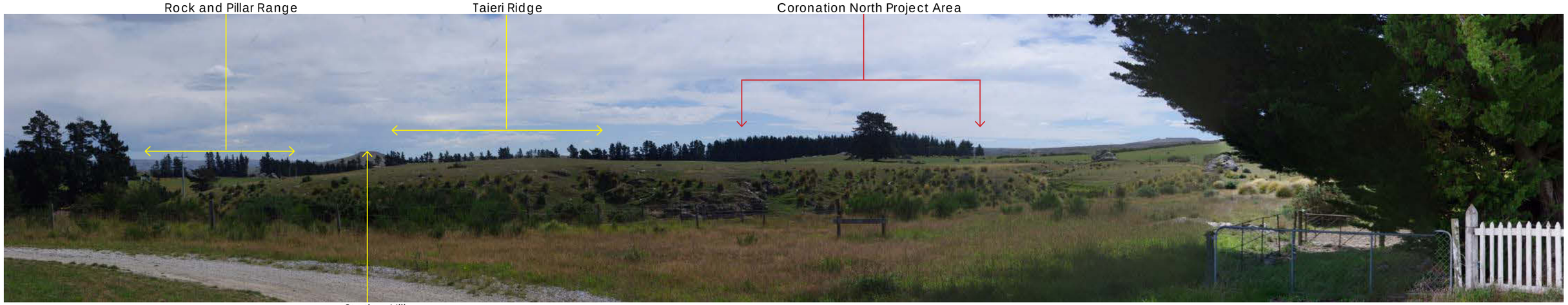
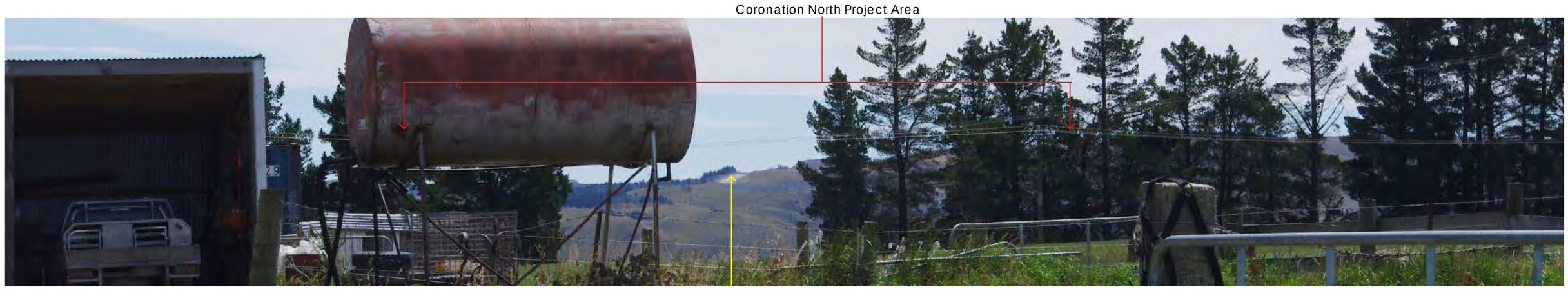


Viewpoint 4 - Macraes Flat Old Cemetery



Viewpoint 5 - Hyde Street, Macraes Village

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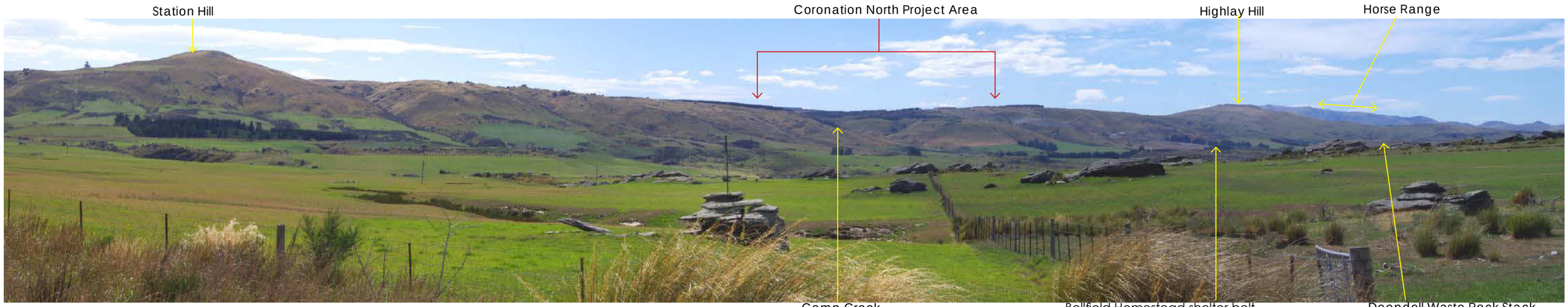
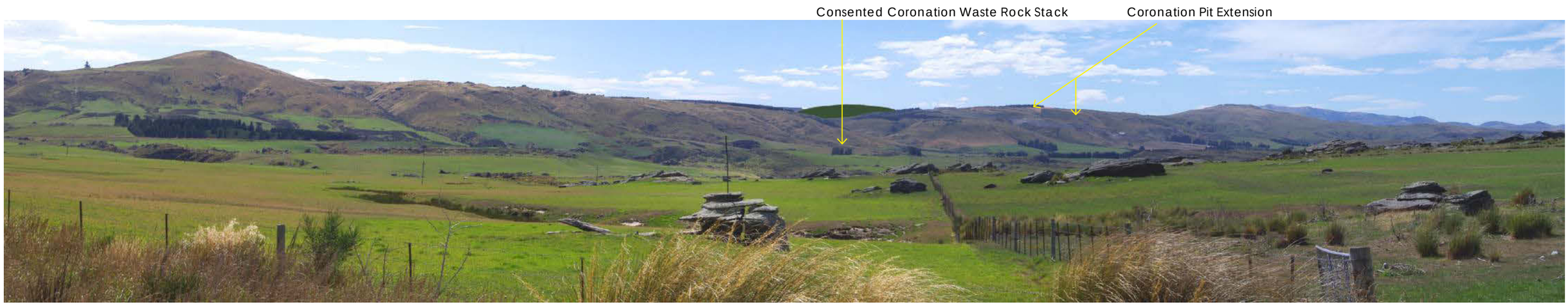


Viewpoint 6 - Frasers to Nenthorn Road, Macraes



Viewpoint 6 - Photo simulation (False Colour)

Viewpoint 6 - Photo simulation

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Viewpoint 7 - Howard's Gateway, Horse Flat Road

Photo 7a - Deepdell Station Homestead - Vanderley Property as seen from Horse Flat Road

Photo 7b - Howard Homestead as seen from Taieri Ridge

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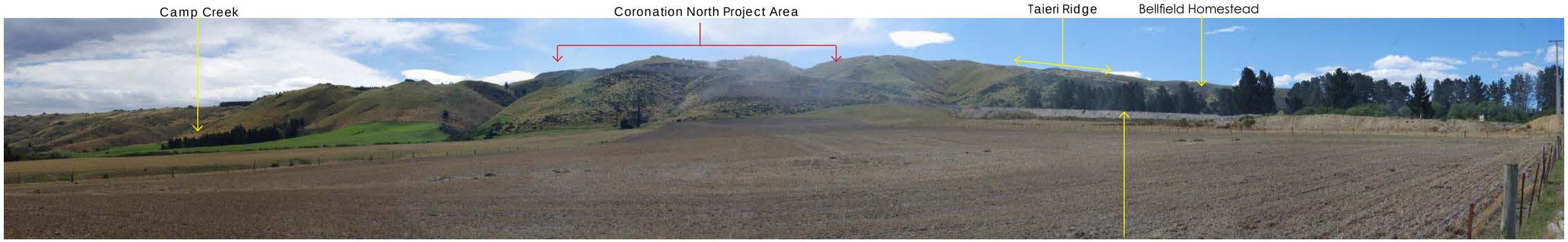
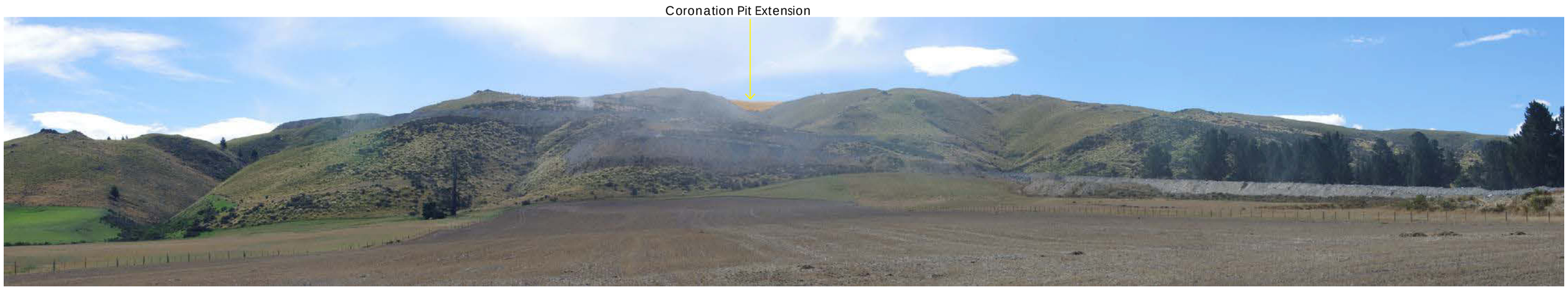


Viewpoint 8 - Golden Point Road intersection, Horse Flat Road



Viewpoint 8 Enlargement - Photo simulation (False Colour)

Viewpoint 8 Enlargement - Photo simulation

OPUS

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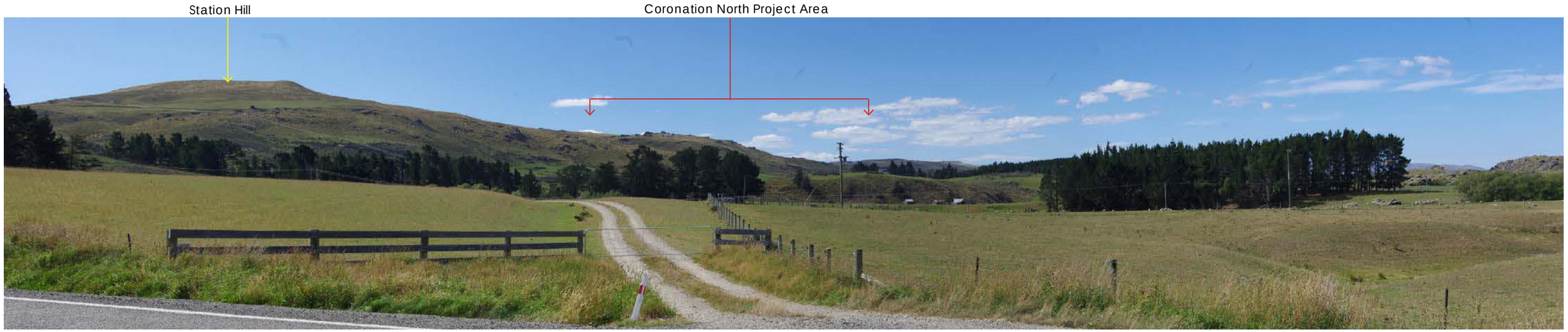
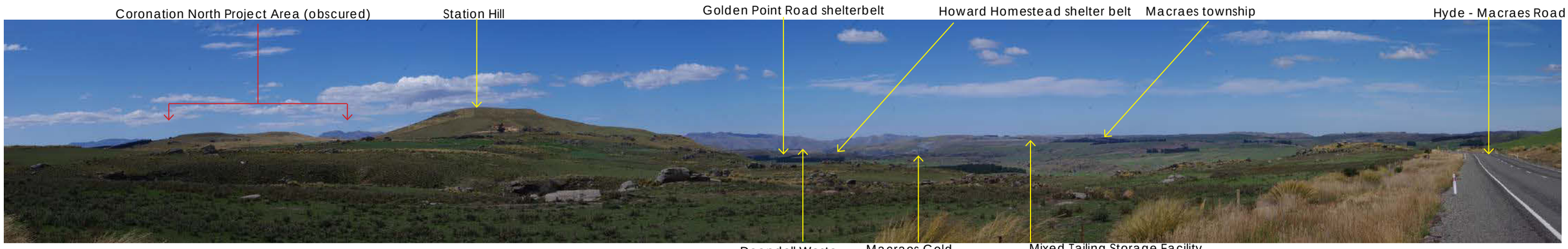
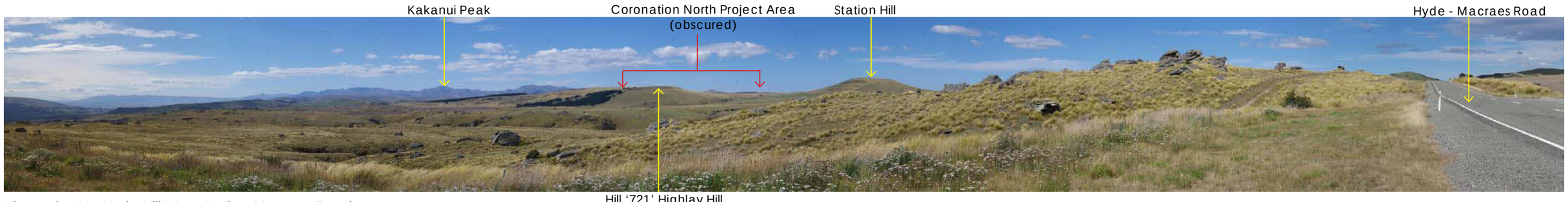


Viewpoint 9 - Roy's Gateway, Hyde - Macraes Road



Viewpoint 10 - Hyde Hill East, Hyde - Macraes Road



Viewpoint 11 - Hyde Hill West, Hyde - Macraes Road

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Oceana Gold: Coronation North Project - Landscape and Visual Assessment

JOB NUMBER: 3-81043.00 SCALE: N/A

DATE: April 2016

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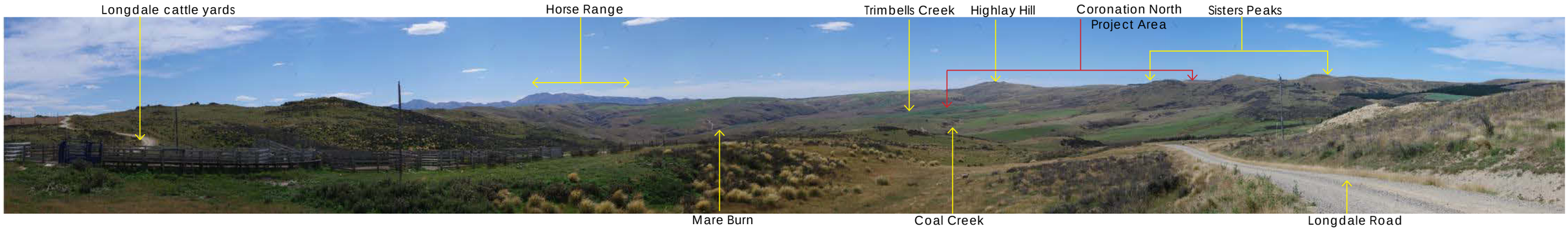
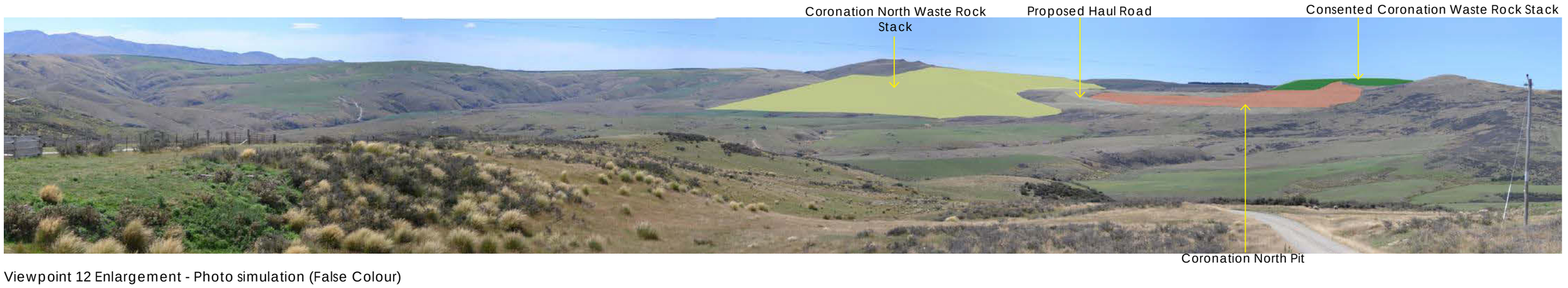


Viewpoint 12 - Longdale cattleyards, Longdale Road



Viewpoint 12 Enlargement - Photo simulation (False Colour)

Viewpoint 12 Enlargement- Photo simulation

OPUS

Oceana Gold: Coronation North Project - Landscape and Visual Assessment

JOB NUMBER: 3-81043.00 SCALE: N/A

DATE: April 2016

P:\Projects\3-81043.00 - Coronation North Project Landscape Effects\Site Photos\Panaromas\Indesign

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