Waihi North Project

Landscape, Natural Character and Visual Effects Assessment
Prepared for OceanaGold New Zealand Limited
10 February 2025

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Bibliographic reference for citation: Boffa Miskell Limited 2025. *Waihi North Project: Landscape, Natural Character and Visual Effects Assessment*. Report prepared by Boffa Miskell Limited for Oceana Gold New Zealand Limited.		
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Status: [FINAL]	Revision / version: [5]	Issue date: 18 February 2025

Template revision: 20150331 0000

File ref: BM210482C_Landscape_Natural_Character_and_Visual_Effects_Assessment_20250218.docx

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Executive Summary

OceanaGold (New Zealand) Limited ("OGNZL") commissioned Boffa Miskell to prepare a landscape, natural character and visual effects assessment for a proposal to develop a new underground mine (Wharekirauponga Underground Mine) and a new open pit mine (Gladstone Open Pit), expansion of processing and rock and tailings storage facilities in Waihi referred to collectively as the Waihi North Project. The assessment concludes that:

1. Due to the underground nature of the Wharekirauponga Underground Mine, landscape, natural character and visual effects within the Coromandel Forest Park are largely avoided. The distinctive peaks, ridges and valleys will remain intact alongside its existing broader native forest cover and backdrop consistent with its inherent vivid, wild and remote qualities. No physical modification to existing streams or rivers is anticipated, and potential localised impacts on aspects relating to landscape and natural character will avoid potential for any significant adverse effects and are addressed through appropriate remediation.

2. Beyond the Coromandel Forest Park, the project will remain visually well contained and primarily in the context of established mining activity, resulting in no significant increase in adverse landscape or visual effects. Sympathetic siting alongside identified landscape mitigation will ensure the project avoids significant adverse effects and remains well integrated within its local landscape setting and facilitates positive landscape and natural character outcomes in the long-term. Such outcomes include facilitating greater connectivity between inherent values within the Coromandel Forest Park and the wider surrounding rural landscape.

Landscape Context

Waihi is situated along the foothills of the Coromandel Ranges and along the edge of primary productive lowlands which extend across terraces along the Ohinemuri River to the south-east. The existing character of Waihi incorporates established mining activity including the proximity of Martha Mine and broader mining artefacts within the town and surrounding areas. Established processing and storage operations are located beyond Union Hill and less visible from the town within a sequence of surrounding elevated landforms. Despite the physical proximity of ongoing mining operations, there are limited views of mining activity from adjacent urban and rural areas.

The Coromandel Ranges are located approximately 3 kilometres from Waihi and are identified as an outstanding natural landscape at the district and regional scales for which s6(b) of the Resource Management Act 1991 (RMA) applies. This landscape contains steep and deeply incised landforms and peaks cloaked in native forest which form the backdrop of views from vast areas to the east. The landform's volcanic origin and almost complete native forest cover remains clearly legible, and the resultant ranges express a memorable, wild and remote quality. The site and its general location are not located within or near to the coastal environment, however the RMA matters relevant to this assessment also requires the preservation of natural character of rivers, wetlands and their margins (s6(a)). Other matters relevant to this assessment include the maintenance and enhancement of amenity values (s7(c)) and the quality of the environment (s7(f)). These are matters to which particular regard must be had under the RMA and which remain relevant to the Fast Track consent applications.

Natural Character Effects

The potential for natural character effects within Coromandel Forest Park have principally been avoided through the nature of underground mining with no direct or physical modification proposed along existing waterbodies or their margins within this context. In this context, natural character effects are limited to indirect changes which are largely indiscernible in the context of existing variable surface water flows alongside the loss of a single warm spring, beyond which there is no anticipated reduction in the overall condition or quality of existing streams or their margins that contribute to the natural characteristics or qualities of the surrounding Forest Park. Given the nature of localised and limited impacts anticipated, effects on natural character are considered very low and readily addressed through proposed ecological mitigation which includes restoring tributaries and streams adjoining the Forest Park within the Willows Road site.

Outside the Coromandel Forest Park, waterbodies modified by this project primarily represent permanent and intermittent watercourses and tributaries along the Mataura and Ruahorehore Streams as well as those more directly associated with the Ohinemuri River. Such waterbodies have varying levels of natural character and typically flow through more modified rural areas subjected to ongoing human impacts from grazing and established mining contexts within which the proposed activity is not considered inappropriate. During the initial stages of the project, proposed changes to existing waterbodies, including stream diversions, will generate some inevitable albeit short term adverse effects. Such effects will be remedied or mitigated, including by restoring natural character through enhanced wetland and riparian planting which increases the overall connectivity and condition across the larger development footprint and avoids any potential longer term or significant adverse natural character effects.

Landscape Effects

Wharekirauponga Underground Mine
The Wharekirauponga Underground Mine (WUG) is located beneath the Coromandel Forest Park except for ongoing exploration and up to four isolated shaft raises within the Forest Park. The sensitive siting of surface elements and activities within the extensive homogenous forest cover combined with their comparably diminutive scale will ensure the inherent characteristics and values of this outstanding natural landscape will remain. More substantial surface infrastructure and earthworks are required within the Willows Road site on rural land adjoining the Coromandel Forest Park. This includes a further shaft raise and a portal to the underground mine with associated surface infrastructure and rock storage pad from which material from the underground mine will be deposited and later removed during operation. A further portal is located adjacent to the existing Processing Plant. Landform modification has been carefully considered to minimise wider landscape impacts within its working rural landscape context and enables the successful rehabilitation at the completion of the project.

Gladstone Open Pit and Tailings Storage Facility
During implementation, the creation of Gladstone Open Pit (GOP) and subsequent tailings storage facility will substantially modify an existing working rural area and part of the sequence of rounded elevated landforms which extend to the east of Waihi. This will gradually extend mining activity within a localised area adjoining the existing Processing Plant, and which will remain relatively well contained beyond Union and Winner Hills. During operation, the retention and enhancement of a periphery of vegetation including plantation pine on Winner Hill and expanded native planting along the margins of the Ohinemuri River ensures potential views from surrounding rural areas towards the GOP remain well contained.

Upgrades of the Processing and Water Treatment Plants
Upgrades to the existing Processing and Water Treatment Plants will remain within the established development footprint and largely concealed from external views. Proposed cutbacks to accommodate portals face the existing Processing Plant and will remain well contained from beyond the site. Any change in configuration of the existing operation is unlikely to be discerned from beyond the existing contained operation area accessed along Baxter Road.

Northern Rock Stack
The proposed Northern Rock Stack (NRS) will gradually modify part of a localised rural area within the existing Martha Mineral Zone. During operation, temporary topsoil stockpiles will be developed along the margins of Golden Valley Road which will be reinstated in grass and enclose the area where an initial borrow area and the subsequent rock stack is formed. Impacts of mining activity have already been established in this context and will continue to influence the character of this area of landscape. At completion, much of the rock will be reused and the resultant landform will be recontoured and grassed to support adjoining rural land use through rehabilitation.

Tailings Storage Facility 3
The proposed development of Tailings Storage Facility 3 (TSF3) will adjoin the existing tailings storage facilities and extend along the slopes of a larger more elevated undulating backdrop to the north and east. During construction, borrow areas and the subsequent TSF3 will remain relatively well contained whilst generating relatively localised landscape effects within this working rural area. At completion, TSF3 will extend a linear terrace in the foreground of the larger more elevated and vegetated natural backdrop. Vegetation removal will be replaced with enhancements to native vegetation and habitats within an adjoining Significant Natural Area and riparian planting along the Ruahorehore Stream and the Ohinemuri River. Once completed, the faces of the TSF3 will be reinstated in pasture to become visually assimilated with adjoining rural areas and mitigate potential for any longer term significant adverse effects.

Visual Effects
Visual effects associated with the project overall are not considered to be significant. Primarily this is due to the underground nature of the WUG and the sympathetic siting of surface elements in response to sensitive views. Beyond the extents of the Coromandel Forest Park, surface elements including processing and storage areas have been sited to remain effectively contained within working rural contexts which includes adjoining areas accommodating existing mining activity alongside the retention of intervening topography and landcover. During operation, views of expanded mining activity will be limited. Some views towards the Willows Road site and from rural areas to the east of Waihi will progressively change from views of exposed rock and its subsequent rehabilitation within localised rural areas. At completion of the project, much of the landform disturbance generated during operation will be rehabilitated and re-assimilated within the established rural character.

For most people living in and around Waihi, the project will remain visually well contained, resulting in no substantial change or adverse landscape or visual effects in the context of existing mining activity. Landscape mitigation will ensure the project remains well integrated within its local landscape setting and facilitates positive landscape and natural character outcomes in the long-term including greater connectivity between inherent values within the Coromandel Forest Park across the wider surrounding rural landscape.

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1.0 Introduction

Boffa Miskell has been engaged by OceanaGold (New Zealand) Limited (OGNZL) to prepare a natural character, landscape and visual effects assessment in relation to the Waihi North Project. As such, this assessment considers the project in terms of effects on Waihi's surrounding landscapes including the Coromandel Forest Park, available views, and natural character of affected waterbodies including the Ohinemuri River and its tributaries. Boffa Miskell has worked collaboratively with Frank Boffa and the project team to inform mitigation and long-term rehabilitation opportunities at project completion.

The Waihi North Project comprises several interrelated components of extended mining operations and subsequent disposal or reuse of rock and tailings. This encompasses the Wharekirauponga Underground Mine (WUG) comprising a new underground mine beneath the Coromandel Forest Park and associated above ground infrastructure supporting this aspect of mining on adjoining farmland at Willows Road (Willows Road site). An additional open pit (Gladstone Open Pit) is proposed in the vicinity of the existing Processing Plant. The existing Processing Plant and Water Treatment Plant is proposed to be upgraded and will continue to be used throughout the proposed development. Additional tailings and rock storage areas are also proposed within the resultant Gladstone Open Pit (GOP), and at a Northern Rock Stack (NRS) and TSF3 adjoining existing tailings storage facilities to the east of the Ohinemuri River.

The first part of this report sets out an understanding of the project in its broader landscape and statutory context. Part A of this report sets out an assessment of natural character of affected, streams, wetland and their margins. These occur within and outside the Coromandel Forest Park. Part B of this report sets out an assessment of the project within both individual and cumulative landscape contexts and identifies the level and nature of adverse effects. This assessment has involved a combination of visibility analysis, fieldwork and preparation of visual simulations from representative publicly accessible viewpoints to understand the likely landscape and visual effects which result from this project. To assess potential adverse effects, the various elements of this application have been considered in terms of proposed maximum heights and corresponding maximum extents of stockpiled material. Notwithstanding this, it is recognised that activity will occur gradually and sequentially across various stages of development and will not occur simultaneously everywhere all at once.

2.0 Approach

2.1 Overview

This assessment has been undertaken and peer reviewed by New Zealand Institute of Landscape Architects ('NZILA') registered landscape architects with reference to best practice guidance, which includes:

- Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects (July 2022);
- Quality Planning, Plan Topics Landscape (2013); and
- Guidelines for Landscape and Visual Impact Assessment 3rd Edition, Landscape Institute (UK) and IEMA (2013).

2.2 Familiarisation of the Project and Receiving Environment

2.2.1 Desktop Analysis of the Receiving Environment

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

- the statutory setting of the project area and surrounding context , including in the context of the Fast Track Approvals Act;
- existing landscape assessments undertaken within the receiving environment; and
- base map data (such as contours and aerial photography)

2.2.2 Site Analysis and Input into the Project Layout

Throughout the preparation of this assessment, several site visits were undertaken to further understand both the project area and the surrounding context including its likely visibility. To inform this assessment and assist with managing the potential for adverse landscape, natural character and visual effects, the project drawings prepared for the application have been reviewed and further developed through an iterative design process. Through this process, input into the proposed project layout has included the siting, size and appearance of landforms and ancillary structures where possible to assist integrating these elements within the landscape, and associated planting to mitigate potential adverse effects. Current aerial imagery and point cloud modelling obtained using an unmanned aerial vehicle (UAV) has also assisted with project shaping.

2.2.3 Preparation of Visual Simulations

A series of visual simulations were prepared to understand the extent of visibility of the project and the potential impact on the surrounding viewing audiences. Visual simulations are detailed in **Sections 7 to 11** of this report and included as a separate appendix to this report. Viewpoint photographs provide representative views from the available viewing areas located at a range of viewing distances and locations. Visual simulations have been prepared in accordance with NZILA Best Practice[1] and adhere to Boffa Miskell's internal Visualisation Guidelines to assist with an accurate understanding of the proposed magnitude of visual change.

3.0 Landscape Context

3.1 Site Location

In broad terms, the project is located beneath and adjoins the southern end of the Coromandel Range and is primarily contained within an undulating foothills landscape which surrounds the established township of Waihi. The proposed development maintains a close relationship with former and existing mining related operations established throughout this area. This includes existing gold exploration within the Coromandel Range and the continued operation of the

[1] NZILA Best Practice Guide, Visual Simulations BPG 10.2, February 2010.

existing Processing Plant, Water Treatment Plant and established tailings storage facilities which extend to the east of Waihi and generally beyond Union Hill.

A key element of this project accommodates the proposed WUG Mine beneath part of the Coromandel Forest Park and accessed from portals within farmland at Willows Road and adjoining the existing Processing Plant (see **Figure 1**). In closer proximity to the existing operation and east of Waihi are additional proposed mining elements which include a new open pit mine and subsequent tailings storage facility (GOP) created within the existing form of Gladstone Hill as well as an extended rock stack (NRS) and additional tailings storage facility (TSF3) adjoining existing similar facilities to the east of the Ohinemuri River.

Existing mining activity contributes to the character of the Waihi landscape, and this generally has not resulted in major adverse landscape or visual effects on surrounding areas, primarily due to the intervening topography and vegetation which maintains effective containment of mining related aspects. In this context, the WUG is proposed to occur with minimal surface expression and linked with existing processing facilities underground to minimise any potential for increased adverse landscape or visual effects. The expansion of mining and associated tailings storage adjacent to the existing Processing Plant occurs in the context of similar existing mining activity and has been configured to remain contained within a broader working rural character.

3.1.1 Topography

The topographical characteristics of the Coromandel Range forms the dominant landscape element in this broader landscape context (see **Figure 2)**. The topography within the Coromandel Forest Park climbs to elevations above 700 metres above sea level (masl) in the vicinity of Waihi and comprises various steep and rugged deeply incised landforms with gorges and “V” shaped valleys.

Within the southern area of the Coromandel Range, gorges and valleys tend to run in a north-east / south-west orientation and include local streams such as the Wharekirauponga and Waiharakeke Streams. A broad ridge encloses the upper reaches of the Mataura Stream within the Coromandel Forest Park and descends in elevation towards the Waiharakeke Stream to the north. This broad ridge contains the most elevated portions of the project area, reaching 500 masl and primarily forms the backdrop of views from the east.

The other key ridge in the project area is located to the north of the Waiharakeke Stream and Wharekirauponga Stream. Whilst within the project area, this ridge is lower than the broader ridge to the south and forms part of the lower flanks of Whakamoehau, which is a particularly prominent peak in the local context reaching 750 masl. It is noted however that this peak is generally not visible in the visual catchment of the project due to intervening landforms, particularly those reaching 500 masl in the project area.

The adjoining foothills of the Coromandel Range express a series of gently sloping and rounded spurs and gullies which generally run in a north-south orientation. To the northwest of Waihi, the topography rises more steeply towards the steeper vegetated slopes of the Coromandel Range approximately 3 kilometres from the town centre. The topography of farmland adjoining the steeper topography within the Coromandel Range, including the Willows Road site, rises in elevation from the lowlands to the east and culminates within a contained gully associated with tributaries to the Ohinemuri River which include Mataura Stream. In this context, the landform supports a rural fringe and mid-slopes along the foot of the more elevated Coromandel Range.

The landform associated with Waihi and the existing mining operations form part of the south-eastern foothills of the Coromandel Range that adjoin a broad basin along the Ohinemuri River. The existing form of Martha Pit forms a distinctive modified landform feature within this landscape, the base of which is currently some 220 metres below the surrounding ground level and approximately 100 metres below sea level. Martha Hill (Pukewa), within which Martha Mine is now located, previously formed part of this broader foothills landform. The urban area

surrounding the mine is typically flat to gently undulating between 80 and 160 masl with the meandering form of Mangatoetoe Stream flowing through an urban area to the southwest of Martha Pit.

A series of steep rounded hills rise to the east of the township including Union Hill (162 masl), Gladstone Hill (170 masl), Winner Hill (150 masl) and Black Hill (224 masl). The Ohinemuri River passes to the east of this series of hills and bisects the more rounded hills adjoining Waihi from a larger elevated landform which extends to the east that accommodates the existing tailings storage facilities along its south-western edge. The Ruahorehore Stream flows east to west to the south of these broader elevated landforms and along the north-east edge of a broader floodplain of the Ohinemuri River which opens out to the south-east of Waihi and north of the Kaimai Range.

3.1.2 Land Cover

A broad understanding of the existing land cover as identified by Landcare Research New Zealand Limited on their land cover database (LCDB v.5) is illustrated on **Figure 3**. This identifies that the rural land use surrounding Waihi predominantly comprises of a patchwork of mainly exotic pasture and cropping interspersed with shelter planting and orchard trees. Mining activity, including the Processing Plant and the existing tailings storage facilities also contribute to the modified land cover within this area.

Within the Coromandel Forest Park, the steeper hill forms of the Coromandel Ranges support areas of established and regenerating indigenous forest. The forested backdrop associated with the Coromandel Range runs north-south for approximately 85 kilometres. Vegetation within this area comprises a variety of species including late and mid successional forests (see **Plate 1**). Common species include tawa (*Beilschmiedia tawa*), rimu (*Dacrydium cupressinum*), kauri (*Agathis australis),* silver fern (*Cyathea dealbata*), pukatea (*Laurelia novae-zelandiae*), kiekie (*Freycinetia banksia*), and pigeonwood (*Hedycarya arborea*). Groundcover species include bush rice grass, and hard fern species such as crown fern (*Blechnum discolor*).

Plate 1 Sub- canopy vegetation within the Coromandel Forest Park

The rural land use within the Willows Road site reflects the land cover of the wider foothills of the Coromandel Range, predominantly comprising a patchwork of exotic pasture interspersed with exotic shelter planting. Native vegetation which is present is typically found within riparian remnants and some single standing trees (see **Plate 2**). Such vegetation includes kawakawa (*Macropiper excelsum*), manuka (*Leptospermum scoparium*), and mahoe (*Melicytus ramiflorus*). Two mature swamp maire (*Syzygium maire*) are also located in a small boggy area / degraded wetland along the margins of the Mataura Stream (approximately 0.24 Ha). Areas of willow

occur in association with a man-made pond as well as areas of exotic forestry established in the upper slopes of the Willows Road site along the interface with the Coromandel Forest Park.

Plate 2 Landscape context in the Foothills of the Coromandel Range

The built-up area of Waihi covers approximately 425 hectares and surrounds the existing Martha Mine. This includes residential and some commercial development established near Martha Pit, including Waihi's Town Centre located to the south. The majority of Waihi currently extends to the south of Martha Pit, straddling State Highway 2 with part of the town also extending to the north-east and north of Union Hill.

In addition to urban and productive rural land uses, existing mining activity occurs in Waihi and introduces an established working character in some areas. Small pockets of indigenous forest and broadleaved indigenous hardwoods also occur throughout this landscape and typically form patches retained on the steeper hill forms east of Waihi and along the foothills of the Coromandel Ranges. Areas of exotic forestry have also been established in association with some vegetated slopes.

More recent native planting, much of which has been established by OGNZL and former owners of the Waihi mine, follows the margins of the Ohinemuri River and some tributaries. Further water bodies present throughout this area occur in association with the existing tailings storage facilities and the small lake within Gilmour Reserve, which was established by the then Waihi Gold Company as a replacement to Mine Lake at the time Martha Pit was being developed.

3.2 Landscape Character

An understanding of landscape character involves a combination of physical, sensory and associative landscape dimensions. Two previous landscape studies at the district and regional scales, noted below, have been completed and provide an established background understanding of such landscape character and values which help inform this aspect of the receiving environment.

OGNZL also recognises the special relationship that iwi have with the land and the waterways, and that this relationship is important to spiritual and cultural wellbeing. Māori cultural values interests and associations with the project area, and the potential impacts of the Waihi North

Project on these, will be identified through iwi led Cultural Impact Assessments. Ngati Hako, Ngati Maru, Ngāti Hei, Ngāti Porou ki Hauraki, Ngāti Puu, Ngāti Tamaterā, Ngāi Tai ki Tāmaki, Ngāti Rāhiri Tumutumu, Ngāti Tara Tokanui Ngāti / Koi and Ngāti Whanaunga are formally recognised within this project area.

3.2.1 Waikato Regional Landscape Assessment (2010)

The Waikato Regional Landscape Assessment was completed in 2010 and is split into two parts. 'Part A' identifies eight "landscape types" across the region. Each landscape type identifies "a broadly defined landscape area that has a recognisable pattern of physical elements. Variations in geology and soils, landform, land use and vegetation, and settlement patterns give rise to different landscapes each with its own distinctive character and unique sense of place." The landscape type relevant to the project is the "Eastern Ranges", which focuses on the Coromandel and Kaimai Ranges. Part B builds upon Part A and provides the context for the identification of special landscapes and an understanding of the degree or level of natural character in the area. This includes the identification of Outstanding Natural Features and Landscapes extracts from which are included in **Appendix 3**.

3.2.1.1 The Eastern Ranges – Landscape Type

This landscape type is determined by the "massive volcanic features which form a strong and distinctive backbone to the Coromandel Peninsula" and are a strong visual backdrop to the Hauraki Plains.

The area is described as having a series of very impressive peaks, pinnacles and rocky outcrops that are highly visible. The landscape comprises of steep and deeply incised topography with gorges and "V" shaped valleys. The Eastern Ranges are characterised by a significant portion of forest cover which provides a sense of wilderness and remoteness.

The Waikato Landscape Assessment acknowledges that the main pressures on the landscape include the potential effects of mining, quarrying, and the spread of exotic forestry and pasture over the ranges on land not in public ownership.

3.2.1.2 Coromandel Range and Moehau Range – Outstanding Natural Feature and landscapes (ONFL 5)[2]

The Coromandel and Moehau Ranges contain a number of blocks administered by the Department of Conservation. This is referred to collectively as the Coromandel Forest Park and recognised as an outstanding natural feature and landscape (ONFL) at the regional scale.

The Waikato Regional Landscape Assessment describes the Moehau and Coromandel Ranges as a series of massive extent volcanic landforms, which form a series of very impressive peaks, pinnacles, and rocky outcrops which can be seen from all over the peninsula, including Castle Rock and Table Mountain. The skyline of the ranges is described as unique to the Coromandel and as the backdrop for literally hundreds of views from roads and settlements within the Thames-Coromandel District and further afield including Auckland and north.

The Waikato Regional Landscape Assessment also describes the ranges which contain Coromandel Forest Park as having a steep deeply incised landform with gorges and 'V' shaped valleys running through them. They have an almost complete cover of native forest except for some large areas of pine plantations. It also notes that the bush varies in quality from very mature high-quality forest to forest that has been regenerating for approximately 20 years. The broader ranges are also described as having a wild and remote quality, and in places very high natural character.

The description also notes that features of the Coromandel Forest Park include not only its varied plant life and native birds, but also reminders of the early history under European

[2] Waikato Regional Landscape Assessment (2010), Part B, Page 57

settlement. There are wooden dams from the kauri logging days, pack horse tracks, tram routes, old gold mining roads and sites of logging camps.

3.2.2 Hauraki Landscape Assessment (2006)

The landscape character of the Hauraki District was considered as part of the Hauraki Landscape Assessment completed in 2006[3], extracts from which are included in **Appendix 3**. Within this assessment, landscape character units relevant to this project are identified as the Coromandel Range, the foothills of the Coromandel Range and the Primary Production Lowlands around Waihi (refer to **Figure 4**).

3.2.2.1 The Coromandel Range

The landscape unit is determined by the volcanic mountain range which form the "*distinctive backbone to the Coromandel peninsula*". The landscape unit characterises the Coromandel Forest Park within which a portion of the project would be located. The topography of the landscape unit varies from rolling hills to steep and deeply incised high country up to approximately 700 masl. Pine plantations and, more predominantly, native bush populate the landscape unit which includes mature and semi mature forest. The Hauraki Landscape Assessment also notes that the landscape unit illustrates a homogenous quality due to the extensive forest cover it supports.

The landscape assessment concluded that the Coromandel Range is an Outstanding Natural Landscape (ONL), extracts from which are reproduced below:

> *The landscape character of this unit is determined by the volcanic mountain range which forms the basis for it. The ranges form the distinctive backbone to the Coromandel peninsula and continue south into Hauraki District. The range in the Hauraki District is not as high or distinctive as it is in the Thames Coromandel District, though there are still distinctive peaks of between 500 and 700m above sea level. The skyline and ranges form the backdrop for literally hundreds of views from roads and settlements. Driving through the Hauraki Plains the Coromandel Range forms the backdrop to the views looking east.*
>
> *The landform varies from rolling hills to steep and deeply incised high country with gorges and V shaped valleys running through it. The ranges have a cover of native forest, except for some large areas of pine plantations. The bush varies in quality from very mature high quality forest that has been regenerating for around 20 years. The forest cover gives the Ranges a homogenous quality.*
>
> *The Department of Conservation owns a number of blocks on the Coromandel Range. These blocks are referred to collectively as the Coromandel Forest Park and contain within the 72,000 hectares some of the most rugged terrain in the ranges. Among the features of the park are a number of quite difficult tramping tacks, tramping huts, as well as less arduous walks in the bush, and places to picnic and swim.*
>
> *Among the features of the park other than its variety of plant life and native birds are reminders of early history including Maori and European settlement. There are wooden dams from the kauri logging dams, pack horse tracks, tram routes, old mill sites, mining roads and sites of logging camps as well as gold tailings and gold mines.*

Current professional practice conceptualises landscape as three overlapping physical, perceptual and associative dimensions through which landscape character can be described and landscape values can be identified and assessed. A summary of relevant landscape values in relation to the Coromandel Range ONL identified through this landscape assessment is set out below:

[3] LA4 Landscape Architects (2006) Hauraki District Landscape Assessment.

Physical

- The landform of the Coromandel Ranges creates a distinctive backbone to the Coromandel Peninsula.
- The area is principally covered with high quality indigenous flora and fauna and is within a Significant Natural Area (SNA) consistent with early to mid-successional regrowth.
- Relatively high species richness given the area's history of modification and complex environment of soil, topographic, altitudinal and bio-climactic gradients present.
- Some limited unmarked trails and formed walking access along the Te Wharekirauponga Walk.
- Built form is limited to very isolated structures and historic artifacts in the context of a broader contiguous area of forest.
- Habitat for several unique species (at-risk declining) including Hochstetter's and Archey's Frog and Elegant and Forest Gecko alongside introduced pests (e.g. rodents, possums and mustelids).

Perceptual

- Sequence of steeply and deeply incised landforms and peaks clearly express formative volcanic processes.
- The almost complete native forest cover maintains a coherent natural backdrop with no apparent modification on its upper slopes.
- A highly vivid and memorable green backdrop and skyline.
- Transient opportunities to experience wildlife reinforce wild and remote scenic qualities.

Associative

- The skyline and ranges form the backdrop recognised from literally hundreds of views from roads and settlements forming a distinctive green backdrop.
- Previous forestry and mining activities and resultant tram routes, Kauri dams, mining artifacts and historic tracks influence established natural and cultural associations.
- Sites of significance to tāngata whenua including, important local landmarks Ngapuketurua ("the many beautiful hills"), urupā and rare ecosystem that have a very unique wairua and mauri[4].

The above assessment and values concur with recognition of the Coromandel Forest Park as an ONL.

3.2.2.1 Foothills of the Coromandel Range

The foothills of the Coromandel Range extend to the west and north-east of Waihi following the alignment of part of the Ohinemuri River. This landscape character unit is described as a combination of moderate to steep landforms with pasture, sizable clumps of exotic forestry and native forest in gullies and on some higher slopes. The foothills are backed by higher landforms covered in native forest with pasture generally sited on the mid and higher slopes. The land-use is predominantly grazing with stream valleys draining into nearby rivers.

The landscape evaluation associated with the foothills of the Coromandel Range concluded that there are no outstanding natural features in this landscape whilst noting that there are a number of distinctive features including the small volcanic peaks in the foothills in the area to the east of Waihi.

[4] Ngāti Tara Tokanui Ngati Trust (2022) Cultural Values Assessment in Relation to Waihi North Project.

3.2.2.2 Primary Production Lowlands Around Waihi

The primary production lowlands around Waihi extend from the south-east of the township. The landform of this landscape unit is flat to rolling with pasture, clumps of exotic trees and shelter belts, horticultural lots surrounded by hedges and glasshouses. Streams also meander throughout rural areas, some with scattered exotic and native vegetation along the banks. The land beyond stream margins is typically divided into rectangular field pattern which results in a high level of modification with very little natural character. No outstanding natural features or landscapes were identified within this landscape unit.

3.3 Summary of Context and Character

The project area spans three defined landscapes, namely: the Coromandel Range, the Foothills of the Coromandel Range, and the primary production lowlands around Waihi. Portions of the project occur beneath the Coromandel Range which encompasses the Coromandel Forest Park and is recognised as part of an ONL. This landscape is characterised as a unique volcanic mountain range which demonstrates rolling hills and steep deeply incised topography and “V” shaped valleys. These recognisable and highly visible landforms are extensively covered in vegetation and maintain a largely homogenous quality.

The land cover of the Coromandel Forest Park contains indigenous forest which cloaks and characterises much of this landscape. Previous forestry and mining activities and resultant tram routes, Kauri dams and historic tracks are also established in the context of this area and influence established natural and cultural associations. Various waterbodies influence the project area, and these vary in quality, influenced by the land uses they are set within. The land cover of the Willows Road site is predominantly exotic pasture with shelterbelt planting and some remnant riparian vegetation along the various tributaries of the Mataura Stream.

The topography of the project area is influenced by the lowlands, foothills and ranges that define the surrounding context. The adjoining topography of the Willows Road site reduces in elevation from west to east and forms gradual rolling hills and valleys which then meet the Coromandel Range. This area is characterised by moderate to steep landforms supporting rural activity with areas of pasture and stands of predominantly exotic shelterbelts and forestry. The predominant land use comprises of grazing the underlying sequence of stream valleys draining into nearby rivers.

Further south, the landform associated with Waihi includes primary production areas and a broad range of modified landform features including Martha Pit. The existing character of Waihi and its surrounding landscape is influenced by established mining activity including such activity established within the Martha Mineral Zone. Despite the physical proximity of the mine, views of mining activity are limited from the adjacent urban areas. Elevated rounded landforms to the east contain the existing Processing Plant and rise above surrounding flat and undulating rural and urban areas. This area of landscape also accommodates existing tailings storage facilities against a larger vegetated backdrop. The floodplain of the Ohinemuri River also exists in the production lowlands and opens out to form a broad open basin north of the Kaimai Range.

The land cover surrounding the urban area of Waihi and established mining activity is predominantly associated with rural activity, typically comprising exotic pasture, clumps of exotic trees, shelter belts and scattered orchards. Native vegetation is also established along some of the steeper volcanic hill slopes and along the margins of the Ohinemuri River (the latter voluntarily planted primarily by OGNZL).

4.0 Statutory Planning Context

4.1 Fast Track Approvals Act

Waihi North is identified as a listed Project under Schedule 2 of the Fast Track Approvals Act. This includes requirements to assess applications under the Resource Management Act under Schedule 5 and the Conservation Act under Schedule 6 as set out below.

4.2 The Conservation Act

The Coromandel Forest Park beneath which the proposed WUG mine is located is classified Conservation Park in terms of Section 19 of the Conservation Act. This requires that:

> *Every conservation park shall so be managed –*
>
> *(a) That its natural and historic resources are protected; and*
>
> *(b) Subject to paragraph (a), to facilitate public recreation and enjoyment.*

The emphasis of the Conservation Act is to ensure the preservation and protection of the natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations. Specifically, The Conservation Act defines *'conservation'* as:

> *'the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations'.*

Natural resources' are defined in the Conservation Act to include a range of elements, including *"c) landscape and landform".*

4.2.1 Coromandel Peninsula Conservation Land Management Plan

The Coromandel Peninsula Conservation Land Management Plan[5] sets out the anticipated management within the area of land which makes up the Coromandel Forest Park. The WUG Mine lies beneath the Wentworth / Wharekirauponga Visitor Management Zone recognised as having been mined and logged for kauri supplying local mills. The objective in this area is to, *"ensure visitor access to, and a self-exploration approach for the Wentworth / Wharekirauponga Valleys".*

4.3 Resource Management Act

The key sections identified with the RMA regarded as being relevant to this natural character, landscape and visual assessment are:

> ***Section 6(a)** – the preservation of natural character of… wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate, subdivision use and development*
>
> ***Section 6(b)** – the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development*

[5] Department of Conservation (2002) Coromandel Peninsula Conservation Management Plan.

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

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

In accordance with the above, this assessment has taken account of the relevant objectives, policies and rules of the Waikato Regional Policy Statement, Hauraki District Plan as set out in the Assessment of Environment Effects. The key matters relevant to this landscape assessment are set out in **Appendix 2** and summarised below.

4.4 Natural Character (RMA s.6a)

Although the RMA does not define natural character, from a technical perspective, natural character is considered to form part of landscape and varies within each area. For this assessment, natural character has been considered with specific reference to RMA s6a as applied to lakes, rivers, wetlands and their margins. Such matters primarily relate to biophysical and some sensory landscape attributes in identified areas and reflect the extent to which natural elements, patterns and processes occur and have undergone human modification. As such, the highest degree of natural character occurs where there is the least apparent modification. Conversely, rivers, wetland and their margins that have been highly modified will have a lower (but retain some) level of natural character.

The geographic areas considered under the assessment of natural character encompass the Wharekirauponga catchment within the Coromandel Forest Park and tributaries and associated margins of surface water bodies along the upper catchments of the Ohinemuri River. Physical modification to waterbodies within the Coromandel Forest Park has primarily been avoided by the nature of underground mining however there is some assessed potential for indirect effects related to potential reduced surface water flows to occur as a result of groundwater drawdown, including the likely permanent loss of a single warm spring. Outside the Forest Park, natural character effects occur along the Mataura Stream, including its unnamed tributaries within the Willows Road farm site, as well as downstream tributaries along the Ohinemuri River and Ruahorehore Stream which adjoin and are physically disrupted by the proposed expanded mining, rock storage and tailings facilities.

The National Policy Statement for Freshwater Management (NPS FM, 2020) requires every regional council to identify outstanding water bodies within their jurisdiction. An 'outstanding water body' means a water body, or part of a water body, identified in a regional policy statement, a regional plan, or a water conservation order as having one or more outstanding values. Policy 8 of the NPS FM requires that the significant values of outstanding water bodies are protected. In this context, the Waikato Regional Plan (Regional Plan) identifies several waterbodies within the Coromandel Forest Park as "natural state waterbodies". Under the current Regional Plan, these waterbodies also qualify as '"outstanding water bodies" and important habitats because they are unmodified or substantially unmodified by human intervention'.

4.5 Outstanding Natural Landscape (RMA s.6b)

The Coromandel Forest Park is formally recognised as part of an ONL at both regional and district statutory levels.

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

The Waikato Regional Policy Statement (RPS) recognises the Coromandel Range and Moehau Range as ONFL 5, which is characterised as follows:

Massive volcanic landform. Forms the distinctive backbone to the whole peninsula – peaks, pinnacles and rocks. Bush on the tops.

Significance to tāngata whenua – pā sites. Remote and wild. High natural character in places. Historic values of early settlement, gold mining and logging

Similarly, the Hauraki District Plan recognises the landscape features of the Hauraki District that have been formally identified and assessed by LA4 Landscape Architects (September 2006) and described as[6]:

The Coromandel and Kaimai Range Landscape Unit is determined by the volcanic mountain ranges which form the basis for it. The ranges form the distinctive backbone to the Coromandel Peninsula and continue south into Hauraki District. The landform varies from rolling hills to steep and deeply incised hill country. With the exception of some of the lower slopes which are used for sheep and cattle grazing, the majority of the land is in native forest with some areas of pine plantation. The viewing audience of the ranges is very large, comprising people travelling on many of the roads and state highways, tourists, trampers, and other recreational users within the range, as well as fishing and sailing people out to the east. The ranges are also visible to many people in settlements – for example Paeroa, Ngatea and Whiritoa.

The Hauraki District Plan recognises that ONL(s) may be adversely affected or degraded as a result of inappropriate land use and subdivision activities[7]. Protection of ONL(s) in the context of the Hauraki District Plan refers to its integrity and associated aesthetic, cultural and intrinsic values[8]. Amenity values and quality of the environment are also relevant considerations under the RMA (Section 7c and 7f).

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

Outside of the Coromandel Forest Park, the landscape surrounding Waihi is characterised by established rural land use which contributes a distinct rural landscape character and amenity which can be differentiated from the adjoining ONL. In amenity terms, the RMA defines amenity values as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes. No part of the project is identified within a District Amenity Landscape Area.

The topography of the Willows Road site expresses the pattern of rural foothills at the base of the more prominent Coromandel Ranges which form a vegetated backdrop against the rising topography. This topography is observed within the foreground of views towards the Coromandel Ranges and the landforms of these areas are visually connected as a series of hills, peaks and valleys. The land use within the Willows Road site reflects part of a wider apron of rural activity observed within the foothills landscape which supports agricultural land use, particularly dairy and cattle grazing. Management with exotic pasture and limited restrictions on stock access has reduced the natural qualities of areas of the Willows Road site.

Parts of GOP and TSF3 also extend beyond the Martha Mineral Zone into adjoining rural zones. The utilisation of mineral resources is provided for in this zone provided the potential for adverse effects are avoided, remedied or mitigated. This includes maintaining the amenity value of a predominately open rural character and the wider productive use of the land. The proposed upgrade to the existing Processing Plant, Water Treatment Plant, and NRS are located entirely within the Martha Mineral Zone. This provides for the utilisation of mineral resources alongside

[6] Hauraki District Plan, Section 6.3.1(2((b)

[7] Hauraki District Plan Section 6.2: Resource Management Issues, Issue 1.

[8] Hauraki District Plan Section 6.3.3, Objective 1

its ongoing rehabilitation and longer term likely uses. Such development should also ensure that the amenity values of Waihi and the wider community are managed and enhanced.

PART A: Natural Character Effects

5.0 Introduction

The assessment of natural character considers any changes in levels of modification and associated condition specific to lakes, rivers, wetlands and their margins. This assessment has been undertaken by assessing the abiotic, biotic and experiential attributes which contribute to the existing and post development levels of natural character. This has also been informed by the assessment inputs from hydrogeologists, hydrologists and aquatic and terrestrial ecologists relating to the active bed and margins of identified waterbodies where relevant. In general terms, effects on natural character consider changes in existing condition, across relevant attributes:

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

Given the increased sensitivity of potential changes to Outstanding Waterbodies which have been identified within the Coromandel Forest Park, a more focussed assessment on the specific natural character attributes of existing and modified levels of natural character has been undertaken in this local and broader context in **Appendix 4**.

5.1 Coromandel Forest Park and Wharekirauponga

As an underground mine, the proposed development will avoid any direct effects relating to the natural character of existing waterbodies or their margins within the Coromandel Forest Park. Current modelling predicts underground mining may result in changes in the variable natural flow regime of some streams above the Wharekirauponga Underground Mine (WUG) as a result of groundwater drawdown during mining operations alongside the permanent loss of a single shallow ‘warm spring’ (ca. 19-20^{o} C).

The streams noted above, all lie within part of the Wharekirauponga catchment and within the broader context of the Coromandel Forest Park. This incorporates several streams identified as ‘natural state waterbodies’ and, therefore, ‘outstanding waterbodies’ within the Waikato Regional Plan. While no physical modification is proposed within the active bed or margins of any identified outstanding waterbody, the proposed dewatering of groundwater associated with mining at WUG may result in small changes to natural flow regimes in some of the streams with potential flow on effects for existing habitats (see **Figure 10**).

The general area within which drawdown effects have been identified has previously been subjected to human modification. This is largely associated with the logging of kauri forest in the 1800s and historic mining activity including the Royal Standard Mine from the 1890s. Some ongoing mineral investigation and exploration activity continues today. Where evident, human modification influences cultural and natural associations. Whilst natural elements and influences are clearly dominant in this context, it cannot be considered pristine. Such modification includes evidence of historic mining activity within the context of existing streams, including kauri dams, a

former battery site, workings, tram ways and other related artefacts[9]. Notwithstanding this, streams, wetlands and their margins within the Forest Park generally support natural elements, patterns and processes which express at least high levels of natural character within the context of low-level human modification and activity.

The greatest potential drawdown effects occur within Edmonds Stream, a 2nd order tributary within the larger 3rd order Wharekirauponga catchment. Here median flows of 87.29 litres per second (L/s) naturally reduce to mean annual low flows of 22.89 L/s for short periods of time during prolonged dry periods. This mean annual flow is predicted to reduce to 19.32 L/s under a post-mining worst case drawdown scenario during mining activity[10]. Any reductions in low flows will result in small reductions to suitable instream habitat for most species however in parts of the catchment. Some species also prefer shallower flows and/or lower velocities for which suitable instream habitat may increase, for example, banded kōkopu, shortjaw kōkopu, and long filamentous algae[11].

Modelled reductions in wetted width are between 0 – 5 % of the 7-day Mean Annual Low Flow for all potentially affected streams[12]. Seasonal and climatic variations will continue, and this is unlikely to be perceived within the natural range of low flow, including low flow variations. Existing pool, run and riffle patterns and processes will continue. In experiential terms, any differences in flows will be perceived within the context of these natural variations. Any effects on natural character will remain subjected to naturally occurring change and through which natural elements, patterns and processes will continue to operate in this dynamic environment, and within which predicted changes in flow rates will be very difficult to discern. The likely worst possible case drawdown scenario would essentially preserve the natural characteristics and qualities of overlying streams during and post mining operations.

When experienced from accessible areas along Wharekirauponga Walk including the natural waterfalls and swimming holes downstream, any of the potentially affected streams will continue to support natural characteristics and qualities including seasonal changes in flow which support seasonal recreation activities. Where predicted drawdown may occur, existing streams will remain and continue to respond to seasonal and climatic influences within the context of limited ongoing human modification.

In short, the overall level of natural character of streams will essentially remain unchanged, with any effects arising from localised changes in natural flow regimes being largely indiscernible and within the bounds of natural variability. Whilst some localised and dynamic low level adverse effects may occur along parts of some tributaries within the broader Wharekirauponga catchment, the potential for any broader adverse natural character effects will essentially be avoided. Overall, effects on the natural characteristics and qualities of waterbodies within the broader Coromandel Forest Park will be very localised and largely ephemeral with overall neutral natural character effects on Wharekirauponga Stream.

During operation, it is recommended that measures are employed to monitor change and ensure no further apparent changes in flows or condition of existing streams within the Coromandel Forest Park will occur. Such measures are necessary to address the potential for any broader indirect effects associated with reduced surface flows which may otherwise impact on the existing natural characteristics or qualities of surrounding streams and their margins within this area of the Forest Park. In the longer term it is understood any potential changes in surface water flow will dissipate.

Given this outcome, alongside reinforced riparian planting and associated improved connectivity between the Forest Park and surrounding rural land use within the Willows Road site as identified in **Figure 21b,** any potential localised natural character effects are assessed as low

[9] Clough and Associated (2025) Assessment of Heritage and Archaeological Effects.

[10] GHD (2025) Wharekirauponga Hydrology – Modelling Report.

[11] NIWA (2024) Instream Habitat of the Wharekirauponga Stream and Tributaries

[12] GHD (2025) Wharekirauponga Hydrology – Modelling Report.

and insignificant. It is considered such limited effects are acceptable in response to the high sensitivity of the natural state streams and their margins and to ensure indirect impacts of underground mining are not inappropriate within the context of preserving natural character within the Forest Park and its surrounding landscape.

5.1.1 Willows Road Site

An assessment of natural character relating to the active bed margins and context of waterbodies within the Willows Road site is set out below with consideration given to the freshwater and terrestrial ecological reports which will form part of the application[13].

Mataura Stream

The upper reaches of the Mataura Stream demonstrate very limited levels of modification and follow a natural flow path at the base of a large gully system within the Coromandel Forest Park. This portion of the stream is considered to have a high instream habitat quality with diverse hydraulic components (such as run and riffle habitat and a variety of pools) enclosed by native forest along much of its length. Natural elements and influences remain dominant.

As the Mataura Stream emerges from the Coromandel Forest Park, the margins along the lower reaches become increasingly more modified, influenced by the high presence of rank pasture and low stature species supporting rural activity, primarily pastoral grazing along margins. Such modification also applies to a small, degraded wetland named the Mataura Wetland located on the lower terrace of the Mataura Stream in the vicinity of proposed surface infrastructure. This supports a mix of rush species commonly associated with agricultural areas and two mature Swamp Maire interspersed with more prevalent exotic pasture. Stock is not excluded from this area which reflects widespread grazing and pugging.

The wider context of the Mataura Stream including experiential attributes encompass unmodified stream banks, unimpeded movement of water and a broader backdrop of native vegetation within the Coromandel Forest Park from which the stream emerges into adjoining productive farmland. These attributes provide a coherent connection to the natural environment which encompasses some broader wild and scenic qualities.

Taking the above into account, it is considered that the Mataura Stream and its margins have **moderate-high** levels of natural character and relatively higher levels of natural character in the context of surrounding lowland pastoral land use given its proximity to the Coromandel Forest Park.

Unnamed Tributaries

These spring fed tributaries of the Mataura Stream are located within the Willows Road site and pass through and alongside the respective footprints of the WRS and its associated surface infrastructure. Much of this context has been modified due to agricultural land use and evidence of stock grazing.

The margins of both tributaries are unfenced from grazing stock and extensive pugging and bank slumping are evident, typically in the lower reaches. There are also some pockets of diverse riparian vegetation which appear relatively more intact. Overall, the natural character of the unnamed tributaries expresses multiple instances of modification such as culverts, a pond and pervasive evidence of stock access and grazing along margins. The presence of exotic pasture and limited pockets of native vegetation in some steeper gullies is consistent with this managed working rural landscape and reasonably intensive grazing. The current natural character of these tributaries and their margins are low-moderate within which human influences are dominant, albeit with an ability to be restored.

[13] Boffa Miskell (2025) Freshwater Ecological Assessment.

The project footprint will remove the majority of Unnamed Tributary 2, which will remain embedded in the context of an existing modified working rural environment within which natural elements and influences remain apparent. In this context, the changes to existing streams alongside substantial additional riparian planting across the larger Willows Road site will be undertaken in accordance with ecological recommendations and will provide associated beneficial natural character outcomes. Such work has been sited to avoid potential adverse effects on identified wetlands and will restore natural character values apparent across a broader area encompassing tributaries and the margins of the Mataura Stream. At completion, Unnamed Tributary 2 will also be reinstated and remedy or mitigate potential adverse natural character effects in the longer term.

During construction of the proposed WRS, the project will require the removal of approximately 558 m of stream bed associated with Unnamed Tributary 2[14]. The successful diversion of this stream is not practicable due to the steep topography and the lack of options for an alternative flow path. This catchment contains numerous first order streams that feed into a main stem before meeting the Mataura Stream. Given this modification, it is proposed that approximately 10.9 ha. of the tributaries within this headwater catchment will be enhanced. This would include fencing off the tributaries to prevent stock access in addition to riparian planting at least 10 m in width in addition to the establishment of wetland species in small floodplain areas within the catchment.

A summary of the assessment of natural character effects along the Mataura Stream taking account of changes in its unnamed tributaries in accordance with the methodology set out in **Appendix 1** is set out below.

Existing Natural Character Description	Level of Natural Character (Current Condition)	Proposed Natural Character Description (including mitigation)	Post Development Level of Natural Character (Condition)	Level of Effect	Nature of Effect
Mataura Stream (Willows Road site only)					
Active Bed • Follows a natural flow path with high instream habitat quality • Species found within stream consist of those found in moderate to good habitat including those considered rare or common	High	Active Bed • The active bed will continue to follow a natural flow path and hold high instream habitat quality.	High	Very low	Neutral
Margins • Limited areas of modification to stream margins associated with rural land use downstream of the Coromandel Forest Park. • Rank pasture and low stature vegetation species	Moderate	Margins • Modification to unnamed tributaries occurs in the context of established human modification. • Proposed enhancements of tributaries and riparian planting results in a	Moderate - High	Low	Beneficial

[14] Boffa Miskell (2025) Freshwater Ecological Assessment.

Existing Natural Character Description	Level of Natural Character (Current Condition)	Proposed Natural Character Description (including mitigation)	Post Development Level of Natural Character (Condition)	Level of Effect	Nature of Effect
dominate margins within the Willows Road site. • Includes a defined wetland area which includes two mature swamp maire (critically endangered) • Context influenced by modification associated with neighbouring agricultural land uses.		measurable increase in biophysical and experiential attributes along the river margins and associated tributaries.			

5.2 Gladstone Mine

In natural character terms, the GOP is located within a modified rural area where man-made elements / influences are dominant, comprising grazing, forestry and proximity to the existing Processing Plant. In this context, construction of the GOP will result in the removal of a small headwater gully and tributary of the Ohinemuri River containing an area of planted riparian vegetation carried out voluntarily by OGNZL with moderate ecological value as identified in the assessment of ecological effects[15].

Following pre-operation ecological mitigation (see **Figure 21b: Proposed Integrated Mitigation**), substantial replacement planting and associated habitat opportunities will occur to offset any habitat loss alongside rehabilitation to reinstate surface water flows at completion. Such outcomes ensure any potential adverse natural character effects are not significant or inappropriate in this more modified rural context.

5.3 Northern Rock Stack

During construction of the NRS, small areas of degraded and restored wetlands will be removed alongside the diversion of 1,389 m permanent and intermittent watercourses and tributaries of the Ohinemuri River. These have been planted with native vegetation with medium ecological value as set out in the assessment of freshwater and ecological effects[16]. In natural character terms, such modification occurs in the context of existing mining activity and associated man-made elements and influences which remain dominant in this rural context promoting ongoing opportunities to remedy or mitigate associated natural character effects.

As part of mitigating potential natural character effects, substantial replacement planting will be reintroduced around the diverted stream corridor following the perimeter of the NRS and combined with additional planting and associated habitat opportunities along the margins of the Ohinemuri River and within SNA T13UP166 as illustrated on **Figure 21b: Proposed Integrated Mitigation.** Given the proposed integration between the NRS with existing modification alongside enhancement of surrounding streams, the proposed NRS is not considered

[15] Boffa Miskell (2025) Freshwater Ecological Assessment.

[16] Boffa Miskell (2025) Freshwater Ecological Assessment.

inappropriate within this modified rural context and has been configured to ensure no significant adverse effects on natural character will occur.

5.4 Tailings Storage Facility 3

Constructing TSF3 will entail the loss of several small permanent, intermittent and ephemeral streams, artificial watercourses and a water detention pond with low to moderate-high ecological value as set out in the assessment of ecological effects[17]. The resulting stream diversion will follow the contour of the landform and create a more engineered linear appearance following the contour along the eastern edge of TSF3.

Ruahorehore Stream

The Ruahorehore Stream is a tributary of the Ohinemuri River which contains 2nd and order streams which generally flow through rural landscape near the toe of the existing Tailings Storage Facilities. In natural character terms, 1st order tributaries through the footprint of TSF3 extend from a mixed vegetative backdrop through a more highly modified rural character which adjoins existing tailings facilities where man-made elements and influences are dominant. Potential adverse natural character effects are therefore primarily associated with modified streams and include substantial riparian enhancements along diverted streams and the margins of the Ruahorehore Stream to reinforce habitat opportunities as illustrated in **Figure 21b: Proposed Integrated Mitigation**. Given this modified rural context and the extent of mitigation as proposed, such changes in natural character are not considered inappropriate and avoid any potential for significant natural character effects with ongoing low-level effects.

A summary of the assessment of natural character effects along the Ruahorehore Stream in accordance with the methodology set out in **Appendix 1** is set out below.

Existing Natural Character Description	Level of Natural Character (Current Condition)	Proposed Natural Character Description (including mitigation)	Post Development Level of Natural Character (Condition)	Level of Effect	Nature of Effect
Ruahorehore Stream					
Active Bed • The mainstem appears to follow its original course however large areas of the surrounding catchment have been drained with artificial channels through this productive rural landscape • Headwaters of tributaries which flow through TSF3 footprint are located within regenerating forest predominantly comprised of large boulders, with a mixture of pools, runs, cascades and waterfalls present	Moderate	Active Bed • Diversion of 2,118m length of existing stream bed to form 2,714m reformed watercourse the east of TSF3 beyond regenerating forest and in the context of existing pastoral activity • It is anticipated that the gradient and engineering requirements of parts of the upper length of the diversion channel will have a low ecological functionality • Mitigation includes opportunities to retain and replicate a fully	Low – Moderate	Low	Adverse

[17] Boffa Miskell (2025) Waihi North Project: Freshwater Ecological Assessment.

		formed ecologically functional watercourse in the lower reaches			
Margins • The context and margins are influenced by modification associated with agricultural land uses • Bank slumping is evident along much of the stream length, with areas of pugging from stock also present • The headwaters of tributaries are located within a regenerating forest dense with black tree fern (*Cyathea medullaris*) and some remnant mature pine trees	Low-Moderate	Margins • Proposed enhancements of tributaries and riparian planting results in a to create a continuous corridor along the middle and lower reaches of the Ruahorehore Stream which flow through OGNZL land. • Riparian restoration along one or both sides of the stream out to a minimum of 10 m	Moderate	Low	Beneficial

PART B: Landscape and Visual Effects

6.0 Introduction

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

The assessment of potential effects on landscape is carried out as an effect on an environmental resource, i.e. effects on physical landscape features and effects on landscape character. Visual effects are assessed as one of the interrelated effects on people.

The nature of effects can be summarised as follows:

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

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

6.1 Assessment of Effects

The findings of this assessment are set out in **Sections 7.0 to 12.0** with a full methodology describing the landscape and visual assessment method set out in **Appendix 1.** The findings of this assessment adopt the seven-point scale between Very Low and Very High as endorsed by the NZILA to determine the overall level of effect:

6.1.1 Landscape Effects

To assess the level and nature of physical effects associated with the project, the assessment has considered the values and sensitivity of the physical landscape features undergoing change together with the magnitude of change proposed. For this project, this may include changes to the landform and vegetation disrupted by mining activity, as well as associated changes to existing landscape characteristics and identified values.

Assessing landscape character effects provides judgement of the level and nature of changes to the existing landscape character and values. This includes consideration of the specific attributes and interrelationship between physical, sensory and associative landscape dimensions, depending on the location of the development proposed and judgement as to the extent to which such dimensions will undergo change.

To inform an assessment of the magnitude of landscape change, it is also important that the size or scale and the geographical extent of the area influenced is defined where possible together with the duration of the effect and whether potential effects are reversible. Change is not necessarily an adverse effect, and the assessment must consider the identified change in response to the recognised landscape values and its statutory context.

6.1.2 Visual Effects

To assess the overall level and nature of visual effects, the potential visual sensitivity of the identified viewing audience is considered together with the overall magnitude of change resulting from the proposed development. It should also be emphasised that views of a development or change do not necessarily equate to adverse visual effects. Visual impact is not always negative and differences in view are not automatically unacceptable.

The method used to identify and assess potential visual effects has included desktop visibility analysis and fieldwork to identify available views including representative viewpoints and visual simulations used to assist determining the likely magnitude of change. Whilst the visual assessment has not included views from private properties, representative views have been provided from the nearest available public locations in accordance with best practice. During this assessment, several private properties have been visited for the purpose of identifying and verifying potential visual effects.

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

Site photographs were taken with a Canon digital SLR camera fitted with a 50mm focal length lens, with photographs for visual simulations also mounted on a tripod and panoramic head. A series of photos were taken at predetermined viewpoints, in portrait mode. The viewpoints were situated on public land and the locations of each were fixed using the GPS unit built into the camera. Visual simulations have been prepared from each representative viewpoint based on georeferenced panoramic photographs taken to capture a 90^{o} horizontal field of view and

reproduced using a rectilinear projection on a single A3 sheet to compare the existing and proposed views.

Where change is observed over long distances, a single frame cropped image at a 40^{o} horizontal field of view has also been included to inform understanding of the extent to which change is visible. This enables the resultant simulation to be held at a comfortable viewing distance when printed at A3 to understand the extent of visual change. In all instances the field of view, projection used and image reading distance has been specified to ensure an observer can correctly reconstruct the perspective seen from the viewpoint location from which the photograph was taken.

6.1.3 Mitigation and Integrated Effects Management

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

This integrated mitigation strategy thus aims to prevent a 'patchy' and disconnected mitigation approach (whereby mitigation effort is dotted at irregular locations) and prefers a concentrated mitigation effort at selected locations. In addition, the integrated mitigation strategy supports opportunities to enhance the ecological connectivity benefits across the landscape.

6.1.4 Summary of Assessment of Landscape and Visual Effects

In summary, this assessment aims to:

- Systematically identify and assess the sensitivity of the landscape resource and viewing audience;
- Assess the potential magnitude of landscape and visual change which will result from the proposed development;
- Indicate the measures proposed to avoid, remedy or mitigate those effects; and
- Provide an overall assessment and professional judgement as to the level of the anticipated landscape, natural character and visual effects, considering the proposed opportunities for mitigation.

7.0 Wharekirauponga Underground Mine

The WUG will be executed in two phases, namely development of access tunnels and Willows Road Infrastructure followed by commencement of underground mining. The proposed WUG extends from supporting surface infrastructure at the Willows Road site to beneath the Coromandel Forest Park and will eventually be connected with the existing Processing Plant via an underground tunnel. This has therefore been considered in two separate parts relating to the Willows Road site and Coromandel Forest Park as set out below:

7.1 Willows Road Site

7.1.1 Site Appraisal

The Willows Road site accommodates an irregular shaped landholding straddling the Mataura Stream and totalling 196 ha in area (see **Figure 6**). The current land use is pastoral farmland and features large fields bisected by post and wire fences across the property. Broadly the northern portion of the Willows Road site is defined by the interface with the Coromandel Ranges. The eastern portion of the site is defined by the Mataura Stream and the legal road boundary of Willows Road and the southern and western portions defined by property boundaries of adjoining farms.

The topography of the Willows Road site reflects that of the wider context in which the southern portions are relatively low-lying in nature and in places is approximately 150 masl[18]. The landform then rises in elevation towards the Coromandel Ranges (north) and reaches heights up to 360 masl to the northwest. The steep pasture covered foothills create various folds and localised gullies and include several overland flow paths and unnamed tributaries flowing to the Mataura Stream then into Ohinemuri River beyond the boundaries of the site.

The Willows Road site is principally rural in character and together with the predominantly pastoral covered landscape, features a number or attributes which contribute to its working rural character and amenity. Alongside a prevalent use of pastoral grazing there are various farm tracks, enclosed fields, tree stands, shelterbelts and farm buildings/ structures, the latter of which include barns and a milking shed in the lower portions of the site.

7.1.2 Zoning

As illustrated on **Figure 5**, the entirety of the Willows Road site including surface infrastructure associated with the portal and Vent 1 are zoned Rural. The Willows Road site has not been classified as an area of outstanding natural feature or landscape.

7.1.3 Landscape Characteristics and Values

The Willows Road site is located within the Foothills of the Coromandel Range Landscape Character Area adjoining the Coromandel Forest Park as identified in the Hauraki Landscape Assessment (see **Figure 4**). This landscape is primarily comprised of a combination of moderate to steep landforms with pasture, sizable clumps of exotic forestry and native forest in gullies and on some higher slopes.

Views from within the Coromandel Foothills are frequently observed against a backdrop of native forest within the Coromandel Forest Park. Within the foothills, rural activity remains prevalent throughout the mid and upper slopes, predominantly grazing with some cropping in lower lying areas and forestry on some slopes. Small pockets and corridors of indigenous vegetation are also present, particularly within incised stream valleys draining into nearby rivers.

Dispersed rural settlement maintains a relatively open rural character and typically reflects nodes or clusters of rural dwellings and farm-based infrastructure. Fenced paddock boundaries with hedgerows and access tracks along paddock boundaries are common and maintain a cohesive productive rural character. Some existing quarrying activity is also apparent as are

[18] All level information in this report is based on the current standard New Zealand Vertical Datum 2016 (NZVD2016). This datum is approximately 1002m above the mine datum traditionally used by OGNZL, and approximately 2m above the pre-1949 datum from which the mine datum is derived.

large utilitarian structures including dairy sheds and large implement sheds which contribute part of a broader established working rural character.

7.1.4 Proposed Surface Infrastructure at Willows Road

Surface infrastructure supporting the WUG Mine will be located within the Willows Road Farm property. Whilst the surface infrastructure area will be used for temporary facilities during construction and tunnelling, this assessment has taken account of the proposed mine surface infrastructure established prior to the combined tunnelling / mining operations and which are likely to remain during operation through to project closure. It is expected that bulk earthworks and planting followed by initial tunnelling operations will occur during the first five years of operation.

The key surface elements proposed during operation are indicated on **Figure 7**. The following elements are proposed:

Topsoil Stockpiles and Noise Bunds

The surface footprint areas will first be stripped of topsoil to create temporary topsoil stockpiles covering an area of 2-3ha, which will be grassed or hydroseeded to prevent erosion. Stockpiles will also be used to form noise bunds maintained in pasture grass during operation and associated with the surface infrastructure and private parking up to a maximum height of 3 metres.

Surface Facilities

Office and Change House

An office and single storey change house comprised of modular, demountable buildings of approximately 250 m^2 in area will be established. Power and water connections will be arranged, and a sewage treatment and disposal system installed.

Service Workshop

A steel framed and clad service workshop will be established. The workshop will include a sealed undercover area of approximately 400 m^2, and a 200 m^2 concrete apron area. The maximum height of this building will be 10 metres.

Willows Rock Stack

A temporary Willows Rock Stack (WRS) of approximately 5 ha. and with a total capacity for storage of up to 900,000 m^3 of rock is proposed. This rock stack will be constructed in 10 metre lifts, to a maximum height of 265 masl (see **Figure 7A**).

The rock stack has been located to integrate within the existing topography and minimise visibility from off-site locations. Implementation of the WRS is expected to occur in the first 5 years of operation associated with tunnelling. This is expected to be gradually returned until the completion of the project in approximately 15 years. At completion, all stockpiles will be removed and the underlying land rehabilitated.

Collection Ponds

A collection pond is proposed to be constructed to intercept run-off and seepage from the Willows Rock Stack. The collection pond will be formed as an earth dam located between unnamed tributaries 1 and 2. The run-off and seepage collected in the collection pond will be pumped in a dedicated pipeline offsite to the existing Waihi Water Treatment Plant for processing and discharge.

Several other small retention ponds will be constructed across the site to intercept run-off water from sources other than the Willows Rock Stack to allow solids to settle prior to discharge to Mataura Stream. These ponds will be designed to accommodate silt removal as required. Silt

from collection ponds will be periodically removed, allowed to dewater and placed on the Willows Rock Stack.

Site Access Roads

An internal access road off Willows Road into the Willows Road site will be constructed, with spur connections to main site infrastructure, including the first aid room/gatehouse, office/change house, workshop and private carpark. These roads will be sealed for the main trafficked section, with the balance constructed of gravel to provide a 6 m running width and provision for drainage. An 8-m wide haul road constructed of rock base with crushed rock surfacing will run from the portal to the rock storage pads, with a connection to the workshop and wash pad. The magazine will be accessed via upgrading an existing farm track to a width of 6 m.

Power and Communications

Three phase power will be brought to site via separate cables supplied from the new Waihi mine substation located near the existing Processing Plant. This line will be buried in a trench on OGNZL land and then on the SH25 and Willows Road corridors to reach the mine substation with no landscape or visual effects. A single overhead power and communications line will be installed at Willows Road to supply power and service security at the magazine site.

A small ~80 kVa generator will be located on site to power vital communication and control infrastructure only in the event of power outages. No other back-up generation will be located on site.

Water Supply

Sources of water within the Willows Road site will include recycled tunnel ingress water and a water supply line from the existing Processing Plant.

Explosives Magazines

A series of explosives magazines which conform to New Zealand hazardous substances regulations will be located on the saddle to the south of the WRS. This will be accessed via an upgrade to an existing farm access which approaches this saddle from the south.

Ventilation Fan

Two 250 kW ventilation fans will be installed at the portal entrance in an insulated shipping container for noise mitigation. These fans will be relocated underground and integrated into the overall tunnel ventilation system on completion of the first raise bore vent shaft. All ventilation equipment will be located underground thereafter.

Willows Portal

The Willows Portal will form the initial tunnel entrance with a nominal cross-sectional area of 6.0 metres high by 5.8 metres wide. Following geotechnical investigations to confirm the suitability of the portal location, earthworks will be undertaken to form the portal. Suitable earthmoving equipment, including backhoe excavator, bulldozer and rock breaker will be utilised. If necessary, blasting will be employed. Once the face area of the portal has been established, ground support will be installed in accordance with the geotechnical design, including steel sets/arches, rock bolts, concrete and steel plates. Other required equipment and accessories will be installed at the portal, including transformers, ventilation fan, water storage tank, lighting and safety tag board.

Ventilation Shaft

A single vent shaft (Vent 1) will be constructed in the Willows Road site outside the Coromandel Forest Park at approximately 1km from the tunnel entrance. The ventilation shaft will have a nominal diameter of up to 5.5 metres. No clearance of vegetation is envisaged necessary to undertake breakthrough works and establish a vent collar at this location. An exhaust stack, up

to 8 metres in height, will be installed on completion, together with fencing to prevent unauthorised and animal access.

At the closure of the project, all surface infrastructure will be removed, and footprint areas fully rehabilitated to return the land to pre-tunnelling status as being suitable for farming. Stockpiled topsoil will be reclaimed for use in rehabilitation.

Heli Pad

A new helipad will be established towards the northern end of the Willows Road farm. This site has been identified to improve resilience resulting in issues with existing helipad facilities and avoid any increase in effects associated with a proposed increasing helicopter activity from up to 100 flight hours per month (300 trips) to no more than 200 flight hours per month (600 trips). There would be no direct line of site between the helipad and any surrounding residences.

7.2 Landscape Effects

Assessing landscape effects considers proposed changes in terms of effects on existing landscape values. Such effects can relate to physical aspects such as landform and vegetation alongside the combination of physical, perceptual or associative landscape attributes or dimensions which contribute to landscape character. In each instance, this assessment considers the specific landscape characteristics and values, depending on the location of the development proposed and the extent to which this will undergo change. To inform an assessment of the magnitude of landscape change, it is also important that the size or scale and the geographical extent of the area influenced is defined, where possible, together with the duration of the effect and whether potential effects can be rehabilitated or remedied.

7.2.1 Landform

Servicing the underground mining activities will require development of surface infrastructure that will alter the existing landform of the Willows Road site. Such modification includes the creation of surface infrastructure and an associated rock stack progressively brought to and from the surface through a portal to the underground mine. This occurs within the undulating and folded landform of the Willows Road site which contributes a key characteristic of the foothills of the Coromandel Ranges.

The most notable alteration of the landform resulting from mining activity will be the creation of the WRS, created from material brought to the surface from the portal. This has been designed to accommodate approximately 900,000 m^3 of rock material, which will be progressively deposited within a defined platform within the Willows Road site. During construction of the tunnel, material will be extracted from the tunnel portal and deposited to form the WRS. This will be progressively filled in 10 metre lifts to a total elevation of 265 masl (see **Figure 7A**).

The positioning of the WRS has been considered in relation to the ability for this element to remain visually contained and integrated within the existing folded topographical characteristics in the centre of the Willows Road site. During implementation, the worked appearance resulting from the depositing of material and nature of machinery will appear atypical within the established character of adjoining working rural areas, predominantly comprised of pasture and grazing. Following operation, all rock within the WRS will be returned underground and the area recontoured to the original landform and returned to a tributary surrounded by arable farmland. This area will effectively be reintegrated with the surrounding topography and assimilated within the sequence of foothills at the base of the Coromandel Range.

Temporary topsoil stockpiles (approximately 2-3 ha in area) are also required as a result of grading / preparing surfaces for above ground infrastructure and the WRS. Such topsoil will subsequently be re-spread over disturbed areas. To support vitality, topsoil stockpiles will be formed to maintain microbial health and located in adjoining areas to ensure they remain well

contained within the Willows Road site. This will result in temporary changes in landcover alongside localised landform disturbance which appears broadly consistent with surrounding rural activity once reinstated in pasture grass species.

Earthworks to facilitate surface infrastructure will include cut and fill batters up to approximately eight metres high and laid back at a gradient of 1(v) and 1.5(h) and hydroseeded. Once established, this will generate a contained terrace stepped above the margins of the Mataura Stream. Temporary noise bunds are also proposed along the southern side of the main site infrastructure which would form distinct linear localised changes within the adjoining flattened terrace landform. These elements typically reach a maximum elevation of three metres in height and would be grassed to soften their initial worked appearance. Such elements will have minimal external views beyond the unformed northern section of Willows Road which will become further reduced through retained and proposed areas of exotic and native vegetation.

In combination with the construction of the WRS, a collection pond is required to intercept run-off from the WRS. This is located within existing terracing within the Willows Road site to minimise the extent of earthworks and limit the potential for views from beyond the site. The resulting collection pond will contain untreated water to be removed for treatment off site. The resulting embankments would be hydroseeded and assimilate within adjoining river escarpments once established. Diversion drains and a spillway will be required from the WRS and require localised modification to the landform in these areas.

Internal access and haul roads will be required during operation of the project and creation of the WRS. Existing farm tracks/ roads will be utilised where practicable and upgraded to accommodate efficient and safe access between surface infrastructure. A haul road will be formed at the toe of the proposed WRS adjoining the portal and will navigate up the proposed WRS to dispose of and collect material. A poly farm accommodating polyethylene pipe and fittings used within the underground mine is proposed to the east of the WRS and will remain visually concealed from beyond the site. An existing farm access will also be upgraded to enable vehicles to access the proposed explosives magazine.

Due to the topography of the Willows Road site, access roads will require modification across steeper sections of terrain and result in additional cuts and batters most apparent during construction. Once formed, exposed batters should be finished with rounded batters to integrate within the adjoining landform and all exposed soil scarified and hydroseeded with pasture and/or native vegetation to become assimilated within the surrounding land cover and rural land use.

Supporting facilities and buildings will be required as part of the project and these areas have been concentrated in the vicinity of the proposed portal and WRS to maintain operational efficiencies and minimise the overall footprint of disturbance within the Willows Road site. Where practicable, areas of flatter, low-lying land have been utilised to provide areas for these facilities, particularly to the east of the main access road along terracing above the Mataura Stream. An area for private carparking has also been proposed to the west of the main access road which will require some localised benching and associated bunds to accommodate this within the lower flanks of the rising topography.

Outside of the more concentrated modification to the landform in the vicinity of the WRS and proximate surface infrastructure, disturbance is proposed to facilitate explosive magazines and a vent shaft in the west and north-west area of the Willows Road site respectively. This modification will result in localised effects to prepare the ground for these elements. The remaining Willows Road site will retain a mosaic of working rural areas with fencing and access tracks alongside pockets of reinforced native regeneration which assist with integrating landform disturbance within the site.

7.2.2 Vegetation

Consideration has been made to retain as much existing vegetation as practicable during implementation and to restore vegetation loss during and following operation.

During implementation, a small number of individual trees and tree groups will be removed to accommodate the main area of surface infrastructure, located in the low-lying areas of the Willows Road site (see **Figure 7B**). In addition, most of the existing riparian vegetation along Unnamed Tributary 2 is proposed to be removed to accommodate the footprint of the WRS. Beyond this disturbance, several existing exotic shelterbelts, hedges and many standalone trees and tree groups within the pastural areas of Willows Road site will be retained.

In the immediate vicinity of the project, native vegetation within the majority of Unnamed Tributary 1 will be retained. Such vegetation will be fenced and enhanced as part of the project through supplementary planting. Moreover, further substantial riparian planting will be provided along tributaries to the south of the main operation area, which will connect to the Mataura Stream and assist with visual screening of the surface infrastructure from neighbouring residents.

The removal of riparian vegetation resulting from surface infrastructure within Willows Road is proposed to be offset by enhancing a sub-catchment to the north within the Willows Road site (Tributary 3). This will entail fencing off the tributaries to prevent stock access in addition to riparian planting of at least 10 metres in width and the establishment of wetland species in small floodplain areas within the catchment.

Given the relatively limited vegetation clearance within the Willows Road site alongside the considerable amount of native restoration planting proposed, it is considered that there will only be very limited temporary adverse effects of construction activity on landcover. Such effects will ultimately become neutral and then beneficial as planting identified on the integrated mitigation plan becomes established.

In addition to the above, a substantial amount of additional riparian planting is proposed along the margins of the Mataura Stream which extends into adjoining land. As the stream effectively forms part of the eastern boundary of the operation area within the site and improvements can readily be made to the quality of this riparian margin as a result of this localised change in land use, this recognises an opportunity to meaningfully enhance connectivity along the Mataura Stream between the Coromandel Forest Park and the formed end of Willows Road. Approximately 900 m of additional riparian enhancement planting would be provided in this area.

7.2.3 Landscape Character

Landscape character is derived from the distinct and recognisable pattern of elements that occur consistently in a landscape. It combines biophysical, sensory and associative landscape dimensions and reflects combinations of geology, landform, soils, vegetation, land use and features of human settlement alongside human perceptions and associations. It creates the unique sense of place defining different areas which are appreciated as a distinct landscape.

During implementation and operation, part of the Willows Road site will gradually change through sequences of deposited material as the WRS is formed. The establishment of supporting facilities such as the workshop and wash bay will remain relatively comparable to the size, scale and nature of agricultural buildings that are observed in the wider area, expressing a contained node facilitating broader working rural land management practices. Most of these facilities are located within lower lying areas of the Willows Road site and enclosed by landform alongside existing and proposed vegetation to ensure minimal external views and no detrimental effects on the surrounding open rural character.

The majority of established vegetation that characterises and contains the Willows Road site will remain and retain the rural amenity of the area through a predominant cover of pasture and various shelterbelts and tree stands (see **Figure 7B**). Although vegetation within the Unnamed Tributary 2 will be affected as a consequence of the project, this occurs alongside substantial enhancements along riparian corridors within the site and along an adjoining section of the Mataura Stream. Moreover, enhancements to existing tributaries to the north and south of the Willows Road site will reinforce natural patterns and the associated quality of the environment within these modified aspects of this rural landscape.

The activities of the project will be visible through the movement of large machinery and earthworks. A variety of quarries are present in the wider area, including within the Willows Road site and a more substantial quarry to the east of the site off Corbett Road. While the earthworks necessary to construct the WRS are of a relatively much larger scale, such activity has been sited to remain visually contained and integrated within the surrounding landscape. At completion, the WRS will be removed with the land recontoured to the original landform and returned to use as arable farmland alongside re-established native riparian margins. In essence, the nature of landform modification and its subsequent rehabilitation will continue to contribute to the surrounding productive rural land use which characterises this area.

Following rehabilitation, the landscape character of the Willows Road site will appear largely unchanged and continue to be associated with a working rural landscape. Within this context, the project, including landscape and ecological mitigation embedded in the project design, has been configured to ensure adverse landscape character effects remain localised and largely reversible in the context of sustaining broader environmental enhancements. A large proportion of the associated activity will remain visually concealed or visible at distances of approximately 2 km (in the vicinity of SH25 and Corbett Road), with most external views continuing to be characterised by a series of moderate to steep landforms of pasture which characterise the Coromandel Foothills.

Given the relative containment of views within a portion of the site, and measures undertaken to reduce and rehabilitate effects on the landscape character of the Willows Road site, it is considered that any adverse effects during implementation and operation will remain relatively limited and will not detract from the open rural character of the surrounding landscape. Following rehabilitation, the form and scale of the rehabilitated landform and pattern of proposed vegetation would complement and reinforce this existing area of rural landscape.

7.2.4 Summary of Landscape Effects at Willows Road Site

The below tables provide a summary of the landscape effects resultant from the project.

	Contributing factors	Implementation[19]		Operation[20]		Residual[21]	
		Level of Effect[22]	Nature of Effect[23]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Large scale earthworks to accommodate the WRS • Localised terracing and noise bunds to accommodate surface infrastructure	Moderate	Adverse	Low - Moderate	Adverse	Very Low	Neutral

[19] Effects at implementation before mitigation

[20] Effects during operation with mitigation

[21] Residual effects at completion

[22] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[23] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[19]		Operation[20]		Residual[21]	
		Level of Effect[22]	Nature of Effect[23]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	• Landform modification integrated within existing topography • Collection pond bund formed to blend within adjoining river terraces along the Mataura Stream **Mitigation** • Temporary topsoil stockpiles hydroseeded and removed at completion to facilitate rehabilitation • Final landforms restored to appear similar to existing and revegetated with grass or other vegetation to integrate within the surrounding land use.						
Vegetation Effects	• Retain key shelterbelts and tree stands during operation • Removal of vegetation in Unnamed Tributary 2 compensated by ecological enhancement • Minimal impact on remaining existing riparian vegetation across the remainder of the site • Temporary/short term change in rural land cover including pasture **Mitigation** • Reinforce riparian planting established and maintained along wider tributaries along Mataura Stream and identified wetland • Substantial expansion of terrestrial native forest cover along the true left of the Mataura Stream • Pastoral rural land cover re-established at completion	Low	Adverse	Low	Neutral	Moderate	Beneficial
Landscape Character Effects	**Characteristics and Values** • No formal national / local landscape protection • Combination of moderate to steep landforms, predominantly in pasture with clumps of exotic forestry and native forest in gullies and on some higher slopes • Working rural character with disbursed rural settlement distinct from the broader more natural green backdrop of the Coromandel Range	Low – Moderate	Adverse	Low	Adverse	Very Low	Neutral

	Contributing factors	Implementation[19]		Operation[20]		Residual[21]	
		Level of Effect[22]	Nature of Effect[23]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	Nature of Landscape Change • Localised and relatively contained landform modification associated with Willows Road Stack which remains subservient within enclosure of adjoining sequence of hill forms • Buildings sited to ensure minimal external views and no detrimental effects on the surrounding open rural character **Mitigation** • Retain existing vegetation where practicable and introduce further buffer planting including planting adjoining scarps and intervening riparian areas • Landscape rehabilitated to reinstate rural character at completion						

7.3 Visual Effects

7.3.1 Viewing Areas and Representative Viewpoints

Due to the topography of the Willows Road site and surrounding context, many areas of the visual catchment associated with the WRS occur within the Willows Road site and a localised area which extends to the south-east (see **Figure 8**). A limited number of roads are located within this area with the ability to obtain potential views. Many of these roads service rural properties off more major transport corridors. Such roads encompass parts of SH25, Willows Road, Corbett Road and very long-distance views from Heard Road and Golden Valley Road.

The proposed vent shaft in the north-west area of the Willows Road site has a more contained visual catchment which is almost entirely contained within the Willows Road site and adjoining forested areas within the Coromandel Forest Park from which potential views are concealed. Except for unformed paper roads, predominantly covered with existing vegetation which limits views, no external viewpoints were identified in relation to this aspect of the project.

The main public and private viewing audiences located within the visual catchment which attain views of the Willows Road site are within the vicinity of and along the aforementioned roads to the south-east of the site. Publicly accessible viewpoints used to assist this assessment are primarily located on roads adjoining such areas.

Based on the above, five viewing areas have been identified from which visual effects have been assessed together with visual simulations prepared from seven representative viewpoints from within these areas (see **Figure 8**).

- **W1:** Willows Road (VSs 1 to 4)
- **W2:** Highland Road (VS 5)
- **W3:** SH25 and Corbett Road (VS 6 to 9)

- **W4:** Golden Valley Road
- **W5:** Heard Road

W1 Willows Road (VS 1 to 4)

This viewing area to the south-east of the site primarily includes the northern end of Willows Road as well as rural and rural lifestyle properties and road users along Willows Road. It is noted that a paper road exists alongside the Mataura Stream and in principle could accommodate people walking towards the Coromandel Forest Park, however such views are likely very infrequent and of lower value. In this area, the most sensitive views are likely to occur from people within adjoining residential dwellings at the northern end of the road.

Four viewpoints have been taken to represent the nature of views from this area, however no access to private property has been obtained to confirm the nature and level of visual effects from individual dwellings.

VS1: End of Willows Road

This view is obtained beyond the northern end of the formed road, but within the legal road corridor. This view is characteristic of the working rural landscape context established within undulating and steeper pastoral slopes along the toe of the Coromandel Range. The principal change in this view will result from embankments necessary to support the surface infrastructure area and collection pond as well as the uppermost portion of the WRS. Notwithstanding this, visitor numbers are infrequent, particularly for those beyond the formed road. Accordingly, these views are unlikely to be recognised or highly valued by the community. There will however be an apparent change, particularly during implementation and operation where the WRS will remain visible. Mitigation which includes wetland and terrestrial planting along the margins of the Mataura River will increasingly screen landform changes and integrate proposed development within this view.

Once the project is complete and rehabilitation has been established, the WRS will be removed, and the landform reinstated to resemble its existing form.

VS2: Willows Road

This view is obtained from the roadside to the north-west of 122 Willows Road the nearest property to the east of Willows Road. This northwest facing view captures the low-lying pastoral land of the site in the foreground, with the pasture covered land rising in elevation forming a sequence or rolling hillsides. The Coromandel Forest features in the wider context of the view beyond the site. Stands of trees, hedge rows and rural elements including post and wire fences feature throughout the view.

The key change brought about by the project from this location would be implementation of site infrastructure beyond a foreground of existing and reinforced vegetation alongside more distant partial views of WRS as it is progressively formed. Carparking areas and storage areas in the southern area of the site are formed beyond bunding containing views towards this area. Existing tree stands and vegetation will maintain a visual screening of most surface infrastructure from this location. Once the project is completed and land rehabilitated, WRS will be removed and the recontoured landform being returned to grazing.

VS3: Willows Road

This view is positioned nearby the residential properties of 111A and 111B, the nearest neighbouring property to the west of Willows Road, in addition to the currently undeveloped 112 Willows Road. The view from this location consists of localised depressions in the landform due to a visible overland flow path in addition to the more

distant rising landforms of the site. From here the sequence of hills within the site are not particularly legible due to the presence of tree stands and shelterbelts associated with the rural activities which define this area.

The change in view for these viewing audiences will remain limited with proposed surface infrastructure obscured by existing and proposed planting in addition to existing intervening rural structures. The key discernible change relates to a view of the upper portion of the WRS which will rise alongside the elevated topography within the site. During operation, this will form an ongoing working aspect which extends along part of the skyline within this adjoining rural outlook. Once rehabilitated, this temporary landform will be removed and will not feature within the current perceived outlook.

VS4: Willows Road

Positioned at an approximate mid-point along Willows Road, this viewpoint is principally representative of residents at 65 Willows Road in addition to road users travelling north towards the site. The compilation of the view observed is of a rural landscape characterised by low-lying arable farmland in the foreground which then rises to greater elevations forming a distinctive pasture covered ridgeline which visually relates to the vegetated ridges within the Coromandel Forest Park. Rural elements such as barns, fences and related vegetation patterns (such as tree stands and shelterbelts) are also visible.

From here, the majority of Willows Road site will be screened by intervening landform and vegetation, with the exception of the upper portion of the WRS. The WRS will appear visible beyond intervening shelter planting and appear as an extension of the existing folded rural landscape which continues along the skyline to the left of this view. Such modification will remain distinct from the bush clad backdrop of the Coromandel Forest Park which extends to the right of this view. The lower lying surface infrastructure will not be visible from this location due to existing and proposed vegetation in the lower portions of the view. Once completed, there will be no apparent change or associated visual effects.

W2: Highland Road (VS 5)

This viewing area comprises the northern portion of Highland Road which originates from Willows Road. The road gradually ascends in elevation from the junction with Willows Road and supports a cluster of four residential properties at the northern end which have a higher sensitivity. From here it is anticipated that 98A and 98B which are at the most northern end of the road and elevated above VS5 may be able to obtain partial views of the proposed explosives magazine and upgrades to the existing access over distances of approximately 550 m.

One viewpoint has been taken to represent the nature of views from this area, however no access to private property (including the private road servicing these properties) has been obtained to confirm the nature and level of visual effects from individual dwellings.

VS5: Highland Road

Positioned at the upper portion of Highland Road, this view represents the residential viewing audience that obtains north facing views towards the site. The viewing audience's outlook is currently characterised by the rural features within the site including the rising pasture covered hillsides which form part of the Coromandel foothills. From here the WRS and associated surface infrastructure will not feature in available views due to the intervening landform. The proposed upgrade to the existing access to the magazine area will initially appear as a raw worked area which can be hydroseeded at completion to become increasingly integrated within surrounding areas of pasture.

W3: State Highway 25/ Corbett Road (VS 6 to 9)

This is a broadly linear viewing area which includes the SH25 transport corridor and Corbett Road in addition to the neighbouring properties accessed off these roads. The viewing audience is therefore comprised of lower sensitivity road users in addition to potential residents considered to be the more sensitive to change due to their associated activity and fixed views. For most viewing audiences that attain views, views tend to be wide and panoramic, including the surrounding arable farmland and Coromandel Ranges forming the background.

Four viewpoints have been taken to represent the nature of views from this area, however no access to private property has been obtained to confirm the nature and level of visual effects from individual dwellings.

VS6: Corner of Willows Road and State Highway 25

This view is positioned on the corner of Willows Road and SH25 and representative of views for road users about to travel along Willows Road and therefore generally have a lower sensitivity to change. The view is currently characterised by the local road environment in addition to the rural land uses that flank it. The outlook also includes the rising pasture covered topography of the site in addition to the Coromandel Ranges and adjoining pastural hills to the north.

From this location the top of the WRS is potentially visible above the top of an intervening shelter belt and below a broader backdrop of the Coromandel Range. Part of the earthworks associated with upgrading the existing access to the magazine may also be visible with temporary topsoil stockpiles located below this largely screened by intervening vegetation. Such views will be transient and predominantly reversible as the WRS is removed and rehabilitated. Similarly, earthworks associated with upgrading the existing access to the magazine will increasingly become integrated within surrounding areas of pasture.

VS7: State Highway 25

Located along SH25, this viewpoint is representative of road users and adjoining properties off SH25 which are located on slightly more elevated land to the south at distances of approximately 2km from the proposed WRS. Views obtained from this location are panoramic and open and are characterised by the rural outlook and its interplay with the Coromandel Ranges. The site features as part of the midground view against a backdrop of rising vegetated topography. Tree stands and shelterbelts feature within the view and obscure the lower portions of the site.

With existing and proposed vegetation screening views of the surface infrastructure, the change in view as a result of the project will be primarily focused on the WRS and upgrading the access to the magazine area which will modify part of the middle and upper elevated positions of the site's topography. Once the site is rehabilitated, this will not feature, and the area occupied will read as a continuation of the rural landscape with the topography recontoured and pasture re-established.

VS8: Corbett Road

This view is positioned at an approximate mid-point of Corbett Road and represents road users and a nearby residential dwelling at 17 Corbett Road. The view is orientated northwest looking toward the Willows Road site, although it is recognised that the views obtained from this location are panoramic and include a broad rural area. The view obtained includes features typical of a working rural landscape including farm buildings, pasture fields, farm tracks, hedges and tree stands. In this context the Willows Road site is in the midground of the view and vegetation in the lower reaches features where the folding hillsides meet the lower lying areas.

From here, the WRS and upgrade to the existing access to the magazine will be visible on the hillside within the site over a distance of approximately 1.8 kilometres. As this is progressively formed then subsequently removed this will appear as a localised modification which extends along a localised area of skyline in the context of a wider rural outlook. The vegetation that features in the lower portions of the site will screen the proposed surface infrastructure and the majority of the associated topsoil storage areas. As the WRS is progressively removed and rehabilitated, the site will be returned to pasture consistent with the existing rural outlook.

VS9: State Highway 25

This view is obtained from the road corridor and is orientated west, toward the Willows Road site. The view captures the representative outlook of road users in this location and also reflects views obtained from residential properties in the vicinity accessed from the state highway. The outlook for these viewing audiences is similar to those within the broader viewing area in that the views are wide and panoramic and feature the low-lying arable farmland which then rises in elevation to meet the pasture covered hillsides of the Coromandel Foothills (including the Willows Road site) and Coromandel Ranges beyond. The character of the rural outlook is also supported by surrounding rural elements which include rural buildings and exotic plantings which bisect the various fields.

The change in view as a result of the project during implementation will be the formation then removal of the WRS that will appear on a distant hillside within the site over a distance of approximately 2.5 kilometres. The WRS will evolve over time during this period in the context of established rural land use. Once removed this will retain the existing wider rural context and outlook.

W4 Golden Valley Road

Views from Golden Valley Road are restricted to an isolated area in the northern section of the road which include a small number of residential properties. Views from the road toward the site are more typically curtailed by intervening vegetation. The outlook from the properties varies with a number of these bordered by vegetation (such as 65 Golden Valley Road which is heavily treed and 51 Golden Valley Road which has shelterbelt planting along the roadside). The key change in these views for those that do obtain views of the site will be the WRS which will form a long-distance, small element in their overall outlook. Once completed and rehabilitated this feature will no longer be visible.

W5 Heard Road

These residential viewing audiences are also located at some distance (at least 4 kilometres) from the proposed WRS. Views are elevated and comprise of wide panoramic views of the surrounding rural landscape. Whilst views of the Willows Road site in the context of the backdrop of the Coromandel Range may be apparent from this elevated enclave of rural lifestyle development, any views of the project will be very long-distance glimpse views filtered through intervening vegetation and approximate a no change situation.

7.3.2 Summary of Visual Effects Assessment Willows Road Site

An assessment of the level and nature of visual effects from identified viewing areas associated with the Willows Road site are set out below:

	Contributing factors	Implementation[24]		Operation[25]		Residual[26]	
		Level of Effect[27]	Nature of Effect[28]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
W1: Willows Road **(VS1 - VS4)**	**Key Landscape Attributes** • Part of the undulating rural landscape within the foothills of the Coromandel Range • Views occur within a working rural context in the foreground of a more elevated vegetated backdrop of the Coromandel Range • Views partially enclosed by intervening vegetation and landforms consistent with rural land use **Nature of Visual Change** • Views from proximate residential dwellings typically enclosed by vegetation • WRS will become visible in some cases although this tends to be glimpsed and partial views • WRS removed from view at project completion with landform recontoured and returned to grazing **<u>Mitigation</u>** • Maintain existing site vegetation where practicable as an established visual buffer • Vegetate or hydroseed noise bund associated with main site infrastructure as soon as practicable after construction • Establish proposed intervening buffer vegetation to contribute to containing and screening low-lying surface infrastructure	Low - Moderate	Adverse	Low	Adverse	Low	Neutral
W2: Highland Road **(VS 5)**	**Key Landscape Attributes** • Part of the undulating working rural Foothills of the	Low	Adverse	Very Low	Adverse	Very Low	Neutral

[24] Effects during implementation before mitigation

[25] Effects during operation following mitigation

[26] Residual Effects at Completion Following Mitigation

[27] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[28] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[24]		Operation[25]		Residual[26]	
		Level of Effect[27]	Nature of Effect[28]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	Coromandel Range landscape • View currently characterised by steep pastoral slopes, fences, access tracks and pockets of vegetation **Nature of Visual Change** • Views from rural dwellings off a private road • Views of the WRS and surface infrastructure obscured beyond intervening landforms • The proposed magazine buildings and surrounding bunding will appear visually contained within a localised saddle • Upgrades to the existing magazine access will form an initial worked appearance which will become progressively integrated within surrounding areas of pasture once hydroseeded **Mitigation** • Exposed batters supporting all access roads to be finished with rounded edges to integrate within the adjoining landform and all exposed soil scarified and hydroseeded						
W3: State Highway 25 / Corbett Road **(VS 6 to 9)**	**Key Landscape Attributes** • Part of a flat to undulating area of Foothills of the Coromandel Range • Rural working land use along the undulating foreground of a more distant vegetated backdrop of the Coromandel Range • Views typically wide and panoramic although several residential viewing audiences along SH25 will have partial or obscured views due to intervening vegetation **Nature of Visual Change** • Views from dwellings and transport corridors	Low	Adverse	Low	Averse	Very Low	Neutral

	Contributing factors	Implementation[24]		Operation[25]		Residual[26]	
		Level of Effect[27]	Nature of Effect[28]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	• Predominant change will be distant views of the WRS within an area of folded pastoral land use. • Views will be gradual and transitional as the WRS is formed and progressively removed in the context of surrounding working rural activity • WRS removed at project completion with landform recontoured and returned to grazing						
W4: Golden Valley Road	**Key Landscape Attributes** • Part of the flat to undulating Foothills of the Coromandel Range landscape • Part of a working rural midground of a more distant vegetated backdrop of the Coromandel Range **Nature of Visual Change** • Views from distant rural properties • Roadside planting and planting in private properties tends to restrict views towards the site • Views that are obtained are distant and panoramic, containing the Coromandel foothills and Coromandel Ranges • Change observed form this distance primarily relates to glimpse views of the proposed WRS • WRS removed at project completion with the landform recontoured and returned to grazing	Very Low	Adverse / Neutral	Very Low	Adverse / Neutral	Very Low	Neutral
W5: Heard Road	**Key Landscape Attributes** • Part of the flat to undulating working rural Foothills of the Coromandel Range landscape • Panoramic views of surrounding rural landscape observe the site and the toe of the Coromandel Ranges which form a distant backdrop **Nature of Visual Change**	Very Low	Adverse	Very Low	Adverse	Very Low	Neutral

	Contributing factors	Implementation[24]		Operation[25]		Residual[26]	
		Level of Effect[27]	Nature of Effect[28]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	• Potential views from distant rural properties • Change in view will be limited in respect of the wider outlook and includes the WRS which will feature as distant elements on the site's rolling landforms • Removal of the WRS at the completion of the project will ensure potential longer-term effects are remedied with the landform recontoured and returned to grazed land						

7.4 Wharekirauponga Underground Mine: Coromandel Forest Park

The WUG occurs beneath the Coromandel Forest Park which reflects a landscape of high value that is particularly sensitive to change. The area above the proposed mine is focussed within the Wharekirauponga catchment which contains steep and deeply incised landforms enclosed by expressive peaks which form the backdrop of views from vast areas to the east.

7.4.1 Zoning

The project footprint beneath the Coromandel Forest Park is within the Conservation (Indigenous Forest) Zone. Much of the Coromandel Ranges, including the Coromandel Forest Park, has been formally classified as part of an ONL (see **Figure 5**).

7.4.2 Landscape Characteristics and Values

The underlying sequence of steeply and deeply incised landforms reflect formative volcanic processes and are commonly recognised as the undeveloped backbone of the Coromandel Peninsula. Whilst past logging and mining activity remains evident, much of this broader landscape associated with the Coromandel Forest Park is characterised by a cohesive cover of established and regenerating forest. Within this context, sites of significance to tāngata whenua include important local landmarks, urupā and rare ecosystem that have a very unique wairua and mauri. Further detail which recognises the Coromandel Forest Park as an ONL is set out in Section 3.2 above.

Within the AA area, existing exploratory drilling sites and supporting site infrastructure establish more recent but highly localised mining influences within the broader remote forest park context. This occurs alongside remnants of the former Royal Standard Mine which introduces some historic mining influences in this context encompassing Kauri dams, historic tracks and opportunities to encounter mining artifacts and tunnels along walking tracks. Beyond such areas, the almost complete native forest cover maintains a coherent natural backdrop and opportunities to experience wildlife within reestablished areas of native forest which reinforce the underlying wild and remote scenic qualities.

Beyond the Forest Park, there is no apparent modification along the landscape's underlying volcanic form and predominantly vegetated upper slopes, retaining a highly vivid and memorable green backdrop and skyline.

7.4.3 Proposed Underground Infrastructure

Given the recognised high sensitivity of the Coromandel Forest Park, the WUG mine is proposed entirely underground albeit with some limited surface expression. Proposed tunnelling will comprise a combination of single and dual drives which extend for a length of approximately 6.9 km from the Willows Road site beneath the Coromandel Forest Park to access and mine the identified orebody, and approximately 5 km to the east to provide a connection to the existing Processing Plant.

The tunnels commence from separate portals within the Willows Road site and in the vicinity of the Processing Plant which transition to a dual heading tunnel from the first vent raise near the northern boundary of the Willows Road site. The overall dimensions of each tunnel are nominally 6.0 metres in height by 5.8 metres in width. Tunnel depths will vary between 100 m and 500 m below the surface (other than access declines) with resulting mining activity occurring no closer than 65m from the surface at any point, subject to maintaining minimal surface effects.

7.4.4 Proposed Surface infrastructure within the Coromandel Forest Park

The proposed activities within the Coromandel Forest Park are sequential in nature with ongoing exploration activity and monitoring as the tunnelling enabling mining activity is established and until mining activity is completed and remediation and closure occurs. As proposed tunnelling commences beneath the Coromandel Forest Park, sequential ongoing investigation and exploration activity is proposed on the surface. Any temporary surface activity will be removed and rehabilitated once the mining activity has been completed. This work has been defined in three separate phases as set out below with locations indicated on **Figure 9**:

Stage 1

- Four additional exploration drill sites within the AA Area
- One additional drill rig (currently limited to three, resulting in a total of four). One of these rigs may be a man-portable rig;
- Two additional camps and messing facilities, located on any of the existing or proposed drill sites (currently limited to two, resulting in a total of four);
- One additional helipad (currently limited to two, resulting in a total of three), located on any existing or new drill site;
- Up to four surface geotechnical exploration drill sites within the AA Area to confirm suitable vent shaft sites;
- Up to four surface geotechnical exploration drill sites outside the AA Area above the dual access alignment;
- The provision of two additional river pump sites for abstracting surface water (currently limited to three, resulting in a total of five); and
- The ability to use a man-portable rig for up to 50 sites for drilling shorter (<100m) holes.

Stage 2

- Four additional exploration drill sites (for a total of 18: currently limited to ten, with four additional at Stage One, and four additional at Stage Two);
- Two additional drill rigs (for a total of six: currently limited to three, with one additional at Stage One, and two additional at Stage Two). One of these rigs may be a man-portable rig;
- Two additional camps and messing facilities, located on any of the existing or proposed drill sites (for a total of six: currently limited to two, with two additional at Stage One, and two additional at Stage Two);
- One additional helipad (for a total of four: currently limited to two, with one additional at Stage One, and one additional at Stage Two), located on any existing or new drill site;
- Four exploration drill sites for the purpose of drilling additional piezometer holes to assist with pumping test investigation and/or other hydrogeological testing or baseline data collection;
- Complete surface clearing and construction of larger pads (up to 900m2) for hydrogeological pump test investigations and ventilation construction;

Stage 3

- Remediation and Closure Activities.

The position of all surface elements within the Coromandel Forest Park will be determined by geotechnical suitability in combination with ecological, landscape and recreation criteria assessed and reported to the Hauraki District Council and Waikato Regional Council. The drilling rig and associated equipment will be transported via helicopter. Once investigation and exploration activities are completed and shaft raises are formed, all superfluous construction equipment including helipad and surface facilities no longer required will be removed.

Ventilation and Emergency Refuge/Secondary Egress

During operation, fixed surface infrastructure proposed within the Coromandel Forest Park is limited to up to four ventilation shafts (one jointly serving as an egress shaft). Each shaft site will be selected according to a range of ecological and landscape based site selection criteria. During construction, these will occupy a cleared footprint of up to 30 x 30 metres, with a combined cumulative total area of approximately 2,700 m^2. Once constructed each clearing will be rehabilitated back to a footprint of approximately 100 m^2 with construction materials removed via resultant shafts. Each shaft raise will have a nominal diameter of up to 5.5 metres with an 8 m evasé (stack) installed over the collars to direct discharge air and a perimeter fence around the stack to prevent inadvertent animal or human entry into the shafts.

During Stage 3: Rehabilitation and Closure Activities, all drill sites, surface facilities, fencing and vent/egress surface infrastructure (vent stacks) will be removed and rehabilitated. Areas accommodating ventilation raises and shaft collars will be covered over and the areas occupied including raises and any accommodation/amenities removed or filled in and rehabilitated to support native flora and fauna. Such rehabilitation effectiveness will be monitored and managed for a period of 2 years or more following closure to ensure the success of such remediation.

7.5 Landscape Effects

7.5.1 Landform

The nature of underground mining means the potential for any apparent landform effects on the character of the Coromandel Forest Park will remain extremely limited. Such modification

results from ongoing investigation and exploration activity including earthworks and retaining walls and resulting in the construction of up to four level 12 x 12 m concrete pads for testing and installation of ventilation shafts to support underground mining activity. As described in the project description, the exact locations of investigative drill sites and vent / egress are to be confirmed after further surveys have been carried out which confirm that identified sites are suitable from an ecological and landscape perspective. This includes expert landscape input to be documented in a report submitted to the Hauraki District Council and Waikato Regional Council.

The combined extent of landform modification, including at the vent raise sites, will represent very localised modification of up to four confined 30 x 30 metre areas to allow surface infrastructure and equipment to be established within cleared areas of forest. Once operational, earth worked areas will be reinstated to achieve a seamless transition with adjoining areas and reduced footprint of 100 m^2 remediating landform effects. Once the project is completed, areas modified by these works are proposed to be rehabilitated to enhance their existing condition and to assimilate within surrounding areas. With the above considered, any landform effects including from the investigation and exploration activity and installation of shaft raises within the Coromandel Forest Park will remain localised and with very low and neutral long-term effects.

7.5.2 Landcover

The Coromandel Forest Park supports indigenous forest comprising a variety of floral species which are extensive across the Coromandel Ranges and which extend across approximately 72,000 hectares. In this context, ongoing investigation and exploration activity proposes an additional 20 sites above the proposed underground mine and tunnel alignment, each requiring clearance of up to 150 m^2 with a combined total area of 3,000 m^2. Each site will be guided by a need to minimise adverse effects on existing trees, with activity enabled via wooden decks which will be completely removed and rehabilitated to re-establish as native forest at completion.

In addition to ongoing investigation and exploration, vent raise sites will be confirmed by detailed on the ground investigations. These propose additional clearance of up to 3,600 m^2 entailing four 30 x 30 m areas and temporary surface infrastructure supporting the underground mine to be established. The extent of vegetation clearance is proposed to guided by a need to minimise adverse effects on ecological and landscape values. Any tree removal restriction should not apply to the removal of older pine trees present in this area, particularly where this supports biodiversity outcomes. Once work is completed and areas vacated, areas where vegetation removal has occurred will be rehabilitated in accordance with ecological recommendations.

Clearance of sites within the forest will result in an apparent change and adverse effect on existing vegetation in localised and defined areas where investigation and exploration activity and temporary surface structures supporting effective underground mining can occur. In the context of conservation of landcover within the wider Coromandel Forest Park, any associated landscape effects of such vegetation clearance will become gradually reestablished through rehabilitation and become extremely difficult to discern in the context of the surrounding forest.

7.5.3 Landscape Character

The potential for any change in landscape character within the ONL arises from proposed ongoing investigation and exploration activity and the implementation and operation of vent shaft raises during establishment of the WUG. Final site confirmation will be guided by the need to minimise modification to the surface topography and vegetation and consequent effects on landscape character. While the presence of ongoing surface activity and subsequent shaft raises may be discernible from adjoining areas within the Forest Park, such effects will remain

localised within the context of the defined mining area and broader Wharekirauponga catchment.

In landscape character terms, surface modification and activity would have a negligible impact on the characteristic peaks, ridges and valleys and broader native forest cover that characterises and defines this landscape. Moreover, site specific consideration will be given in relation to the extent of vegetation clearance and potential habitat disturbance, with the overwhelming majority of forestry vegetation retained, including habitats protected and enhanced alongside additional planting along the margins of the Forest Park as identified in the ecological assessment. While temporary noise and activity may be apparent as part of the immediate context of each operational area and including the vent shaft raises during mine operation, the inherent vivid, wild and remote qualities which are a key characteristic of this landscape will remain.

In the context of minimal surface disturbance, necessary mitigation will also be informed by landscape and visual considerations to avoid, remedy or mitigate potential effects alongside other biophysical and recreational aspects within this landscape. The scale of the ONL and comparably diminutive scale of investigation and exploration activity and the vent shaft raise locations, as proposed, will ensure the inherent homogenous quality of the extensive forest cover and its underlying distinctive backdrop form and context will remain fundamentally intact. Ephemeral plumes from return air vent shafts under certain climatic conditions are expected to be effectively masked by the immersive forest canopy within the park and have very limited transient effects including extremely limited long-distance views from beyond the Forest Park.

With the above in mind, it is considered that effects arising from disruption to the character and integrity of the ONL will remain isolated, primarily during ongoing investigation and exploration activity as well as construction and rehabilitation of localised vent shaft raise locations or extremely limited but memorable encounters along existing unmarked trails. At the completion of the project, all activity including vent shaft raise sites will be rehabilitated back to their original form.

7.5.4 Landscape Effects Assessment (Coromandel Forest Park)

An assessment of the level and nature of landscape effects associated with underground mining beneath the Coromandel Forest Park is set out below:

	Contributing factors	Implementation[29]		Operation[30]		Residual[31]	
		Level of Effect[32]	Nature of Effect[33]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Investigation / drill sites and additional camps and helipad to be operated from wooden decks with minimal ground disturbance • Localised modification to landform within four 30 x 30 metre areas to introduce up to	Very Low	Adverse	Very Low	Adverse	Very low	Neutral

[29] Effects during implementation before mitigation

[30] Effects during operation following mitigation

[31] Residual Effects at Completion

[32] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[33] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[29]		Operation[30]		Residual[31]	
		Level of Effect[32]	Nature of Effect[33]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	four shaft raises on benched platforms **Mitigation** • Site selection of drill sites and additional helipad to avoid characteristic ridgelines and distinctive peaks • Once investigation and shaft site works are completed, landform to be remediated to transition between localised modification and unaffected areas						
Landcover Effects	• Localised clearance of trees that are equal to or less than 50 cm diameter at breast height up to a total area of 3,300m^2 • Additional clearance of up to 2,700m^2 including up to four trees between 50 and 100 cm diameter at breast height to enable siting of four shaft raises **Mitigation** • Adoption of site selection process to minimise adverse effects on existing trees • Cleared areas of vegetation to be replanted/ re-established at the completion of mining activity	Low	Adverse	Low	Adverse	Very low	Neutral
Landscape Character Effects	**Characteristics and Values** • Coromandel Forest Park is an ONL • The almost complete native forest cover maintains a coherent natural backdrop and highly vivid and memorable green backdrop and skyline • Previous forestry and mining activities and resultant tram routes, Kauri dams, mining artifacts and historic tracks influence established natural and cultural associations • Transient opportunities to experience wildlife reinforce wild and remote scenic qualities • Several significant sites to tāngata whenua including,	Very Low	Adverse	Very Low	Adverse	Very Low	Neutral

	Contributing factors	Implementation[29]		Operation[30]		Residual[31]	
		Level of Effect[32]	Nature of Effect[33]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	important local landmarks, urupā and rare ecosystem **Nature of Landscape Change** • No apparent change on characteristic peaks, ridges and valleys • No apparent change on coherence of wider green backdrop character and very isolated impacts on associative values • Very localised and isolated disturbance of vegetation and associated contained surface activity embedded within broader context of established forest cover • Very localised and transient perception of ongoing exploration activity and shaft raises when traversing isolated adjoining areas within the Forest Park • Transient vapour plumes may occur from the return air vent shaft in very long-distance views under certain climatic conditions **Mitigation** • Site selection to minimise disturbance and ensure the sensitive design of isolated structures remains visually well contained during operation • Surface infrastructure to be completely removed and disturbed areas to be fully rehabilitated at project completion						

7.6 Visual Effects

As an underground mine, there will be no potential views of underground tunnelling and associated below ground mining activity from within the Coromandel Forest Park. The combination of topography and landcover in this area of the Coromandel Forest Park also ensures the proposed investigation and exploration activity and vent shaft raises will not be seen from beyond their immediate context.

Once operational, water vapour plumes may occur from the proposed ventilation shaft within the Forest Park under certain climatic conditions. Such plumes may occur in winter and spring up to a height of approximately 175 m during calm periods of higher relative humidity, typically during

cold mornings, late afternoons and through the night under the cover of darkness[34]. When present, such plumes would remain largely concealed within the folded and vegetated topography of the Forest Park and hidden from surrounding areas including the Coromandel foothills and primary lowlands surrounding Waihi, remaining within and below the distinctive backdrop of the Coromandel Range. A more detailed assessment of the potential visual effects of the Plume is set out in **Appendix 7**.

In very long-distance views beyond may occur from isolated elevated areas along the Coromandel's east coast in the vicinity of Whangamatā. Such views are extremely limited and where visible would appear similar to transient atmospheric changes which might normally occur through intervening rural areas, including smoke from home fires. Given the limited visibility, considerable viewing distances and transient nature of views, any potential broader visual effects associated with such plumes will be **very low**.

Potential changes in visual amenity have also been assessed in terms of a potential reduction in flows of affected streams above the proposed underground mine. Views of existing waterbodies are typically limited to those accessible along existing recreation tracks which comprises of the Wharekirauponga Walk (see **Figure 10**). Beyond this, headwater tributaries are not generally accessed or therefore subjected to potential human sensory changes potentially influencing visual amenity effects. Notwithstanding this, any effects on visual amenity would remain indiscernible in the context of existing variable seasonal flows.

Downstream of the area within the Forest Park, the Wharekirauponga Walk includes two bridges across Wharekirauponga Stream and follows the margins along the true left of Wharekirauponga Stream from which views of the Stream are often filtered through regenerating forest and through which access to several swimming holes occurs, most typically in summer. The upper part of the track also crosses Adams Stream and overlooks the relatively dramatic elements of Wharekirauponga Falls (see **Photos 10 and 12** included in **Appendix 4**).

In accordance with the natural character assessment set out above, any flow changes that occur as a result of groundwater drawdown within Adams and Wharekirauponga Streams is predicted to result in largely imperceptible changes in dynamic flows and no significant changes in habitats resulting in neutral natural character effects overall. As a consequence, any change in visual amenity is unlikely to be discerned. Whilst the Project Area may remain associated with ongoing mining activity occurring beneath this local area of the Coromandel Forest Park, any physical or sensory changes to accessible waterbodies on the surface above are considered to result in very low visual effects.

Within the broader mountain backdrop of Coromandel Forest Park, the steep and folded topography results in a series of fragmented visual catchments where the landform often obscures visibility from lower elevations and gullies and prevents potential for wider views. When combined with extensive areas of native forest cover, the potential for views of any above ground aspects of the proposed development remains extremely limited and principally only encountered from areas immediately adjoining the locations where temporary exploration, helipad, amenity facilities and vent shaft raises are proposed.

Potential viewing audiences have been considered with particular regard to people walking along Te Wharekirauponga Walk (Parakiwai Valley Track), which is a formed track originating from Parakiwai Quarry Road, as well as occasional hunters and experienced trampers using Te Wharekirauponga Track, a five to six hour unmaintained track connecting with Golden Cross[35]. In visual terms, the very localised changes proposed will remain well concealed in the context of the Coromandel Forest Park and primarily avoids any potential for visual effects.

As described earlier, the potential localised viewing audience of proposed activity and vent shaft raises within the Forest Park will entail site selection that ensures activity and built structures

[34] Tonkin and Taylor (2021) Assessment of the frequency and height of visible water vapour plume associated with mine vents

[35] Rob Greenaway and Associated (2025) Recreation and Tourism Assessment

remain reasonably difficult to see from important viewpoints. Part of Te Wharekirauponga Walk has been closed as a result of concerns with Kāuri dieback, however the density of the forest vegetation which occurs throughout this area ensures views within the vicinity of proposed surface elements typically remain enclosed (see **VP10**). For these reasons, it is considered that the vast majority of visitors within this area of the Coromandel Forest Park and typically accessing the swing bridge at Wharekirauponga Falls at the end of Wharekirauponga Walk and effectively experience no discernible visual effects.

For the very limited remaining group of individual observers within the Coromandel Forest Park, it is considered that potential views of temporary supporting surface infrastructure and up to four vent shaft raises will be extremely limited and most likely informed through local knowledge due to their isolated presence within often dense vegetation. Furthermore, due to the variance in landform and treatment of project-built features to minimise vegetation loss combined with recessive materials / colours, such opportunities primarily relate to proximate locations only. Ephemeral plumes are unlikely to be seen with the exception of some distant and remote views under certain climatic circumstances. For these reasons, it is considered that any adverse visual effects in the context of the Coromandel Forest Park would be **very low**.

7.7 Recommended Mitigation Measures

In considering the nature of the project and the anticipated change to the receiving environment, there are a number of measures which will help to mitigate the assessed landscape and visual effects. It is recommended that such measures are included as part of the project and have been considered in this assessment of landscape and visual effects in terms of effects during operation and residual effects.

Mitigation measures for this project have been developed in two ways:

- Measures that intrinsically comprise part of the development design through an iterative process;
- Specific additional mitigation measures designed to reduce adverse effects of the final development proposals including areas of buffer planting included on **Figure 21: Overall Integrated Mitigation**.

7.7.1 Willows Road Site

- Retention of existing shelterbelts, trees and hedges in the Willows Road site outside disturbed areas where practicable (refer **Figure 7B**).
- Strengthening of existing shelterbelts through additional planting managed through an effective rehabilitation strategy. This shall encompass:
    - Native buffer planting along escarpment edges;
    - Native buffer planting and exotic screen shelterbelt planting beyond riparian margins where this may assist in reducing available views;
    - Enhancement planting of existing and proposed wetland areas; and
    - Riparian planting along the Mataura Stream where riparian areas enter the Willows Road site.
- Vegetate or hydroseed noise bund associated with main site infrastructure as soon as practicable after construction.
- Exposed batters supporting all access roads to be finished with rounded edges to integrate within the adjoining landform and all exposed soil scarified and hydroseeded with pasture and/or native vegetation to assimilate within the surrounding land cover.

- Hydroseed the proposed earth mounding associated with the explosive magazine and vegetate around the explosive magazine to reduce visibility of buildings.
- Signage for the entrance of the site should be as discrete as practicable (adhering to NZTA sign requirements) and not visually dominate the entrance.
- Lighting throughout the project will be minimised as far as practicable so it meets the permitted standards of the zone. Placement and direction of lights should avoid high points which are visible outside of the Willows Road site. Light shields should be used where necessary, and all lightings shall be down facing to minimise effects on the night sky.

7.7.2 Coromandel Forest Park

Minimise adverse effects on landscape character and visual amenity by selecting sites that can be visually contained and assimilated into the environment so that they respond to underlying landscape values. This is summarised as follows:

Visual Effects

- Ensure vent shaft raises and associated temporary activities are not highly visible from within or beyond the Coromandel Forest Park.
- Ensure the vent shaft raises and associated temporary activities are not visible from Wharekirauponga Walk.

Landscape Effects

- Minimise native vegetation clearance within Coromandel Forest Park, ensuring any vegetation removal is clearly identified prior to occurring to avoid accidental vegetation loss.
- Sensitive design of temporary buildings and structures (including evasé) using neutral and recessive colours which relate to their natural setting.
- Ensure ability to effectively rehabilitate disturbed areas to ensure this will become reestablished within the context of the surrounding nature conservation and recreation values of the Forest Park.

Figure 21a: Proposed Integrated Mitigation illustrates the proposed landscape mitigation. The mitigation plan also encompasses anticipated ecological mitigation planting as set out in the separate assessments of ecological effects. To ensure the certainty of these measures, it is recommended that a condition of consent requires that planting adhere to an approved landscape rehabilitation strategy to ensure this achieves effective long-term outcomes.

8.0 Gladstone Open Pit

8.1 Site Appraisal

The proposed GOP extends to the south-west of the existing Processing Plant. This area currently encompasses Gladstone Hill (*Motukehu*) and part of the northern flank of Winner Hill (see **Figure 11**). Gladstone Hill reaches an existing elevation of 170 masl and forms part of a sequence of rounded volcanic hills which rise to the east of Waihi. The existing land cover predominantly comprises pasture and pine plantation, with small pockets of native and exotic

trees and rock outcrops within this working rural context. Gladstone Hill adjoins more substantial areas of mixed native vegetation and pine on Black Hill (Ngatikoi Reserve) and Union Hill.

Part of Winner Hill and Gladstone Hill is currently used for mountain biking, part of which can be retained on the residual slopes of Winner Hill following operation. A wider network of trails extends around the base of Black Hill and along the margins of the Ohinemuri River with motor cross trails occupying the northern face of Black Hill. Trails are accessed through a carpark area located at the eastern end of Clark Street.

The Gladstone Battery (HAU245) is identified between Union Hill and Gladstone Hill near the northern edge of the proposed GOP, however there is no obvious evidence of any remaining heritage association in this area[36].

8.1.1 Zoning

The proposed area accommodating GOP and subsequent GOP Tailings Storage Facility straddles the Rural and Martha Mineral zones (see **Figure 5**).

8.1.2 Landscape Characteristics and Values

The proposed GOP adjoins the existing Processing Plant located within the Foothills of the Coromandel Range (see **Figure 4**). This area of landscape is characterised by a sequence of distinctive eroded volcanic hills which lie to the east of Waihi and contain existing mining related activity in the context of plantation forestry and pasture, expressing an established working rural character.

No outstanding natural features and landscapes are identified in the context of the GOP or its vicinity, however the sequence of rounded hills is noted as a distinctive feature to the east of Waihi. Motukehu – The Gladstone Hill is also identified as important to Ngāti Tara Tokanui, Ngāti Koi including as the site of a significant battle[37].

8.2 Proposed Development

The proposed GOP will disturb a total area of around 19 ha., will be about 95 metres deep, 375 metres wide and 625 metres long (see **Figure 12**). During the initial stages of operation, topsoil will be stripped to form a temporary topsoil stockpile of approximately 52,500 m^3.

During operation, mining activity will gradually lower the form of Gladstone Hill to create an open pit before extending south-west towards a low point which separates Gladstone and Winner Hills. Such mining activity is expected to occur over a period of approximately 7 years. This culminates along a band of plantation pine trees to the west which will be retained during mining operation as a visual buffer adjoining an abandoned cowshed and sloping area of pasture proposed to be planted to the east of the Ohinemuri River. The southern edge of the GOP is similarly located beyond the remaining form of Winner Hill and areas of established pine to be retained during mining operation. The northern aspect of the mine may also form an alternative location for the Martha Underground Mine (MUG) Portal and in-pit crusher concealed from external views.

At completion of mining activity, the GOP will be modified to accommodate a tailings storage facility. Rock will be reintroduced to the base of the GOP and lined to support the subsequent introduction of tailings. This will maintain the lowered pit rim associated with creating the GOP and enables a maximum tailings level of approximately 101 masl within this resultant void (see

[36] Clough and Associates (2025) Assessment of Heritage and Archaeological Effects.

[37] Ngāti Tara Tokanui Ngati Trust (2022) Cultural Values Assessment in Relation to Waihi North Project.

Figure 13). In addition, the temporary stockpile will be removed and placed in association with rock cover over the tailings surface as well as exposed pit walls. The final landform will be mounded to a sufficient depth to accommodate any ongoing settlement. The mounded form of the completed surface will enable re-establishment of surface water flows to the south, with any additional runoff directed through the north-western low point of the pit perimeter and to the Ohinemuri River via an appropriately formed drain.

8.3 Landscape Effects

8.3.1 Landform

The introduction of an open pit mine and subsequent tailings facility will substantially modify the existing landform of Gladstone Hill and part of the northern aspect of Winner Hill. During the proposed establishment of this mine, this will gradually replace part of the existing sequence of rounded hill landforms to the east of Waihi with an open void with benched faces and associated haul road connected with the existing Processing Plant characteristic of an open pit mine. During operation, a temporary stockpile will also be established along the eastern margin of GOP that will remain largely concealed from surrounding areas adjacent to the existing Processing Plant. This will subsequently be used to assist with rehabilitation at the completion of the mine.

Despite the substantial and permanent changes proposed to accommodate open pit mining within this local area, physical effects will remain relatively well contained and closely associated with existing mining activity including the Processing Plant and potential relocation of the operational Favona Portal within the footprint of the mine. Existing rock outcrops and the steeper weathered southern slopes near the top of Gladstone Hill will be permanently removed, however the broader adjoining sequence of rounded landforms including Union Hill, Black Hill and the remaining aspect of Winner Hill will remain apparent and maintain a key characteristic evident to the east of Waihi evident throughout the surrounding landscape.

While the nature of open pit mining will completely modify the existing form of Gladstone Hill, this will remain well contained within the localised context of existing mining activity and the existing surrounding rounded hill forms. Following the mining operation, the existing landform will reflect a lower subservient landform element with very limited external views. Once tailings are accommodated, the final landform surrounding the pit will be returned to pasture and native shrubs which may further soften and assimilate the extent to which landform modification will remain apparent in the long term. This may also be reinforced with opportunities for skink habitat and enhancement of the existing stream / wetland area along the eastern slopes.

8.3.2 Vegetation

Whilst much of the existing land cover associated with Gladstone Hill will be removed, this is predominantly pasture and part of a larger adjoining block of plantation pine. Small pockets of exotic and native trees will also be removed near the summit of Gladstone Hill as will an area of approximately 5 ha. of existing pine plantation established along the southern boundary and along part of the eastern face of Gladstone Hill.

Clearance of plantation pine trees is consistent with a cycle of establishment and harvest. Disturbance to the existing land cover is also largely reversable, with vegetation removed during the mining and subsequent tailings operations to be re-established with pasture and native shrubs following completion to limit the potential for any longer-term adverse effects. Once established, rehabilitated tailings will remain embedded within a wider sequence of adjoining rounded landforms and vegetated backdrop which extends to the east of Waihi.

In summary, given the localised and modified landscape features including isolated pockets of native and exotic trees in the context of existing mining and adjoining rural activity, there will be limited effects on existing vegetation.

8.3.3 Landscape Character

In landscape character terms, the GOP will remain in the context of established mining activity and within the relative enclosure of surrounding rounded landforms. In this context, the proposed mining activity will occur incrementally over several years rather than all at once and includes a process of mining followed by the gradual deposition of tailings and subsequent rehabilitation. At completion, modification of the existing landform will remain relatively localised within the adjoining sequence of undulating and rounded hills and associated with a consistent landcover rehabilitated as pasture which will limit potential longer-term landscape character effects.

The creation of a new open pit mine, by its very nature, requires disruption to an existing working rural land cover and underlying landforms which may inevitably generate adverse landscape character effects. In the case of the GOP, proposed mining activity will gradually extend an existing mining footprint associated with an established Processing Plant and underground portal. The retention of the southern slopes of Winner Hill and a periphery of plantation pine trees around the western edge of the proposed open pit mine will ensure potential for wider effects on surrounding rural areas will remain relatively limited and any wider landscape character effects will remain localised within a more modified mining context.

During operation, the project will disrupt part of the elevated sequence of rounded hills which characterise the landscape to the east of Waihi. The Favona Portal is proposed to be relocated adjacent the existing Processing Plant to ensure any indirect landscape effects associated with ongoing activity and access to existing and expanded underground mining activity remain well contained. At completion, the final lowered landform will be established in pasture and, as appropriate, native shrub planting, ensuring complementary rural land use is re-established and long-term impacts remain largely benign in the context of the adjoining mining activity and the surrounding rounded and vegetated volcanic hills which will continue to characterise this area.

Overall, landscape impacts will remain well contained within a wider established working rural landscape character. It is acknowledged that mana whenua values, interests and associations connected with Motukehu are to be addressed separately through Iwi led Cultural Impact Assessments.

8.3.4 Landscape Effects Assessment (Gladstone Pit and Tailings)

An assessment of the level and nature of landscape effects associated with Gladstone Pit and associated tailings is set out below:

	Contributing factors	Implementation[38]		Operation[39]		Residual[40]	
		Level of Effect[41]	Nature of Effect[42]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Change occurs in context of existing mining activity including Processing Plant • Relatively well contained by existing topography and vegetation • Permanent removal of the upper slopes of Gladstone Hill and part of northern aspect of Winner Hill • Introduction of replacement portal within mine footprint and temporary stockpile along the periphery of the pit • Modified landform converted to accommodate tailings as part of ongoing mining operation **Mitigation** • Lowered landform reinstated in pasture and native shrubs as part of site rehabilitation at project closure	Moderate	Adverse	Moderate	Adverse	Low – Moderate	Adverse
Vegetation Effects	• Predominantly pasture and plantation pine with small patches of planted native and exotic trees **Mitigation** • Progressive replacement of pine with native vegetation following landform modification during mining activity • Reinstatement in pasture and native shrubs as part of the site rehabilitation	Low	Adverse	Low	Neutral	Low	Neutral
Landscape Character Effects	**Characteristics and Values** • No formal national / local landscape protection • Part of the undulating foothills of the Coromandel Range and local sequence of rounded volcanic hills to the east of Waihi • Pasture and forestry retain a working rural character with a close association with existing mining activity associated with the established Processing Plant **Nature of Landscape Change** • Permanent removal of the middle and upper slopes of Gladstone Hill	Moderate	Adverse	Low – Moderate	Adverse	Low	Adverse

[38] Effects at implementation before mitigation

[39] Effects during operation with mitigation

[40] Residual effects at completion

[41] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[42] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[38]		Operation[39]		Residual[40]	
		Level of Effect[41]	Nature of Effect[42]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	and part of northern aspect of Winner Hill within broader sequence of rounded hills • Landform modification remains relatively well contained within existing forestry viewed from surrounding rural areas **Mitigation** • Maintain established buffer of pine trees during mining operation • Rehabilitate existing rural land use at completion						

8.4 Visual Effects

Despite the substantial modification to Gladstone Hill, the potential for visual effects associated with the GOP and subsequent tailings storage are relatively limited. During construction and operation, the southern slope of Winner Hill will remain intact, with the mine centred on Gladstone Hill and within the existing low point extending between Winner and Gladstone Hills. In this context, visual effects are well contained and primarily occur from adjoining areas which observe Gladstone Hill in the context of the existing Processing Plant. Potential wider views of landform changes associated with this proposed operational mine will remain largely obscured by intervening landforms including Winner Hill and Union Hill.

Potential views from the eastern area of Waihi including rural residential dwellings along Heath Road are primarily contained by intervening plantation pine trees retained along the western edge of the pit rim and residual form of Winner Hill as well as native planting extended along the margins of the Ohinemuri River. Over longer distances, the proposed removal of Gladstone Hill may be visible from residential areas of Waihi. At completion, modification within the established pit to facilitate tailings in the longer term will remain visually well contained and avoid the potential for any longer-term visual exposure and associated potential adverse visual effects.

8.4.1 Viewing Areas and Representative Viewpoints

Given the high level of visual containment, there are a limited number of potential viewing areas from which potential views of GOP are available.

To the south-west of the proposed GOP, including the eastern end of Clarke Street and Heath Road on the eastern edge of Waihi, views are predominantly screened by a combination of intervening vegetation and landform including the residual form of Winner Hill. Over longer distances, the summit of Gladstone Hill is visible from within parts of Waihi, however views are more typically concealed by intervening development and vegetation which makes up the urban form of Waihi. Where visible, Gladstone Hill remains partially concealed beyond intervening vegetation and typically between the larger more vegetated forms of Union Hill and Black Hill.

To the south of GOP, views are available from part of the lower area of Ngaitikoi Domain along the toe of Black Hill and below vegetation which covers the hilltop and encloses much of the existing recreation trail which ascends this area. Over longer distances beyond State Highway 2, some views may be available from rural land holdings and dwellings to the south of Waihi, however such views are more typically limited by retained pine plantation on Winner Hill and through successive bands of intervening shelter belts typical through this rural area.

To the north of GOP, views are available from the eastern end of Moore Street beyond the conveyor, however any use of this area is limited to restricted access into the rear of the Processing Plant. Further west along Moore Street approaching Barry Road, views become increasingly concealed beyond intervening bands of vegetation and residential development. Views are similarly concealed by vegetation within Union Hill, with no existing recreation tracks currently formed on the eastern slopes in the direction of Gladstone Hill.

To the east of GOP, potential views are generally contained within the existing landforms including TSF1A and TSF2 and limited to areas associated with the existing Processing Plant accessed along Baxter Road. This land is predominantly owned by OGNZL, within which the effect of such change will be viewed in the context of established mining activity. Whilst the Ohinemuri River also passes through this area, the margins along this stretch of river are established in semi-mature vegetation enclosing the river corridor and has no public access beyond the Processing Plant to the north of Black Hill.

Over longer distances, the proposed removal of Gladstone Hill to form GOP may be visible from areas of residential and rural zoned land to the north-east of Waihi. These views occur between the intervening forms of Union and Favona Hills, such as illustrated in a representative view obtained along Barry Road. Further to the west, Gladstone Hill remains screened from the remaining residential area to the north-east of Waihi by the intervening form of Union Hill. Similar very long-distance glimpse views may also be available from users of Golden Valley Road.

Based on the above, the following six potential viewing areas have been identified from which visual effects have been assessed together with visual simulations prepared from seven representative viewpoints (see **Figure 14**).

- **G1:** Clarke Street / Heath Road (VSs 11 and 12)
- **G2:** South-East Waihi (VS 13)
- **G3:** Black Hill (VS17B)
- **G4:** SH2: Tauranga Road
- **G5:** North-East Waihi (VS 14)
- **G6:** Golden Valley (VS15)

G1: Clarke Street / Heath Road (VS11 and VS12)

The viewing area to the south-east of Waihi includes recreation areas along the Ohinemuri River and rural lifestyle properties established along Heath Road. The most sensitive views are likely to include a cluster of seven rural dwellings to the north of Heath Road over distances of up to 600 metres from the proposed edge of Gladstone Pit.

Two viewpoints have been taken to represent the nature of views from this area, however no access to private property has been obtained to confirm the nature and level of visual effects from individual dwellings.

VS11: Clarke Street

This view is obtained from the eastern end of Clarke Street looking east towards Gladstone and Winner Hill. The foreground of this view includes intervening native vegetation which connects the Ohinemuri River with Union Hill and screens lower areas of Gladstone Pit beyond. Above this, the retention of part of the existing pine plantation on Winner Hill and the remaining part of Gladstone Hill will continue to screen views of introduced mining activity during operation and once completed.

VS12: Ohinemuri Walkway

This view is obtained from the existing recreation track which extends along the northern margins of the Ohinemuri River looking north-east across intervening open paddocks established to the west of Winner Hill. From here, retention of the existing pine plantation will continue to screen views of Gladstone Pit with any visibility limited to glimpse views seen between the trunks of retained trees along the south-west edge of the mine and subsequent tailings facility.

G2: South-East Waihi (VS 13)

The viewing area consists of the residential area to the south-east of Waihi and predominantly includes road users, visitors to recreation areas and dwellings established along Waihi's urban edge. The nature of intervening development and vegetation results in limited open areas or view corridors from within the established settlement of Waihi from which Gladstone Hill is visible between Union Hill and Winner Hill.

One viewpoint has been taken to represent the nature of views from this area over a distance of approximately 570 metres along the periphery of Waihi. Beyond Gilmour Reserve, views become increasingly more limited from within the confines of developed areas of Waihi.

VS13: Gilmour Reserve

This view is obtained from within Gilmour Reserve looking north-east towards Gladstone Pit near the New Zealand Tunnelers Memorial. From this open area, part of the elevated vegetated backdrop near the summit of Gladstone Hill is visible which will be removed during operation. To the right of this, the lower south-western extension of Gladstone Pit will remain concealed beyond the retained areas of pine plantation and intervening vegetation established along the margins of the Ohinemuri River.

G3: Black Hill in Ngatikoi Domain

Views from Ngaitikoi Domain include views from Black Hill as this rises to the south-east of GOP. From here, recreation users may obtain transient views of the existing form of Gladstone Hill and associated plantation pine trees on Winner Hill adjoining the Processing Plant, seen against a larger vegetated backdrop of Union Hill. Intervening vegetation covers the majority of Black Hill and limits the areas from which views out towards GOP are available from the top. Where visible at lower elevations, GOP will extend a local area of mining activity seen in association with the existing Processing Plant and Favona Portal. At completion, the potential for adverse effects will be partly remedied and mitigated as rural land use is re-established upon tailings in this context.

One viewpoint has been taken to represent the nature of transient views from this area over approximately 450m from the edge of the proposed GOP. Such views are representative of potential transient views descending the summit of Black Hill on an established walking track, during which views out are also frequently obscured by intervening vegetation.

VS17B: Black Hill towards Gladstone Mine

From here, elevated transient views observe Gladstone Hill within which GOP is proposed against residual areas of existing plantation pine, the larger vegetated backdrop of Union Hill and the proposed WUG Portal within Favona Hill. During operation the exposed form of GOP will extend mining activity within this modified and relatively contained rural context which includes established and ongoing mining activity currently associated with the existing Processing Plant and adjoining Favona Portal. Whilst the expansion of mining related activity will be apparent within this context, the

resultant open pit will remain relatively well contained by a backdrop of established vegetation and therefore remain largely embedded within this modified mining context.

G4:SH2: Tauranga Road

This viewing area encompasses rural properties which extend to the south-east and glimpse views from SH2: Tauranga Road near the intersection with Baxter Road when approaching Waihi from the south-east. From the majority of SH2, views towards GOP are obscured beyond intervening vegetation including the larger intervening vegetated forms of Black Hill and Winner Hill. Views from rural dwellings in this area are typically limited by the intervening vegetated forms of Winner Hill and Black Hill combined with intervening shelter planting.

As GOP gradually removes the top of Gladstone Hill, mining activity will remain concealed beyond intervening landform and vegetation. In all instances, visibility will be limited to long distance glimpse views observed low along the horizon and in the context of more elevated vegetated forms.

G5: North Waihi (VS 14)

Views from residential dwellings to the north-east of Waihi are limited to gaps between existing development and beyond the intervening forms of Favona Hill and Union Hill along the skyline. Further to the north-west, potential views towards Gladstone Hill from within Waihi become increasingly concealed by intervening development and vegetation. Where visible, Gladstone Hill forms a distant aspect of a larger sequence of rounded hills to the east of Waihi which are predominantly covered in mixed native and exotic vegetation. Where visible, the top of Gladstone Hill is viewed as a distant area of pasture in the context of more visible and vegetated landforms which characterise this backdrop.

One representative viewpoint has been taken from this area:

VS14: Barry Road

From this viewpoint, Gladstone Hill forms part of the distant backdrop and skyline seen to the east of Union Hill beyond approximately 700 metres. During operation, mining activity will result in the removal of Gladstone Hill and modify a localised area of skyline in this area. Once removed any change will remain visually contained below the skyline.

G6: Golden Valley (VS 15)

Views from Golden Valley are typically limited to road users along Golden Valley Road and long-distance views form dispersed rural dwellings. From here, mining associated with Gladstone Hill will be visible in glimpse long distance views, however any change will gradually be concealed as temporary stockpiles along the road frontage are developed for the NRS. In the longer term, any change will similarly remain contained below the skyline.

8.4.2 Summary of Visual Effects Assessment (Gladstone Open Pit)

An assessment of the level and nature of visual effects from identified viewing areas associated with GOP are set out below. For the purpose of this assessment mining activity represents “implementation” which is expected to occur over a period of approximately 7 years followed by the establishment of a subsequent tailings facility (operation) and closure (residual) effects:

	Contributing factors	Implementation[43]		Operation[44]		Residual[45]	
		Level of Effect[46]	Nature of Effect[47]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
G1: Clarke Street / Heath Road **(VS11 and VS12)**	**Key Landscape Attributes** • Part of a sequence of rounded hills to the east of Waihi containing the existing Processing Plant • Extensive areas of vegetation, including native planting along the Ohinemuri River and Plantation Pine on Gladstone and Winner Hill which conceals the majority of the existing landform **Nature of Visual Change** • Possible views towards the GOP from up to seven dwellings and recreation areas adjacent to the Ohinemuri River • Views predominantly concealed by vegetation established along the Ohinemuri River and plantation pine retained on Winner Hill and along the western edge of the mine • Modified landform remains contained within established vegetation and surrounding landforms during operation and through mine closure as tailings storage is established **<u>Mitigation</u>** • Retain existing areas of plantation pine during mining operation as part of maintaining an existing visual screen	Low	Adverse	Low	Neutral	Low	Neutral
G2: South-East Waihi **(VS 13)**	**Key Landscape Attributes** • Part of a sequence of rounded hills and vegetated backdrop observed to the east of Waihi • Existing mining activity remains visually well contained **Nature of Visual Change** • Views from dwellings and recreation areas with higher	Low	Adverse	Low	Neutral	Low	Neutral

[43] Effects during implementation before mitigation

[44] Effects during operation following mitigation

[45] Residual Effects at Completion

[46] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[47] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[43]		Operation[44]		Residual[45]	
		Level of Effect[46]	Nature of Effect[47]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	sensitivity and transport corridors with lower sensitivity • Mining activity remains predominantly concealed by intervening landform and vegetation • Long distance partial views of a small part of a broader vegetated skyline removed during operation • Modified landform remains contained within established vegetation and surrounding landforms during operation and through mine closure as tailings storage is established **Mitigation** • Retain existing areas of plantation pine during mining operation as part of maintaining an existing visual screen						
G3: Black Hill **(VS 17B)**	**Key landscape attributes** • Broad panoramic views across surrounding Coromandel Foothills and primary productive lowlands in proximity to Waihi, Processing Plant and associated tailings • Transient views include local area of rounded landforms which provide a sense of enclosure to existing mining related activity • The existing Processing Plant and Favona Portal influence the immediate context in which the GOP is proposed **Nature of Visual Change** • Views from recreation area with higher sensitivity • Change viewed in association with the existing Processing Plant against Union Hill • Intervening vegetation limits the areas from which views are available • Modified landform remains largely contained within established vegetation and surrounding landforms during	Low - Moderate	Adverse	Low	Adverse	Low	Neutral

	Contributing factors	Implementation[43]		Operation[44]		Residual[45]	
		Level of Effect[46]	Nature of Effect[47]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	operation and through mine closure as tailings storage is established **Mitigation** • Progressive replacement of pine with native vegetation following landform modification during mining activity • Reinstatement in pasture and native shrubs as part of the site rehabilitation						
G4: SH2: Tauranga Road	**Key landscape attributes** • Views across the surrounding primary productive lowlands within which elevated vegetated landforms remain visible as part of the existing backdrop • Intervening vegetation frequently curtails longer distance views • Views of existing mining related activity remain well contained in context of surrounding working rural landscape **Nature of Visual Change** • Views from transport corridors and rural dwellings • Long distance views remain mostly concealed bey intervening landforms and vegetation • Any change in glimpse views observed low along the horizon and in the context of more elevated vegetated forms • Modified landform remains contained within established vegetation and surrounding landforms during operation and through mine closure as tailings storage is established	Very Low	Adverse	Low	Neutral	Low	Neutral
G5: North Waihi (VS 14)	**Key Landscape Attributes** • Residential area within Waihi from which a sequence of rounded hills form part of the existing backdrop • Intervening vegetation forms a characteristic part of the skyline which assists with concealing available views	Low	Adverse	Low	Neutral	Low	Neutral

	Contributing factors	Implementation[43]		Operation[44]		Residual[45]	
		Level of Effect[46]	Nature of Effect[47]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	Nature of Visual Change • Middle- and long-distance partial and glimpse views from dwellings • Localised removal of area of open pasture along the skyline typically obscured by intervening landform, and vegetation • Modified landform remains contained within established vegetation and surrounding landforms during operation and through mine closure as tailings storage is established						
G6: Golden Valley **(VS16)**	**Key Landscape Attributes** • Part of the undulating working rural foothills of the Coromandel Range • Sequence of existing rounded hills to the east of Waihi and including Gladstone Hill form part of a distant backdrop in the midground of the Coromandel Range • Views towards Gladstone Hill frequently curtailed by intervening vegetation **Nature of Visual Change** • Limited to glimpse long distance views from roads and dwellings • Modified landform remains contained within established vegetation and surrounding landforms during operation and through mine closure as tailings storage is established	Very Low	Adverse	Very Low	Neutral	Very low	Neutral

The potential for adverse visual effects associated with the GOP and the subsequent accommodation of tailings within the resulting open pit are limited by its landscape context and its association with established mining activity which remains enclosed by a combination of intervening landforms and vegetation. From the majority of views to the south-east of Waihi, the creation of GOP will remain concealed by the intervening form of Winner Hill and plantation pine trees retained along the western edge of the proposed mine. Vegetation established along the margins of the Ohinemuri River further reduces available views which continue to dissipate beyond intervening development and planting as established within the residential area of Waihi.

Where views of proposed mining associated with the GOP remain available, the gradual removal and containment within its existing rounded landforms and vegetated context limits the

potential for permanent adverse visual effects. A difference in view may be discernible but not necessarily adverse.

8.5 Gladstone Landscape Mitigation

To effectively mitigate the potential for visual effects associated with the GOP during mining operation, remaining area of areas of plantation pine including established pine trees on Winner Hill outside the footprint of the mine will be retained. In addition, further terrestrial planting will be established along the margins of the Ohinemuri River and within intervening rural land during operation to reinforce the overall contribution to a vegetated landscape context containing mining activity as illustrated on **Figure 21b: Proposed Integrated Mitigation**. In addition, the mining activity will occur from east to west to ensure any activity associated with the removal of landform typically remains concealed from wider views to the south-east of Waihi.

Following mining and during implementation of the tailing's storage facility, existing pine trees will be progressively removed and re-established with native vegetation. The final landform surrounding the pit will be re-established in pasture and native shrubs therefore offering further opportunities to assimilate the modified landform within a working rural landscape to reduce the potential for any longer-term significant adverse effects.

9.0 Northern Rock Stack

The proposed NRS is located to the east of the Processing Plant on the opposite side of the Ohinemuri River, between the northern edge of TSF2 and Golden Valley Road.

9.1 Site Appraisal

The proposed NRS occupies part of an undulating and modified alluvial terrace along the true left bank of the Ohinemuri River and adjoining the toe of elevated landforms to the south and east (see **Figure 15**). The southern end of the proposed NRS accommodates the eastern end of the conveyor and encompasses an existing rock storage area and workshop within the proposed larger NRS footprint. Unnamed tributaries of the Ohinemuri River flow south-east to north-west through this area and accommodate margins of native riparian planting established by OGNZL. Pastoral land use occupies the remaining northern area of the proposed NRS footprint and supports grazed paddocks, farm tracks, dispersed farm buildings and shelter planting. A single-story dwelling at 699 Golden Valley Road owned by OGNZ is impacted by the stockpile footprint and will need to be removed.

To the west of the proposed NRS, OGNZL has voluntarily planted the margins along both sides of the Ohinemuri River with native riparian vegetation and fenced these from adjoining agricultural and mining activity. Wetland areas are also located in adjoining areas including a degraded wetland within the adjoining rural area to the north and a planted wetland further to the northwest on the opposite side of the Ohinemuri River. Exotic shelter planting and bands of native shrubs and pasture typically occupy the remainder of this area. The existing Processing Plant introduces a strong industrial influence in this context, occupying a flattened terrace to the west of the Ohinemuri River. The existing conveyor and vehicle bridge also connect between the Processing Plant and proposed NRS across the Ohinemuri River through this area.

Golden Valley Road passes to the north of the proposed NRS through Golden Valley. When approaching the vicinity of the proposed NRS from the west, the alignment of the road dips and curves in response to minor terracing along the Ohinemuri River before gradually rising to the

east. Further to the north, Golden Valley Road intersects with Trig Road within a broad undulating rural and rural lifestyle area.

The southern edge of the proposed NRS adjoins TSF2 along the toe of a rounded vegetated backdrop which continues to the east. A rounded unnamed hill covered with native vegetation (SNA T13UP166) is located to the east of the proposed NRS and is separated from a larger area of vegetation also within SNA T13UP166 to the south by pasture with clumps of native shrubs and pine established within an intervening undulating valley system.

9.1.1 Zoning

As illustrated on **Figure 5**, the proposed NRS, temporary stockpiles and collection pond are all located on land zoned Martha Mineral Zone.

9.1.2 Landscape Characteristics and Values

The Northern Rock Stack is located within a relatively contained part of the Foothills of the Coromandel Range as identified in the Hauraki Landscape Assessment (see **Figure 4**). This area of landscape is characterised by a sequence of existing elevated landforms to the east of Waihi which are associated with the established Processing Plant. In this context, the site forms part of an existing transition with established stockpiles and rural activity within the context of a broader working rural landscape.

No outstanding natural features and landscapes are identified in the context of the NRS or its vicinity.

9.2 Proposed Development

NRS footprint covers a total area of approximately 95 ha and reaches a maximum elevation of approximately 177 masl (see **Figure 16**). During operation, three temporary topsoil stockpiles and a collection pond will also extend beyond the northern and western toe of the proposed NRS footprint and cover an additional combined area of approximately 6.4 ha. Temporary stockpiles will also be established at the commencement of NRS whilst the NRS will remain operational during the life of the project. An existing workshop is also proposed to be relocated to the west of the proposed NRS.

During the initial stages of construction, the Western Borrow Area will provide a source of up to 130,000m^3 of rock material excavated from within the eastern area of the proposed NRS footprint. Surrounding this, the eastern and northern edges of the proposed NRS accommodate a stream diversion and collection drain separated by a proposed perimeter road, all of which will be constructed at the commencement of the project. The stockpiles have been designed to contain up to 100,000 cubic metres of material constructed to a nominal height of 10 m above natural topography. The existing workshop structure, fuel bowser and grease storage facilities will need to be relocated approximately 160 m to the southwest as shown in **Figure 13**.

At completion, temporary stockpiles will be removed and the NRS will be smoothed to reflect the adjoining rounded landforms and re-established in pasture and native shrubs. To the east and north of the proposed NRS, proposed diversion to existing water courses will support replacement native riparian vegetation.

9.3 Landscape Effects

9.3.1 Landform

The proposed NRS will extend existing modification along an undulating elevated terrace along the true left bank of the Ohinemuri River. In landform terms, the proposed NRS will introduce an additional elevated and rounded ridge top to the north of the existing tailings storage facilities. This will occupy the immediate context of a surrounding sequence of rounded hill forms which include Union Hill, Black Hill and an unnamed hill which reaches a slightly higher elevation of 196 masl immediately to the east. This sequence of rounded hills provides a high level of visual containment within this area and increases the ability to accommodate the type of landform change proposed.

Construction of the proposed NRS will involve the permanent transformation of an existing undulating terraced landform which includes areas presently accommodating rural land use and water courses with planted margins. This will adjoin existing areas of modification including the toe of existing tailings storage facilities and encompass existing storage areas and part of the conveyor already established in this area. At implementation, temporary topsoil stockpiles will extend along the northern periphery of the proposed NRS and reach a maximum height of approximately 10 metres. During operation these will be maintained as pasture and contribute visual containment of ongoing disturbance associated with the NRS within the site.

Temporary stockpiles will be removed at completion and the final landform will be completed as a smoothed landform which resembles the adjoining existing rounded landforms. Once re-established in pasture and low-level shrubs, the modified landform will become re-assimilated within this area and mitigate the potential for any long-term adverse landform effects.

9.3.2 Vegetation

The footprint of the proposed NRS comprises a combination of working farmland, watercourses supporting riparian planting and small wetland areas adjoining areas previously disturbed by mining activity. In this context, the proposed NRS and temporary stockpiles will remove existing shelter belts, divert existing watercourses and associated riparian planting and occupy productive rural land cover to expand mining activity.

During operation, there will be the permanent loss of voluntarily planted riparian vegetation which follows tributaries of the Ohinemuri River. An adjoining area of SNA vegetation located to the east of the proposed NRS (SNA T13UP166) will remain intact. Prior to construction, riparian vegetation will be re-established along stream diversions and the margins of the Ohinemuri River. At completion, temporary stockpiles will be removed and the final form of the NRS will be re-established in pasture and low shrub planting to remedy the potential for any long-term adverse vegetation effects.

9.3.3 Landscape Character Effects

The proposed NRS will remain contained within the Martha Mineral Zone and resemble part of the larger sequence of rounded landforms to the east of Waihi along the foothills of the Coromandel Ranges. Impacts of mining activity have already been established in this context and will continue to influence the character of this landscape in a manner which remains relatively well contained.

Prior to implementation, riparian and terrestrial vegetation will be re-established and enhanced along the perimeter of the NRS and adjoining water courses and assist with assimilating the additional form of the NRS within this modified area of working rural landscape. During operation, the extraction of rock from the Western Borrow area and creation of the NRS will

occur gradually in the context of the enclosing forms of temporary stockpiles and existing rounded hill forms rather than quickly and dramatically.

Rock within the Western Borrow Area and subsequent NRS will be used during operation and the overall volume reduced at project closure. Any unused rock will be smoothed, capped and covered with topsoil material re-established in pasture or low-level shrubs. The nature of such activity will ensure any perceived disruption to existing rural land use will be mitigated at completion albeit in a different shape. Rural land use and the associated rural character along Golden Valley Road will remain apparent and continue in association with a modified final landform.

9.3.4 Landscape Effects Assessment

An assessment of the level and nature of landscape effects associated with the NRS are set out below:

	Contributing factors	Implementation[48]		Operation[49]		Residual[50]	
		Level of Effect[51]	Nature of Effect[52]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Landform modification occurs in context of established mining activity • Permanent transformation of an existing undulating terraced landform • Operation or Western Borrow Area then rock stack remains partially enclosed within surrounding more elevated rounded hill forms • Temporary stockpiles maintained in pasture and removed at completion **Mitigation** • Final landform smoothed to remain subservient with the adjoining rounded landforms and revegetated	Moderate	Adverse	Moderate	Adverse	Low	Neutral
Vegetation Effects	• Change in rural land cover including pasture, shelter belts and riparian planting following small watercourses • No direct effects on the area of SNA vegetation (SNA T13UP166) **Mitigation** • Native planting established along perimeter of temporary stockpiles and riparian	Low – Moderate	Adverse	Low	Adverse	Low	Neutral

[48] Effects during implementation before mitigation

[49] Effects during operation with mitigation

[50] Residual Effects at completion

[51] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[52] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[48]		Operation[49]		Residual[50]	
		Level of Effect[51]	Nature of Effect[52]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	vegetation re-established along diverted water courses • Pastoral rural land cover re-established at completion						
Landscape Character Effects	**Characteristics and Values** • No formal national / local landscape protection within Martha Mineral Zone • Relatively contained area of rural landscape comprising some existing stockpile activity enclosed by surrounding hill forms **Nature of Landscape Change** • Localised modification which remains relatively enclosed within sequence of adjoining rounded hill forms • Gradual landform modification viewed in context of existing mining activity **Mitigation** • Temporary stockpiles maintained in pasture and removed at completion • Native planting established along the roadside and enclosing temporary stockpiles will increasingly reduce available views • Landscape rehabilitated to reinstate rural character at completion	Moderate	Adverse	Low – Moderate	Adverse	Low	Neutral

9.4 Visual Effects

9.4.1 Viewing Audience and Representative Viewpoints

Potential views of the proposed NRS are typically contained by surrounding elevated landforms associated with existing mining activity and primarily limited to land owned by OGNZL. To the north of the proposed NRS, however, some public and private views may occur from dwellings within adjoining rural areas within Golden Valley and along the north-eastern edge of Waihi (see **Figure 17**).

Theoretically, views of the NRS are also possible from long distance locations to the south-east of Waihi between Union Hill and Black Hill, however in reality visibility is predominantly contained by the urban form of Waihi and concealed by vegetation retained on the intervening landforms. Accordingly, construction of the NRS is unlikely to generate any material visual change from this area. Some partial views of the NRS will occur from Black Hill through established areas of planting characteristic of this hilltop.

Based on the above, the following five potential viewing areas have been identified from which adverse visual effects have been assessed. Visual simulations have been prepared from three representative viewpoints to assist this assessment (see **Figure 17**).

- **N1:** Golden Valley Road (VS15)
- **N2:** Northern Golden Valley (VS16)
- **N3:** North-East Waihi
- **N4:** South-East Waihi
- **N5:** Black Hill (VS17)

N1: Golden Valley Road (VS15)

This viewing area is predominantly limited to transient users of Golden Valley Road passing near the proposed NRS and approximately eight existing rural dwellings within approximately 800 metres, five of which are owned by OGNZL. Views from existing and potential future dwellings to the north-east of the Site are typically orientated to the north and away from the NRS and partially obscured beyond intervening vegetation. The most sensitive private views are likely to occur from a dwelling recently completed to the north-east of the proposed NRS, from which oblique filtered views of temporary grassed topsoil stockpiles constructed adjacent to Golden Valley Road may be visible and obstruct views of ongoing operation within the site.

One representative near distance view has been obtained from Golden Valley Road in this area:

VS15: Golden Valley Road

From here the proposed NRS and temporary stockpiles will be highly visible in near distance views. The proposed temporary stockpiles will bring mining activity closer to the road corridor and replace an existing dwelling and associated areas of pasture and screen planting. Once temporary stockpiles are established in pasture this will reduce their raw worked appearance. Following this, planting introduced along the margins of the stockpiles will increasingly limit the availability of views including the subsequent rehabilitation of the NRS in the short to medium term, providing an almost complete visual screen within approximately 5 years of implementation.

N2: Northern Golden Valley (VS16)

This viewing area includes views from more distant rural dwellings extending to the north-east of the NRS within Golden Valley. One representative view has been obtained from this area.

VS16: Golden Valley Road

From here, long-distance views of the gradual creation of NRS are seen in the context of elevated and vegetated landforms including a backdrop of Black Hill. During operation, the movement of machinery and raw worked appearance may be visible however viewing distance and intervening vegetation ensure any such views will be limited. Temporary stockpiles will not be visible. At completion, the resultant landform will resemble the adjoining more elevated landforms and reinstated in pasture to become readily absorbed within this distant sequence of rounded hills.

N3: North-East Waihi

This viewing area includes potential long-distance views from dwellings and road users passing through residential and adjoining rural areas to the north-east of Waihi. From here, the potential for views of the NRS are typically obscured by intervening vegetation including shelter belts and

established horticultural land use. Any long-distance glimpse views which occur will introduce a small area of disturbance seen in association with existing more elevated rounded landforms. At completion the final form of the proposed NRS will be established in pasture and blend within this distant elevated backdrop.

N4: South-East Waihi

From here the potential for long distance views of the proposed NRS are typically curtailed by intervening development characteristic of Waihi and further obscured by the intervening vegetated forms of Union Hill and Winner Hill. Accordingly, there will be a negligible change associated with the proposed NRS from this area. No representative views have been obtained from this area.

N5: Black Hill in Ngatikoi Domain (VS17)

Views from Ngatikoi Domain include Black Hill which rises to the south-east of GOP and observes the existing form of Gladstone Hill adjoining the Processing Plant against a backdrop of Union Hill.

VS17: Black Hill

This view is obtained from near the summit of Black Hill. This shows that the NRS will be visible from this area and remain an active extraction and stockpiling area during operation beyond the existing tailings storage facilities and below a more distant vegetated backdrop. Any change in view will remain in the context of the existing mining activity and surrounding rounded hills and limit any potential detrimental reduction in visual amenity.

9.4.2 Summary of Visual Effects Assessment (Northern Rock Stack)

An assessment of the level and nature of visual effects from identified viewing areas associated with the Northern Rock Stack is set out below:

	Contributing factors	Implementation[53]		Operation[54]		Residual[55]	
		Level of Effect[56]	Nature of Effect[57]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
N1: Golden Valley Road **(VS15)**	**Key Landscape Attributes** • Part of the undulating rural foothills of the Coromandel Range • Sequence of rounded volcanic hills form part of a larger working rural landscape • Existing Processing Plant remains well contained	Moderate	Adverse	Low – Moderate	Adverse	Low	Neutral

[53] Effects during implementation before mitigation

[54] Effects during mitigation with mitigation

[55] Long Term Residual Effects at Completion following mitigation

[56] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[57] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[53]		Operation[54]		Residual[55]	
		Level of Effect[56]	Nature of Effect[57]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	Nature of Visual Change • Views from transport corridors and rural dwellings • Open transient views and partial fixed views of the proposed NRS and stockpiles replace existing views of rural activity in context of established mining activity • Movement of machinery and raw worked appearance may be visible during construction of temporary stockpile **Mitigation** • Native planting established along the roadside and enclosing temporary grassed stockpiles will reduce available views • Reinstated in pasture at completion to assimilate within surrounding rural land use at completion						
N2: Northern Golden Valley **(VS16)**	**Key Landscape Attributes** • Part of the working rural foothills of the Coromandel Range • Existing views predominantly enclosed by surrounding rounded hills which help conceal the existing Processing Plant **Nature of Visual Change** • Views from rural dwellings • Long-distance partial views of the gradual creation of NRS • Visible in association with existing elevated landforms • Movement of machinery and raw worked appearance may be visible during operation **Mitigation** • Reinstated in pasture at completion to assimilate within surrounding rural land use at completion	Low	Adverse	Low	Adverse	Very Low	Neutral

	Contributing factors	Implementation[53]		Operation[54]		Residual[55]	
		Level of Effect[56]	Nature of Effect[57]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
N3: North-East Waihi	**Key Landscape Attributes** • Part of the working rural foothills of the Coromandel Range • Existing views towards the site predominantly enclosed and characterised by surrounding rounded hills which help conceal the existing Processing Plant **Nature of Visual Change** • Distant views from roads and rural dwellings • Views typically obscured by intervening vegetation including shelter belts and established horticultural land use typical throughout this area **Mitigation** • Reinstated in pasture at completion to assimilate within surrounding rural land use at completion	Low	Adverse	Low	Adverse	Very Low	Neutral
N4: South-East Waihi	**Key Landscape Attributes** • Part of the productive working rural lowlands which extend southeast of Waihi • Existing views towards the NRS site predominantly enclosed and characterised by surrounding rounded hills which help conceal the existing Processing Plant **Nature of Visual Change** • Views from dwellings • Views obscured by the intervening vegetated forms of Union Hill and Winner Hill	Very Low	Neutral	Very Low	Neutral	Very Low	Neutral
N5: Black Hill **(VS17)**	**Key Landscape Attributes** • Panoramic views from the elevated hilltop within the working rural foothills of the Coromandel Range • Views entail existing tailings storage facilities and Processing Plant which remain relatively contained within the surrounding sequence of hills to the east of Waihi	Low	Adverse	Low	Adverse	Low	Neutral

	Contributing factors	Implementation[53]		Operation[54]		Residual[55]	
		Level of Effect[56]	Nature of Effect[57]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	Nature of Visual Change • Transient views from recreation area • The Western Borrow Area and subsequent NRS are observed beyond and in the immediate context of existing mining activity associated with the Tailings Storage Facilities and Processing Plant **Mitigation** • Reinstated in pasture at completion to assimilate within surrounding rural land use at completion						

Despite its scale, the NRS will appear relatively enclosed by adjoining more elevated hills and remain associated with existing mining activity which ensures the potential for more significant visual effects will be limited.

During operation, some visual effects will occur from within Golden Valley, however these will predominantly occur in association with temporary stockpiles near Golden Valley Road introducing a temporary disruption and subsequent grassed bunds in the context of this existing working rural area. The majority of such views will gradually be reduced by planting introduced along the immediate boundary of the Site consistent with adjoining areas.

Some longer distance glimpse views may also occur from rural areas to the east of Golden Valley and north of Waihi, however these will result in limited change in the context of existing elevated landforms and existing mining activity generating low visual effects. Views of the gradual change in landform as proposed will remain consistent with this established working area and largely enclosed by adjoining hills. At completion, rehabilitation of the landform including changes associated with existing vegetation will further assist reinstating the proposed landform in this working rural context and mitigating the potential for any longer term adverse visual effects.

9.5 NRS Landscape Mitigation

During operation, the following measures are proposed to provide project benefits and remedy or mitigate natural character, landscape and visual effects as described above (see **Figure 21**):

- Establishment of fast-growing native planting along the periphery and margins of Golden Valley Road;
- Maintaining temporary stockpiles in pasture to reduce views of the ongoing raw worked appearance of the NRS;
- Reinstatement of riparian and terrestrial vegetation along the margins of diverted streams and reinforcing existing vegetation along the Ohinemuri River; and
- Removing and rehabilitating areas accommodating temporary stockpiles and round off the final contour of the NRS and reinstate with pasture at project closure.

10.0 Processing and Water Treatment Plant Upgrades

Proposed upgrades to the existing Processing and Water Treatment Plants will remain within the existing Processing Plant footprint between Union Hill and the Ohinemuri River (see **Figure 15**). In this location, ongoing operation within the Processing and Water Treatment Plants will typically remain concealed from external view with the exception of transient views from parts of Black Hill and glimpse views obtained along Golden Valley Road.

10.1.1 Zoning

As illustrated on **Figure 5**, proposed upgrades to the Processing and Water Treatment Plants are located on land zoned Martha Mineral Zone. New WUG and MUG Portals are proposed within the adjoining Rural Zone, facilitating an underground connection with the Willows Road site.

10.1.2 Landscape Characteristics and Values

The existing Processing Plant remains relatively enclosed within part of the Foothills of the Coromandel Range as identified in the Hauraki Landscape Assessment (see **Figure 4**). In this context, the site forms part of an existing relatively well contained industrial development within the context of a broader working rural landscape.

10.2 Proposed Development

Accommodating the new and replacement infrastructure associated with the Processing Plant Upgrade will require some localised reconfiguration within the existing Processing Plant footprint as illustrated on **Figure 16**. The main components of this proposed upgrade are:

- Replacing the current mobile and small jaw crusher with a SAG Feed Crusher (Modular Primary Crusher) obtained from the Reefton Mine.
- Replacing the existing Semi-Autogenous Grinding (SAG) Mill with mill obtained from the Reefton Mine. The highest part of the SAG Mill will reach 9 metres;
- Upgrading the existing leach circuit including replacing an existing 17 m diameter thickener with a 26 m diameter thickener and installing three additional 1,500 m^3 leach tanks. Each tank will reach 14.3 m in height and a diameter of 12.2 metres;
- Installing a new interconnecting conveyor for transporting waste rock to the NRS;
- Establishing a new explosives magazine to the north-east of TSF2;
- Installing a new substation and 11 kV switch room;
- Relocate the existing LPG tanks to the east of the Ohinemuri River; and
- Proposed cutbacks and constructing a new WUG portal to provide direct access to the Wharekirauponga Underground Mine and replacement of the MUG portal to accommodate GOP.

The Processing Plant will continue to operate 24 hours per day, 7 days per week. Improved lighting will be installed along the existing conveyor, at the crusher and the SAG Mill and installed to ensure the level of lighting measured at the boundary of any site not owned by OGNZL (or not subject to an agreement with OGNZL) is no greater than 8.0 lux.

The upgraded Water Treatment Plant will nearly double in size to accommodate additional water treatment streams required for the project. Established Discharge Outfalls on the bed of the Ohinemuri River are proposed to be reconsented as part of this work. The additional equipment for the Water Treatment Plant (tanks and clarifiers) required for the expansion will be identical in size to the existing equipment.

A buried services trench is also proposed to connect the Willows Road site to the existing Processing Plant. This will carry power, fibre optic for communications, and several waste and potable/raw/recycled water services. This will be buried on OGNZL land and along the margins of the State Highway 25 and Willows Road corridors with the exception of river crossings integrated with existing bridge structures. Once buried, the existing landcover will be reinstated ensuring negligible potential landscape and visual effects.

10.3 Landscape Effects

The proposed upgrade to the existing Processing Plant and WTP will remain contained in the context of an established Processing Plant. In this context the potential for any landscape effects beyond the immediate site context remain very limited. The final configuration of the Processing Plant and WTP seeks to improve the efficiency of ore processing and maintain adequate water treatment capacity and is unlikely to generate any adverse landscape effects beyond the immediate site context.

Forming an underground tunnel connection with the Willows Road site and WUG Mine avoids any potential landscape effects as a result of this aspect of the project.

10.3.1 Landscape Effects Assessment

An assessment of the level and nature of landscape effects associated with the proposed upgrade to the existing Processing Plant is set out below:

	Contributing factors	Implementation[58]		Operation[59]		Residual[60]	
		Level of Effect[61]	Nature of Effect[62]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Landform modification occurs in context of established Processing Plant and ongoing mining activity. Whilst some site-specific levels will be required, this is readily absorbed in the context of the receiving landscape	Low	Neutral	Low	Neutral	Very Low	Neutral

[58] Effects at Implementation before mitigation

[59] Effects During Operation with Mitigation

[60] Residual Effects following completion mitigation

[61] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[62] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing factors	Implementation[58]		Operation[59]		Residual[60]	
		Level of Effect[61]	Nature of Effect[62]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Vegetation Effects	• No additional vegetation is proposed to be removed within the Processing Plant's existing footprint	Very Low	Neutral	Very Low	Neutral	Very Low	Neutral
Landscape Character Effects	• No formal national / local landscape protection within the existing Martha Mineral Zone • Localised modification which remains well enclosed within existing Processing Plant and sequence of adjoining rounded hill forms	Low	Neutral	Low	Neutral	Very Low	Neutral

10.4 Visual Effects

Upgrades to the existing Processing Plant will remain contained between Union Hill and the Ohinemuri River and typically concealed from view with the exception of views from parts of Black Hill and glimpse views obtained along Golden Valley Road. No potential longer distant views have been identified including the potential for any views from the urban area of Waihi. An assessment of visual effects from the two identified viewing areas is set out below:

10.4.1 Visual Effects Assessment (Processing Plant)

An assessment of the level and nature of visual effects from identified viewing areas associated with the upgrades to the Processing Plant and Water Treatment Plant is set out below:

	Contributing factors	Implementation[63]		Operation[64]		Residual[65]	
		Level of Effect[66]	Nature of Effect[67]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
N5: Black Hill **(VS17B)**	**Key Landscape Attributes** • Opportunity for panoramic views encompassing the foothills and backdrop of the Coromandel Range • Settlement within Waihi and built form within the existing Processing Plant appears separated by a sequence of rounded rural hills	Low	Neutral	Low	Neutral	Low	Neutral

[63] Effects during implementation before mitigation

[64] Effects During Operation with Mitigation (5-10 years)

[65] Residual Effects at Completion following mitigation

[66] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[67] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Nature of Visual Change • Transient views of changes to the Processing Plant and portals will remain with the footprint of the existing Processing Plant • Any change in configuration of built development will remain relatively well contained and is unlikely to be readily discerned from the existing situation						
N1: Golden Valley Road	**Key Landscape Attributes** • Part of the broader Foothills of the Coromandel Range • The existing Processing Plant remains visually well contained within a sequence of rounded vegetated and pasture covered hills and roadside planting **Nature of Visual Change** • Glimpsed views of from transport corridors seen in context of existing Processing Plant infrastructure **Mitigation** • NRS stockpiles and associated screen planting mitigates glimpse views along Golden Valley Rd	Very Low	Neutral	Very Low	Neutral	Very Low	Neutral

10.5 Processing and Water Treatment Plant Mitigation

Containing all processing and water treatment activity within the existing footprint and structures ensures there is very limited potential landscape, natural character and visual effects associated with this aspect of the project. Where possible, all new and replacement infrastructure installed onsite should be coloured the same as the existing infrastructure and therefore remain visually recessive in this established and contained industrial context. The service trench connecting Willows Road with the Process Plant will be buried and the existing land cover reinstated to ensure negligible potential landscape and visual effects.

11.0 Tailings Storage Facility 3

As part of this project, the construction of an additional tailings storage facility is referred to as TSF3. This extends east of and adjoins the existing tailings storage facilities along the toe of a more elevated backdrop to the north and east. Once completed, TSF3 will accommodate an additional volume of approximately 5.7 million cubic metres, extending approximately 46 metres above existing ground level to an elevation of 155 masl.

Construction of tailings storage facilities is a gradual sequential process rather than a development which occurs simultaneously and all at once. At completion the final surface will predominantly be established in pasture and appear integrated within the existing broader context which includes existing tailings storage facilities and an established vegetated backdrop.

11.1 Site Appraisal

The existing form of tailings storage facilities has been integrated along a more elevated backdrop which contains the locations from which views of these elements remain available. The proposed TSF3 occupies part of a working rural landscape which continues along the toe of the larger undulating landform rising to the north and east (see **Figure 18**). In this regard, the proposed form of TSF3 continues along the southern aspect of a more elevated adjoining landform and adjoins an existing elevated tailings storage facility which primarily limits views to southern and eastern areas and some adjoining elevated rural land to the north. The majority of the area where TSF3 is proposed is currently farmed with linear shelter belts and farm tracks along field boundaries, consistent with rural land use patterns.

In closer proximity to the site, vegetation including native vegetation and scattered wilding pine is also encountered along the northern edge of the proposed TSF3 footprint, including vegetation identified within SNA T13UP166. Tributaries of the Ruahorehore Stream also flow through this area and have typically been channelized in response to rural land use to form linear drains along field boundaries.

The surrounding landscape maintains a productive rural character serviced by dispersed farm buildings and dwellings. Views along roads remain primarily rural and encompass a mix of open and enclosed paddocks observed through and between roadside shelterbelts. Transient views from Trig Road North, Waihi Beach Road, State Highway 2 and Trig Road South are typical of this established rural character and extend through the primary production lowlands from the south-east edge of Waihi.

11.1.1 Zoning

The proposed area accommodating TSF3 extends beyond the Martha Mineral Zone into the Rural zone (see **Figure 5)**.

11.1.2 Landscape Characteristics and Values

In landscape character area terms, the proposed TSF3 occupies a transition from the foothills of the Coromandel Range into the primary production lowlands to the south-east of Waihi (see **Figure 4**). In this context, the landscape transforms from a sequence of rounded and more steeply sloping eroded volcanic forms which define the margins of the Coromandel Forest Park and adjoin a broad and flatter productive rural plateau.

The sequence of rounded hills east of Waihi adjoin a low elongated ridge to the south-west of a band of Coastal Foothills along the Hauraki District coastline. These surrounding landforms have previously been subjected to historic and ongoing mining, forestry and pastoral grazing. More locally, vegetation within SNA T13UP166 creates the northern and eastern backdrops that define and help contain existing tailings storage facilities observed from within the Coromandel foothills and along the periphery of this area of primary production lowlands.

South of TSF3, the primary production lowlands form a broad plateau which generally extends east of the Ohinemuri River and encompasses most of the Ruahorehore Stream and its associated tributaries. This landscape generally expresses a productive working rural character comprising agricultural and horticultural activities enclosed within boundary vegetation. Mature tree belts are also common in this context and frequently assist in demarcating paddock boundaries and follow the margins of some streams. Views from within this landscape are obtained along SH2 and local roads, with dwellings more typically enclosed within vegetation.

The TSF3 site or vicinity do not form part of any outstanding or significant natural landscape.

11.2 Proposed Development

11.2.1 TSF3

TSF3 is a downstream earth and rockfill embankment structure, like TSF1A and 2, and forms an impoundment to store the discharged slurry tailings pumped from the Processing Plant. The proposed crest height for the embankment is 155 masl, forming a 46 m high embankment above the existing ground. The total footprint of TSF3, including the extent of the stockpile and uphill diversion drain, is approximately 115 ha. Of this area 20 ha is already part of the existing footprint of Storage 1A and Eastern Stockpile. The new footprint is therefore 95 ha.

During the initial stages of constructing TSF3, the Central Borrow Area and Eastern Borrow Area (Stages A and B) will be constructed in the footprint of the proposed tailings storage facility. The Eastern Borrow Area reaches a maximum elevation of 200 masl and enables a combined total of up to 2.5 M m^3 of material.

The base of TSF3 is located at an elevation of approximately 109 masl. The proposed embankment against which tailings are contained is proposed to be progressively raised in stages, reaching successive elevations of 135 masl, 145 masl and a final crest height of 155 masl. Each stage will occur over a period of approximately one or two years and progressively increase the capacity of tailings storage creating an enclosed basin formed against the existing tailings facilities and adjoining the more elevated landforms to the north and east over a period of approximately 5 years.

Staging of the various elements of the WNP is highly dependent upon the material balance and maintaining adequate tailings storage capacity over time between the various aspects of the project. As such, TSF3 capacity will be built progressively ahead of the requirement to store tailings generated in the processing of ore. In parallel, excess rock will be stored at Willows Road Rock Stack and the NRS, for eventual return underground for backfilling of mining stopes or construction of the TSF3 embankment.

The final surface of the embankment will predominantly be re-established in pasture and equally support native wetland species on the rehabilitated tailings pond.

11.3 Landscape Effects

11.3.1 Landform

The proposed development of TSF3 will permanently modify an existing area of undulating to flat landform along the eastern toe of the existing tailings storage facilities and below a larger more elevated ridge which rises to the north and east. The final crest will follow a sinuous form into the existing tailings storage facilities and ties into an existing undulating spur to the east. During construction, this will extend a raw worked appearance below the adjoining more elevated backdrop which comprises TSF1A and the existing more elevated landform to the north and east.

Prior to implementation, topsoil and rock is proposed to be removed from within the footprint of TSF3. During operation, the creation of this additional TSF will gradually continue along the toe of an existing elevated backdrop to the north. This will resemble the existing rounded and flattened terraced landform already apparent in this area. Existing streams which form tributaries to Ruahorehore Stream will be diverted along the eastern toe of the TSF3 embankment. A temporary collection pond formed along the base of the embankment will capture runoff from the construction area. The inner edge of the embankment will create a basin within which tailings will be contained.

At completion, the proposed TSF3 will remain relatively well enclosed against the TSF1A and more elevated areas of landform to the north and east. This will limit the extent to which any landform modification remains apparent in the long term. All exposed areas will be re-established in pasture and resemble the adjoining tailings storage embankments and rehabilitated to integrate the proposed landform disturbance within surrounding areas of pasture against the larger vegetated backdrop.

11.3.2 Vegetation

During construction of TSF3, approximately 8.3 ha. of vegetation will be removed within SNA T13UP166 or disturbed by construction of an uphill diversion drain and subsequent inundation of tailings created against the adjoining landform. Proposed mitigation has been developed to ensure any terrestrial and riparian planting required to be removed during construction will be replaced alongside opportunities to increase connectivity between established areas of vegetation.

Outside of the identified SNA, vegetation proposed to be removed is predominantly associated with a working rural character comprising pasture and exotic shelter belts. Once established, the landcover in this area will partially be re-established with native shrubs implemented on the completed landform supporting tailings storage and pasture on stockpile areas and associated rock embankments. Internal wetland areas will also establish along the margins of the resulting tailings ponds.

11.3.3 Landscape Character

In landscape character terms, the proposed TSF will remain along a transition from the foothills of the Coromandel Range and a larger productive rural floodplain to the south-east. In this context, TSF3 will extend along the existing landform to the north and east and adjoin existing tailings facilities which characterises part of this established transition between these adjoining landscape character areas.

During operation, parts of the proposed development will appear atypical of day-to-day rural activity which may normally be anticipated in the rural zone. Movement of machinery and the creation of large stockpiles of inert material will contrast with more verdant rural and pastoral areas, often framed within mature trees and shelter planting. Notwithstanding this, such activity will be temporary and shift across the site as the resulting landform is gradually and permanently changed then rehabilitated to support revegetation. An initial worked appearance will remain until the final landform is completed and rehabilitated.

Proposed diversion streams through TSF3 will occur during the initial stage of this development and requires earthworks to create a diverted corridor which follows the contour along the eastern edge. Initially, parts of the stream diversion will appear more engineered in the context of existing stream channels which follow the floor of the gully. Many of the existing channels proposed for diversion flow through rural activity and linear drains along field boundaries. Once created, stream diversion will continue to connect SNA T13UP166 with the Ruahorehore Stream. The resultant landform modification will gradually reinforce and enhance the surrounding landcover and increasingly appear contained along a larger more vegetated, elevated, linear, and undulating backdrop.

At completion, resultant embankments will be reinstated in pasture to support ongoing future rural land use and assist with the landscape's ability to absorb further modification. In this context, any change in landscape character will become increasingly absorbed and characterised by the existing natural and working rural context.

11.3.4 Landscape Effects Assessment

During operation, the interrelated landform created by TSF3 will extend mining related activity to the east of the existing form of TSF1A. Notwithstanding this, the creation of TSF3 will occur gradually rather than simultaneously and all at once. In this context, the identification of landscape effects has been considered over short term and long-term periods acknowledging such time frames will occur over different periods.

An assessment of the level and nature of landscape effects associated with TSF3 are set out below:

	Contributing Factors	Implementation[68]		Operation[69]		Residual[70]	
		Level of Effect[71]	Nature of Effect[72]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
Landform Effects	• Permanent transformation within an enclosed landform which includes the toe of an existing tailings storage facility • Proposed linear landform follows a curvilinear alignment which remains below and against more elevated areas of landform to the north **Mitigation** • Temporary stockpiles hydroseeded during operation • Final landform rehabilitated with pasture at completion	Moderate - High	Adverse	Moderate	Adverse	Low – Moderate	Adverse
Vegetation Effects	• Approximately 8.3 ha. of vegetation within SNA T13UP166 will be removed • Disruption to existing rural land use which can predominantly be replaced with pasture re-established on the final embankment and associated stockpiles **Mitigation** • Terrestrial and riparian planting will be replaced along the perimeter of the development to compensate for any vegetation loss and increase connectivity • Facilitate reestablishment with native wetland plants	Moderate – High	Adverse	Low – Moderate	Adverse	Low	Neutral

[68] Effects during implementation before mitigation

[69] Effects during operation with mitigation (5 – 10 years)

[70] Residual Effects at Completion following mitigation

[71] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[72] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing Factors	Implementation[68]		Operation[69]		Residual[70]	
		Level of Effect[71]	Nature of Effect[72]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	within stored tailings areas at completion						
Landscape Character Effects	**Characteristics and Values** • No formal local / national landscape classification • Extends along a transition from the Coromandel Foothills into primary productive lowlands to southeast of Waihi • Adjoins existing mining activity established in the context of the surrounding working rural character. **Nature of Landscape Change** • During operation, the proposed landform modification will appear atypical of day-to-day rural activity and contrast with more verdant rural and pastoral areas • Landform modification remains relatively well contained against a larger adjoining undulating landform to the north and east • At completion, resultant embankments will support ongoing rural land use **Mitigation** • Temporary stockpiles reduced or removed and affected areas reinstated in pasture • Final landform rehabilitated with pasture at completion	Moderate – High	Adverse	Moderate	Adverse	Low	Adverse

11.4 Visual Effects

11.4.1 Viewing Audience

Views of the extended tailings and storage facilities are more generally limited to adjoining rural areas and typically observe this aspect of the project in the context of the existing tailings storage facilities. In this context the available viewing audience comprises of rural dwellings and transient views along rural roads.

TSF3 is located to the east of the existing tailings storage facility and predominantly visible along Trig Road North and Waihi Beach Road in middle distance views. Beyond approximately 1.5 kilometres, longer distance glimpse views may also occur along Trig Road from primary

production lowlands to the south-east of Waihi and west of a local ridgeline traversed by Mathers Road.

The more elevated backdrop which extends to the north and continues around the eastern perimeter of both existing facilities ensures that potential views are focused to the south from nearby rural properties. The nature of intervening tailings storage facilities also mean TSF3 is not visible from rural dwellings along Kingsley Road or Fisher Road beyond TSF1A. Over greater distances, TSF3 is not visible from any part of Waihi's urban area given the nature of intervening landforms including Black Hill and intervening vegetation.

The following four viewing areas have been identified from which four representative visual simulations have been prepared to assist with the assessment of visual effects (see **Figure 20**):

- **T1:** Waihi Beach Road (VS18)
- **T2:** Waihi Beach Road and SH2: Tauranga Road (VS19 and VS20)
- **T3:** Trig Road South (VS21)
- **T4:** Trig Road North (east)

In addition to the above, 8 private viewpoints were visited as part of undertaking the assessment and to assist understanding of the nature of available views within identified viewing areas. The locations of private viewpoints assessed with respect to TSF3 are included in **Figure 20**.

T1: Waihi Beach Road

This viewing area obtains potential views of TSF3 from Waihi Beach Road including nine rural dwellings. Views from Waihi Beach Road occur over a length of approximately 2.1 km, however vegetation established throughout this adjoining area of landscape frequently limits potential opportunities to observe longer distance views, including parts of TSF1A and the proposed location of TSF3.

Potential views from the vicinity of East Waihi Beach Road are predominantly concealed by intervening vegetation and shelter belts established throughout this area. Partial and glimpse views may observe the linear extension of TSF3 along the toe of the larger vegetated backdrop to the north. Where visible, the crest of TSF3 adjoins areas of more elevated native vegetation and pine along the skyline. The linear form of TSF3 occurs within the context of existing tailings storage facilities and linear shelterbelts established throughout this area and appears consistent within its working rural context. There may be more open views from individual dwellings which generate higher visual effects.

One representative open view has been obtained along Waihi Beach Road.

VS18: Waihi Beach Road

This view is located at a distance of approximately 1.2 kilometres from the toe of the proposed TSF3. From here both TSF1A and the introduction of TSF3 would be visible with varying levels of screening contributed by existing shelter planting. Where visible, the proposed form of TSF3 would extend the existing terracing associated with TSF1A visible in the left-hand side of the photograph observed through gaps between intervening shelter belts and below a more distant vegetated backdrop.

During the initial stages of operation, TSF3 will gradually extend landform modification to the east as vegetation on TSF1A becomes increasingly established. Such ongoing modification will remain below the established vegetation and remain through gaps between intervening shelter belts and below vegetation in SNA T13UP166 retained along the skyline. At completion, TSF3 would be re-established in pasture and pockets

of native shrub planting and become increasingly assimilated along part of a sequence of elevated linear terraces seen against a larger vegetated backdrop.

T2: Trig Road North (VS19 and VS20)

Views from Trig Road North and associated rural dwellings established in this area provide the closest viewing audience from which TSF3 is visible. As with views from Waihi Beach Road, views from dwellings are more typically enclosed by vegetation, however some views of TSF3 may be available, particularly from dwellings located on localised high points and orientated to have increased visibility of surrounding areas. Five rural dwellings (three of which are owned by OGNZL) are identified in this viewing area from which two representative public viewpoints have been identified and described below:

VS19: Trig Road North

From here, the stockpile associated with TSF3 is located at approximately 330 metres, with the toe of TSF3 located at approximately 500 metres. Where visible during operation through gaps between intervening shelter belts**,** TSF3 will extend the linear crest of the terrace embankment along the toe of the more elevated vegetated landform which rises to the north. The permanent stockpile will extend the form of adjoining rounded landforms and reinstated in pasture during operation seen beyond intervening shelter planting which will be retained. At completion, TSF3 and the stockpile will be re-established in pasture to complement the larger vegetated backdrop and ensure the extended tailings storage facilities recede into this pastoral landscape against a larger existing vegetated backdrop.

VS20: Trig Road North

From here the proposed stockpile adjoining TSF3 will be visible over a distance of approximately 450 metres. This will extend beyond the toe of the larger backdrop beyond lower lying intervening rural activity from the outset of the project and work to conceal ongoing activity associated with the implementation of TSF3. During the initial phase of operation, several elevated trees will be removed, and development will extend a worked appearance replacing similar albeit more distant views of TSF1A visible along the skyline. Once formed, this will be re-established in pasture and become readily assimilated within the adjoining undulating rural landforms.

T3: Trig Road South

This viewing area represents long distance views from the vicinity of Trig Road South and rural areas east of this along Waihi Beach Road which may observe the existing tailings storage facilities below a larger more elevated vegetated backdrop. Existing orchards to the north-west of the intersection of Trig Road and Waihi Beach Road obscure views towards the proposed tailings storage facilities from much of this area. Where visible further to the south, disturbance of the existing tailings storage facilities will introduce a distant raw worked appearance within a wider working rural area.

One representative public viewpoint has been identified from this broader area and described below:

VS21: Trig Road South

From here the Eastern Borrow Area and extension of TSF3 with associated stockpiles will be visible over distances of approximately 2 kilometres. Such views of TSF3 will adjoin TSF1A and continue below a larger elevated vegetated backdrop beyond intervening areas of vegetation to remain relatively well contained.

T4: Trig Road North (east)

This viewing area encompasses middle- and long-distance views to the east of TSF3 which occur east of Trig Road North and along adjoining parts of the coastal hills. From here the tailings storage facilities extend from the more elevated vegetated landform to the north and are predominantly concealed beyond intervening spurs which enclose the eastern edge of TSF3. Any glimpse views which remain are limited to views from elevated dwellings with areas of modified landform becoming integrated within a wider working rural landscape which remains apparent.

11.4.1 Visual Effects Assessment

As with landscape effects, given the interrelated and larger completed landform created by the adjoining proposed tailings storage facilities, visual effects of the combined tailings storage facilities have been assessed together. Any visual effects will occur gradually and will affect different viewing audiences at different times rather than occurring simultaneously and all at once. In this context, the identification of visual effects has been considered over short term and long-term periods acknowledging such time frames will occur over different periods. The assessment of the level and nature of visual effects on the identified viewing areas is set out below:

11.4.2 Visual Effects Assessment of Proposed TSF3

	Contributing Factors	Implementation[73]		Operation[74]		Residual[75]	
		Level of Effect[76]	Nature of Effect[77]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
T1: Waihi Beach Road **(VS 18)**	**Key Landscape Attributes** • Existing rural land use observed in the context of established tailings storage facilities and against a larger vegetated backdrop • Intervening vegetation frequently filters and reduces available views **Nature of Visual Change** • Partial and glimpse views from adjoining rural dwellings and roads • Primarily distant views of TSF3 remain below established vegetation along the skyline • Transient movement of machinery and raw worked appearance atypical of day-to-day farming activity in association with permeant change in landform • Long distance partial views generally screened by existing	Low	Adverse	Low	Adverse	Low	Neutral

[73] Effects during implementation before mitigation

[74] Effects During Operation following mitigation (5-10 years)

[75] Residual Effects at Completion following mitigation

[76] Level of Effect assessed as: Very High, High, Moderate-High, Moderate, Low-Moderate, Low, Very Low

[77] Nature of Effect assessed as: Adverse, Neutral or Beneficial

	Contributing Factors	Implementation[73]		Operation[74]		Residual[75]	
		Level of Effect[76]	Nature of Effect[77]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	shelter planting consistent with this rural area **Mitigation** • Rehabilitate final landform in pasture seen against a larger vegetated backdrop						
T2: Trig Road North **(VS19 and VS20)**	**Key Landscape Attributes** • Existing undulating rural land use observed in the context of established tailings storage facilities against a larger vegetated backdrop • Views from adjoining dwellings predominantly remain enclosed within established areas of vegetation • Intervening vegetation throughout adjoining rural areas frequently filters and reduces long distance views **Nature of Visual Change** • views from rural dwellings and rural road • Middle distance views seen beyond a working rural landscape and frequently filtered through intervening shelter planting • Stockpiles constructed at the commencement of the project will be grassed and provide a visual buffer restricting views of construction of the tailings storage facility • Transient movement of machinery and raw worked appearance may be visible in association with permeant change in landform and appear atypical from day-to-day farming activity **Mitigation** • Temporary stockpiles maintained as pasture during operation • Final landform rehabilitated in pasture against a larger vegetated backdrop • Temporary stockpiles reduced or removed and affected areas reinstated in pasture	Moderate – High	Adverse	Moderate	Adverse	Low – Moderate	Neutral
T3: Trig Road South (VS21)	**Key Landscape Attributes** • Broad area of productive rural lowland with distant backdrop of established tailings facility seen against vegetated backdrop	Low	Adverse	Low	Adverse	Low	Neutral

	Contributing Factors	Implementation[73]		Operation[74]		Residual[75]	
		Level of Effect[76]	Nature of Effect[77]	Level of Effect	Nature of Effect	Level of Effect	Nature of Effect
	• Intervening vegetation frequently punctuates and screens distant views **Nature of Visual Change** • Views from rural dwellings and roads • Extension of terracing associated with tailings storage facilities below a more distant and elevated vegetated backdrop • Fixed and transient views frequently concealed by intervening vegetation **Mitigation** • Final landform rehabilitated with pasture against a larger vegetated backdrop						
T4: Trig Road North (east)	**Key Landscape Attributes** • Undulating rural landscape beyond which existing tailings facilities remains relatively contained • Intervening landforms assist with restricting available views of TSF3 site • Where TSF3 is visible, the existing linear form of TSF1A is also visible along part of the more distant skyline. **Nature of Visual Change** • Views from rural dwellings and roads typically enclosed within established areas of vegetation • Location of borrow areas and tailings integrated along the toe of larger vegetated landform which wraps along the eastern edge of TSF3 • Intervening stockpiles reinstated in pasture to conceal ongoing activity during operation **Mitigation** • Rehabilitated in pasture against a larger vegetated backdrop	Low	Adverse	Low	Adverse	Low	Neutral

TSF3 will adjoin existing tailings storage facilities and appear visually contained against an existing landform backdrop which rises to the north and east. In this context, the potential for visual effects primarily extends to the southeast across adjoining rural areas, from which existing views of tailings storage facilities are available and which influence the extent to which additional visual effects occur in this more modified rural context.

11.5 TSF3 Landscape Mitigation

During operation, the following measures are proposed to mitigate natural character, landscape and visual effects:

- Ensure stockpiles are hydroseeded with pasture to resemble adjoining rural areas during operation
- Replace vegetation proposed to be removed in SNA T13UP166 and along existing watercourses to offset vegetation loss and improve connectivity along Ruahorehore Stream
- Re-establish the final embankment and stockpile in pasture and facilitate reestablishment with native wetland plants within stored tailings areas at completion

12.0 Cumulative Effects

12.1 Cumulative Landscape Effects

Despite the scale of the project, the combination of underground elements, its dispersed nature and response to local setting ensures a high degree of visual enclosure and limited cumulative effects.

In landscape character terms, the project responds well to the separate landscape units identified in the Hauraki Landscape Assessment (2006). The proposed underground mine and surface infrastructure at the Willows Road site will remain isolated and well contained within the foothills of the Coromandel Range. Similarly, GOP, the NRS and addition of TSF3 will remain well integrated within the elevated vegetated sequence of small volcanic peaks along the foothills of the Coromandel Range and limit any perceived extension into the primary production lowlands around Waihi.

In landform terms, the expansion of surface infrastructure will result in an increase in rock and tailings introduced at Willows Road and to the east of Processing Plant. Such change will remain relatively well contained in the context of the surrounding topography and an existing mine, typically appearing below adjoining, more elevated, landform backdrops. In landcover terms, vegetation proposed to be removed will be replaced by a comprehensive Landscape Mitigation Plan at the commencement of the operation (see **Figure 21**). This comprises of approximately 35.3 hectares of riparian planting, 63.6 hectares of native terrestrial planting, 27.1 hectares of SNA enhancements and 1.5 hectares of wetland planting within OGNZL owned land which can occur during the project and remain through project closure.

In addition to planting which forms part of this project, OGNZL proposes to undertake further planting on adjoining land with agreement from the Department of Conservation and Hauraki District Council. This comprises 11.2 hectares of terrestrial and riparian planting on land adjoining the Willows Road site and a further 16 hectares of riparian and terrestrial planting on land adjoining the proposed expanded rock storage and tailings facilities, primarily along the margins of the Ohinemuri River.

Given the above any cumulative landscape effects will be **moderate** and become largely neutral with potential positive effects at project closure. When considered in the context of existing mining activity, the overall open rural character will remain and avoid any wider perceived encroachment of expanded mining activity.

12.2 Cumulative Visual Effects

Cumulative visual effects can occur in combination (seen together in the same view), in succession (where the observer needs to turn their head) or sequentially (with a time lapse between instances where proposals are visible when moving through a landscape).

In terms of combination visual effects, the different aspects of proposed mining and associated storage activity will not typically all be visible in one view. The greatest potential cumulative visual effects will occur as a result of the proposed development of TSF3. The construction of borrow areas and proposed TSF3 will be visible alongside the existing tailings storage facilities from some adjoining areas, including parts of Waihi Beach and Trig Road which will observe the gradual extension of modification and expanded tailings storage facilities along the toe of the adjoining backdrop beyond intervening rural land use.

During operation, there is potential for some **moderate-high** cumulative visual effects as a gradual worked appearance occurs as a result of the construction of TSF3 and associated expansion of tailings storage facilities. Such cumulative adverse effects occur against a larger vegetated backdrop which will be retained, and gradually reduce as vegetation is re-established to reinforce a larger vegetated backdrop in this existing rural context.

There will also be glimpsed combination views from within Golden Valley of proposed upgrades to the Processing Plant, the creation and rehabilitation of GOP and the creation of the NRS and associated temporary stockpiles adjoining the margins of the road. Similarly, the NRS and GOP are potentially visible from the summit from Black Hill. In all instances, however such views are seen in transient views and typically over long distances in the context of established mining activity with limited change in existing views or corresponding increase in potential cumulative visual effects.

Accordingly, once mitigation as identified has been established any adverse cumulative visual effects will be **low-moderate**.

13.0 Response to Statutory Provisions

13.1 RMA s.6a Effects on Natural Character

Within the Coromandel Forest Park, the potential for natural character effects is addressed by the nature of underground mining which avoids any direct effects on waterbodies above. Except for potential indirect effects of reduced flows and including the loss of a single warm spring, resultant changes in stream flows remain within the natural range of low flows and will be difficult to discern in this context of their existing natural variability. Where natural elements and influences remain dominant, including the Wharekirauponga catchment and part of the Mataura Stream flowing out of the Forest Park, the project essentially preserves natural character alongside mitigation offered through enhancing the upper reaches of the Mataura Stream.

The greatest potential for natural character effects primarily occurs in the context of more modified watercourses supporting an existing working rural context. In such areas, man-made elements / influences are more dominant, and the nature of mining activity as proposed is not considered inappropriate. Given the avoidance of significant adverse effects in addition to effective remediation which includes ecological compensation and enhancements to tributaries of the Mataura Stream, Ohinemuri River and Ruahorehore Stream, the project enables natural character within this broader landscape to be preserved.

13.2 RMA s. 6b: Effects on aesthetic, cultural and intrinsic values of recognised ONL

The localised ongoing exploration activity and establishment of up to four shaft raises within the Coromandel Forest Park to enable the operation of an underground mine will largely avoid the potential for adverse effects on recognised aesthetic and intrinsic values associated with the identified ONL.

Biophysical aspects including important ecological values are primarily associated with native fauna and flora and will be protected through careful site selection of drill sites, vent shaft raises and associated activity. In perceptual and associative terms, the extremely limited areas affected by this activity will essentially remain isolated within the context of this broader undeveloped backdrop. Once established, vent raises will remain wholly subservient to recognised values, including avoiding impacts on the surrounding extensive vegetation cover, prominent ridgelines and sensitive views. During operation and following completion, this landscape will retain its distinctive 'backbone' to the Coromandel Peninsula. It will retain its aesthetic coherence, remain highly legible and expressive of its formative processes and maintain its fundamental wild and scenic associations.

For the above reasons it is considered that the proposed mining beneath this area of the Coromandel Forest Park, including the construction and operation of up to four vent shaft raises, can occur in a way that protects recognised aesthetic, cultural and intrinsic values, consistent with avoiding inappropriate use and development. This outcome acknowledges that such landscapes will continue to evolve over time, however the overriding values and characteristics will remain both natural and outstanding. Recommendations which inform suitable consent conditions in this regard are set out in Section 7 of this report.

13.3 RMA s.7: Amenity Values and Quality of the Environment

During operation, the landscape surrounding Waihi will remain characterised by established rural land use which contributes to its rural character and helps assimilate related mining activity. Whilst the Willows Road site has not be identified as an outstanding natural feature of landscape, the proposed development will maintain the broader amenity values of this existing rural area and link riparian vegetation with the adjoining Coromandel Forest Park to enhance the quality of this aspect of the adjoining rural environment.

Part of the topography of the Willows Road site will undergo an apparent change as a result of the project however the siting and form of the proposed WRS is located to ensure this remains relatively well contained. As far as practicable, the areas of proposed disturbance are concentrated in visually contained areas to minimise potential wider impacts on rural character. Once completed, the site will be rehabilitated and retain a final form and landcover which will remain visually integrated within the surrounding landscape in the long term.

The proposed modification to landforms adjoining the existing Processing Plant including GOP, NRS and TSF3 remain largely associated with existing mining activity and relatively well contained within a wider working rural context. Within this landscape, rehabilitation offers further opportunities to enhance planting introduced voluntarily along the margins of the Ohinemuri River and facilitates a reinforced landscape framework which continues to contain and address potential adverse effects. At completion, the project will similarly enable a final form and landcover which will become readily assimilated within surrounding areas including enhanced recreation opportunities for the wider Waihi area in the long term.

With the above considered, the landscape elements that contribute to amenity values and the quality of the environment will be maintained and enhanced through the duration and completion of the project.

14.0 Summary and Conclusion

Overall, the potential for landscape and visual effects are less than might be expected for a project of this nature and scale. Primarily this is due to the existing situation and established mining context combined with the retention of intervening topography and landcover which responds to underlying landscape values and available views. Any impacts within the Coromandel Forest Park will remain very isolated with less than minor landscape effects, consistent with protecting underlying landscape values and at least high natural character within this outstanding natural landscape.

During operation, views of expanded mining activity beyond the Coromandel Forest Park will be limited. The sequence of elevated landforms within the Coromandel Foothills and to the east of Waihi will gradually assimilate ongoing landform modification and associated surface infrastructure within localised rural areas. For most people living in and around Waihi, the project will remain visually well contained, resulting in no material change or adverse landscape or visual effects. Landscape mitigation will ensure the project remains well integrated within its local landscape setting and facilitates positive landscape outcomes in the long-term.

15.0 References

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Appendix 1: Natural Character, Landscape and Visual Effects Assessment Method Statement

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

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

The Existing Landscape

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

Physical –relevant natural and human features and processes;

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

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

Engagement with tāngata whenua

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

Statutory and Non-Statutory Provisions

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

The Nature of Effect

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

It should be emphasised that a change in a landscape (or view of a landscape) does not, of itself, necessarily constitute an adverse landscape effect. Landscapes are dynamic and are constantly changing in both subtle and more dramatic transformational ways; these changes are both natural and human induced. What is important when assessing and managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate adverse effects. The aim is to maintain or enhance the environment through appropriate design outcomes, recognising that both the nature and level of effects may change over time.

The Level of Effect

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

Landscape Effects

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

Visual Effects

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

Natural Character Effects

Natural Character, under the RMA, specifically relates to *'the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development'*. Therefore, the assessment of natural character effects only involves examining the proposed changes to natural elements, patterns and process which may occur in relevant landscape / seascape contexts.

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

A natural character effect is a change to the current condition of parts of the environment where natural character occurs. Change can be negative or positive. The resultant natural character effect is influenced by the existing level of naturalness within which change is proposed; a

greater level of effect will generally occur when the proposal reduces the naturalness of a less modified environment. In short, the process of assessing natural character effects can be summarised as follows:

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

The Significance of Effects

Decision makers assessing resource consent applications must evaluate if the effect on individuals or the environment is less than minor[78] or if an adverse effect on the environment is no more than minor[79]. For non-complying activities, consent can only be granted if the s104D 'gateway test' is satisfied, ensuring adverse effects are minor or align with planning objectives. In these situations, the assessment may be required to translate the level of effect in terms of RMA terminology.

This assessment has adopted the following scale applied to relevant RMA circumstances[80] (refer to diagram below), acknowledging low and very low adverse effects generally equate to 'less than minor' and high / very high effects generally equate to significant[81].

[78] RMA, Section 95E

[79] RMA, Section 95E

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

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

Appendix 2: Statutory Context

Waikato Regional Policy Statement

The Waikato Regional Policy Statement (RPS) became operative on the 20th of May 2016 and provides the basis through which integrated management of the region's natural and physical resources will be achieved.

Chapter 3 sets out the **objectives** of the RPS including those relevant to this landscape natural character and visual effects assessment. This includes the following objectives with particular relevance to this landscape, natural character and visual effects assessment:

3.1 Integrated management

Natural and physical resources are managed in a way that recognises:

a) the inter-relationships within and values of water body catchments, riparian areas and wetlands, the coastal environment, the Hauraki Gulf and the Waikato River;

b) natural processes that inherently occur without human management or interference;

c) the complex interactions between air, water, land and all living things;

d) the needs of current and future generations;

e) the relationships between environmental, social, economic and cultural wellbeing;

f) the need to work with agencies, landowners, resource users and communities; and

g) the interrelationship of natural resources with the built environment.

3.12 Built environment

Development of the built environment (including transport and other infrastructure) and associated land use occurs in an integrated, sustainable and planned manner which enables positive environmental, social, cultural and economic outcomes, including by:

b) preserving and protecting natural character, and protecting outstanding natural features and landscapes from inappropriate subdivision, use, and development;

g) minimising land use conflicts, including minimising potential for reverse sensitivity;

3.16 Riparian areas and wetlands

Riparian areas (including coastal dunes) and wetlands are managed to:

a) maintain and enhance:

ii) amenity values.

3.20 Outstanding Natural Features and Landscapes

The values of outstanding natural features and landscapes are identified and protected from inappropriate subdivision, use and development.

3.21 Amenity

The qualities and characteristics of areas and features, valued for their contribution to amenity, are maintained or enhanced.

3.22 Natural Character

The natural character of… wetlands, and lakes and rivers and their margins are protected from the adverse effects of inappropriate subdivision, use and development.

Chapter 4 relates to integrated management including Policy 4.4 which relates specifically to regionally significant industry and primary production and requires that:

Policy 4.4 Regionally significant industry and primary production

The management of natural and physical resources provides for the continued operation and development of regionally significant industry and primary production activities by:

c) ensuring the adverse effects of regionally significant industry and primary production are avoided, remedied or mitigated;

g) promoting positive environmental outcomes.

Policy 12.1 has direct relevance to the Coromandel Ranges ONL, which states:

Policy 12.1 Outstanding natural features and landscapes

Identified values and characteristics of outstanding natural features and landscapes (including seascapes) of regional or district significance are protected from adverse effects, including cumulative effects, arising from inappropriate subdivision, use and development.

Policy 12.2 relates specifically to wetlands, rivers and their margins and states:

Policy 12.2 Preserve natural character

Ensure that activities within the coastal environment, wetlands, and lakes and rivers and their margins are appropriate in relation to the level of natural character and:

a) where natural character is pristine or outstanding, activities should avoid adverse effects on natural character;

b) where natural elements/influences are dominant, activities should avoid significant adverse effects and avoid, remedy or mitigate other adverse effects on natural character;

c) where man-made elements/influences are dominant, it may be appropriate that activities result in further adverse effects on natural character, though opportunities to remedy or mitigate adverse effects should still be considered;

d) promote the enhancement, restoration, and rehabilitation of the natural character of the coastal environment, wetlands and lakes and rivers and their margins; and

e) regard is given to the functional necessity of activities being located in or near the coastal environment, wetlands, lakes, or rivers and their margins where no reasonably practicable alternative locations exist.

Policy 12.3 relates to amenity values

Policy 12.3 Maintain and enhance areas of amenity value

Areas of amenity value are identified, and those values are maintained and enhanced. These may include:

a) areas within the coastal environment and along inland water bodies;

b) scenic, scientific, recreational or historic areas;

c) areas of spiritual or cultural significance;

d) other landscapes or seascapes or natural features; and

e) areas adjacent to outstanding natural landscapes and features that are visible from a road or other public place

Waikato Regional Plan

The Waikato Regional Plan gives effect to the RPS and contains policy and methods to manage the natural and physical resources of the Waikato region. This includes Objective 3.1.2 and Policy 3 which relates to Natural Character which states:

3.1.2 Objective

The management of water bodies in a way which ensures:

a) that people are able to take and use water for their social, economic and cultural wellbeing

b) net improvement of water quality across the Region

c) the avoidance of significant adverse effects on aquatic ecosystems

d) the characteristics of flow regimes are enhanced where practicable and justified by the ecological benefits

e) the range of uses of water reliant on the characteristics of flow regimes are maintained or enhanced

f) the range of reasonably foreseeable uses of ground water and surface water are protected

g) inefficient use of the available ground surface water resources is minimised

h) an increase in the extent and quality of the Region's wetlands

i) that significant adverse effects on the relationship tangata whenua as Kaitiaki have with water and their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses in or on the margins of water bodies, are remedied or mitigated

j) the cumulative adverse effects on the relationship tangata whenua as Kaitiaki have with water their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses that are in or on the margins of water bodies are remedied or mitigated

k) the management of non-point source discharges of nutrients, faecal coliforms and sediment to levels that are consistent with the identified purpose and values for which the water body is being managed

l) the natural character of the coastal environment, wetlands and lakes and rivers and their margins (including caves), is preserved and protected from inappropriate use and development

m) ground water quality is maintained or enhanced and ground water takes managed to ensure sustainable yield

n) shallow ground water takes do not adversely affect values for which any potentially affected surface water body is managed

o) *concentrations of contaminants leaching from land use activities and non-point source discharges to shallow ground water and surface waters do not reach levels that present significant risks to human health or aquatic ecosystems*

p) *that the positive effects of water resource use activities and associated existing lawfully established infrastructure are recognised, whilst avoiding, remedying or mitigating adverse effects on the environment.*

3.2 Management of Water Resources

Policy 3: Natural Character

Recognise, and where relevant provide for, the following characteristics when considering the preservation of the natural character of lakes and rivers and their margins and the protection of them from inappropriate use and development:

a) Diversity and composition of aquatic and riparian habitat.

b) Topography and physical composition of river and lake beds and the course of the river.

c) The natural flow characteristics and hydraulic processes (such as sediment transport) of rivers and streams or the pattern and range of water level fluctuations that occur naturally in rivers and lakes.

d) Any significant natural features of the lakes and rivers and their margins

4.2.2 Objective

The use, erection, reconstruction, placement, alteration, extension, removal or demolition of structures in, on, under or over the beds of rivers and lakes managed in a manner that:

4) preserves the natural character of river and lake beds and their margins and protects them from inappropriate use and development

Policy 1: Enable Low Impact Structures

Enable through permitted activity rules the use, erection, reconstruction, placement, alteration, extension, removal or demolition of structures, in, on, under or over the beds of rivers or lakes which:

d) do not adversely affect the natural character of river and lake beds (including caves)

Policy 2: Management of Structures

Control through resource consents the use, erection, reconstruction, placement, alteration, extension, removal and demolition of those structures in, on, under or over river and lake beds that:

e) may cause significant adverse effects on the natural character of river and lake beds (including caves)

Policy 5: Natural Character

Recognise and, where relevant, provide for the following characteristics when considering the preservation of the natural character of river and lake beds and their margins and the protection of them from the inappropriate use, erection, reconstruction, placement, extension, removal or demolition of structures in, on, under or over river and lake beds:

a. Diversity and composition of aquatic and riparian habitat.

b. Topography and physical composition of river and lake beds and the course of the river.

c. *The natural flow characteristics and hydraulic processes (such as sediment transport) of rivers and streams or the pattern and range of water level fluctuations that occur naturally in rivers and lakes.*

d. *Any significant natural features of the bed or banks.*

Hauraki District Plan

The Hauraki District Plan was made operative on the 26th September 2014 and forms the relevant statutory document for managing land use and development across the District. The relevant zoning as identified in the Hauraki District Plan is illustrated in **Figure 5**.

Section 5.1 is relevant to the rural zone. The following objectives and policies relevant to this landscape, natural character and visual effects assessment:

Objective 1

To ensure a range of compatible rural land use activities can be undertaken, which benefit from the productive potential, location and rural character of the zone.

(a) Policies

(iii) Ensure buildings (including dwellings) and rural activities maintain the amenity value of a predominantly open rural character and the productive use of the land.

Objective 2

To preserve and enhance the open rural landscape character of the zone

(a) Policies

(i) Ensure the erection of buildings does not detract from the open rural landscape character values of the Rural Zone.

Objective 3

To provide for the investigation and utilisation of mineral resources including on-site processing and use of these resources by associated industries.

(a) Policies

(ii) Require that the adverse effects of mineral investigation, extraction activities (including overburden cleanfills) and associated industrial activities be avoided remedied or mitigated

(iv) Recognise that the voids and other landscape features created by mining activities may be appropriate for a range of other uses (including recreation and industrial), and to allow for such users in a manner where adverse effects are avoided, remedied or mitigated.

Objective 4

To ensure that adverse effects of land use activity on the environment or on the amenities of neighbours are avoided, remedied or mitigated.

(a) Policies

(iii) Other adverse effects (e.g. noise, smell, glare, vibration, visual) on the environment and amenity of the District (particularly where they are near to residential or other sensitive activities) should where practicable be avoided, or remedied or mitigated.

5.1.7 ASSESSMENT CRITERIA FOR DISCRETIONARY ACTIVITIES

5.1.7.1 GENERAL ASSESSMENT CRITERIA

(1) The degree to which buildings, other structures and activities will adversely affect the rural landscape characteristics, particularly in relation to the open rural character.

(6) Whether buildings are sufficiently set back from the boundaries of neighbouring properties to avoid causing a nuisance by way of overshadowing, obstruction of views, noise, glare and loss of privacy.

(8) Whether features of the proposal including the location, design, and colour of buildings and structures, the planting of trees and shrubs, and the shaping of earth avoid, remedy or mitigate any adverse effect on the existing landscape.

(9) The extent to which existing native bush, or other vegetation which contributes to visual amenity and/or biodiversity values (as assessed against the criteria in 6.2.5.8), is retained and the reasons why any clearance is proposed.

(12) Whether any exploration, mining, earthworks and/or tracks and driveways necessary to accommodate the activity would create a significant adverse visual impact, particularly in the Outstanding Natural Landscape Area and District Amenity Landscape Area.

(13) Whether any signs proposed detract from the amenities of the area.

(17) The extent to which exterior storage areas of vehicles, equipment, machinery, materials, waste etc is located, or suitably screened from neighbouring properties and any public road or place, to avoid, remedy or mitigate any detriment to amenity.

(21) Whether the activity and any buildings and structures are of a scale and intensity which are in keeping with the character and amenity values of the existing rural environment.

Section 5.2 – Conservation (Indigenous Forest) Zone

5.2.2 – Objectives and Policies

Objective 1

To protect and enhance the biological diversity and outstanding landscape character values of the zone.

Objective 3

To recognise the scientific, educational, historic, cultural, recreational and amenity values of the zone.

(a) Policies

(i) Recognise in the administration of the zone the protection of the significant flora and fauna values, natural landscape character and soil and water protection roles of the zone.

(ii) Maintain the net total area of indigenous vegetation cover including areas of regenerating indigenous vegetation.

(iii) Minimise ground surface disturbance in the zone.

(iv) Recognise that the conservation values of the Conservation (Indigenous Forest) Zone may vary within the zone.

Objective 4

To facilitate efficient conservation management and public use and recreational and visitor opportunities without having a significant adverse effect on biodiversity, landscape, historical, or cultural values of the zone and the amenity values of adjacent zones.

(a) Policies

(i) Recognise that the Department of Conservation and Hauraki District Council may carry out emergency, conservation protection, and enhancement works and where appropriate provide and manage recreational facilities within the zone on public land which is the responsibility of those bodies.

(ii) Avoid, remedy or mitigate the significant adverse effects of activities that have the potential to compromise, damage or destroy the indigenous ecosystems or the amenity values of adjacent land uses.

Objective 6

To avoid, remedy or mitigate any adverse effects of prospecting, exploration and mining activities.

(a) Policies

(i) Objectives 5 and 6 will be achieved by implementation of the above relevant policies for the zone.

Section 6.3 Protection of Outstanding Natural Features and Landscapes and District Amenity Landscapes

Objective 1

Protect the integrity and the aesthetic, cultural and intrinsic values of outstanding natural features and landscapes and maintain the high cultural and visual amenity values of District Amenity Landscapes.

(a) Policies

(i) Control the subdivision, use and development of land so that the adverse effects on aesthetic and intrinsic values and on the visual and physical integrity of outstanding landscapes and natural features are avoided, remedied or mitigated.

(ii) To maintain as far as practicable, the elements, features and patterns that contribute to the quality of District Amenity Landscapes through the careful location of lifestyle subdivision and building development, and the use of appropriate building materials and colour.

Section 7.3 – Riparian Areas & Esplanades

7.3.3 – Objectives and Policies

Objective 1

To sustainably manage the margins of water bodies and coastal water to maintain or enhance natural character, indigenous biodiversity, water quality, and aquatic and adjoining terrestrial habitats.

Section 7.8 – Excavations and Placement of Fill (Earthworks)

7.8.3 – Objectives and Policies

Objective 1

To ensure site earthworks associated with land use and subdivision activities avoid, remedy or mitigate adverse visual effects and off-site effects.

(a) Policies

(v) Limit the scale and location of earthworks to avoid, remedy or mitigate adverse visual effects, particularly in sensitive zones and in areas of outstanding and high amenity and/or natural character values.

Section 5.17 applies across the Martha Mineral Zone, recognising that the Martha Mine has been operating as an open pit gold and silver mine in Waihi since 1988. The following relevant objectives and policies apply to this zone:

Objective 1

To provide for the utilisation of the mineral resource in a sustainable manner.

Policies

(a)(i) Recognise the development of the mine and its processing areas, its ongoing rehabilitation and its longer term likely uses.

(ii) Provide for the social, economic and cultural well-being of the people of the District and for their health and safety.

(iii) Ensure that the amenity values of Waihi and the wider community are protected.

(iv) Recognise that the risks associated with the historic underground working areas require a mixture of approaches to avoid, remedy or mitigate those hazards and provide for appropriate longer term land use activities.

Section 7.3 relates to Riparian Areas and Esplanades, which include the Ohinemuri River. This includes Objective 1 which states:

Objective 1

To sustainably manage the margins of water bodies and coastal water to maintain or enhance natural character, indigenous biodiversity, water quality, and aquatic and adjoining terrestrial habitats.

Section 7.8 relates to Excavations and Placement of Fill (earthworks) which apply across the entirety of the proposed development. This seeks to ensure the following:

Objective 1

To ensure site earthworks associated with land use and subdivision activities avoid, remedy or mitigate adverse visual effects and off-site effects.

Policies

(a)(iv) Limit the scale and location of earthworks to: minimise the risk of instability and damage to other properties, network utilities and the environment; not increase the risk of potential flooding or reduce the function of ponding areas, overland flow paths, and spillways; minimise amenity and public safety impacts.

(v) Limit the scale and location of earthworks to avoid, remedy or mitigate adverse visual effects, particularly in sensitive zones and in areas of outstanding and high amenity and/or natural character values.

Appendix 3: Extracts from Relevant Landscape Assessment

Buckland, M.C., Chow: Hill, GHD, & O'Connor Planning Consultants Ltd. (2010) Waikato Regional Landscape Assessment.

LA4 Landscape Architects (2006) Hauraki District Landscape Assessment.

Appendix 4: Natural Character Assessment within Coromandel Forest Park

Introduction

This assessment of natural character is based on predicted modelling[82] that identifies potential for groundwater drawdown associated with mining activity. Given the increased sensitivity of Natural State waterbodies within the Coromandel Forest, this assessment considers any changes in levels of modification and associated condition specific to, rivers, wetlands and their margins which have been identified in this context. Specifically, this assessment considers the abiotic, biotic and experiential attributes which contribute to the existing and post development levels of natural character of affected waterbodies and follows the method of assessing Natural Character as set out in **Appendix 1.**

The assessment of natural character has been informed by the concurrent assessments of hydrogeology, hydrology and ecology impacts. This has enabled an understanding of the specific characteristics and qualities which contribute to the natural character of each relevant stream and within which potential effects arising from the drawdown of groundwater from mining activity may occur at the time of writing this report. Model results predict that the potential reduction in low flows (1-13% of the 7-day MALF) is largely restricted to areas immediately above the underground mine and down catchment of this area. This multi-disciplinary approach has been adopted to ensure relevant attributes have been considered across the active bed, margins and context of each stream, namely:

- **Flow Regime** – how natural/modified are the flows. This includes input from hydrogeologists and geologists to enable understanding of the interrelationship between groundwater and surface water.
- **River morphology** – geology, active bed and margin shape, including, sedimentation, structures and human modifications.
- **Aquatic ecology** - indigenous taxa assemblages, ecosystem functioning, presence / absence of exotic aquatic flora and fauna, periphyton and macro invertebrates as an indication of water quality.
- **Experiential & perceptual** - human perception of naturalness of a waterbody. The expression of natural elements, processes patterns such as sound of water, smells, feel and transient value, including the degree of human modification.

In accordance with the above, 6 specific factors have been identified to consider the levels of natural character across the active bed of each stream, with a further 3 factors considered across the streams context and margins, as set out below. This aspect of the assessment was informed by a matrix of indicators relating to the characteristics and qualities of each waterbody.

Site Visits

As part of informing this assessment, site visits were undertaken into the Project Area above the proposed WUG within the Coromandel Forest Park on 28 June 2023 and 22 August 2024. During the site visits, a representative location of each identified stream was visited to assess existing natural character attributes and as part of documenting the natural characteristics and qualities as described in this report.

Workshops

Two online and one in person workshop were undertaken on the 12 July 2023, 15 August 2023 and 15 August 2024 to understand and assess the implications of natural character in the context of identified

[82] GHD (2025) Wharekirauponga Hydrology – Modelling Report.

streams within the Coromandel Forest Park and included members of the study team which inputted into more detailed assessment tables for each stream.

Factor	Assessment
Active bed	
Flow Regime	• The flow regime characteristics of a river with a given catchment size and location. This includes an understanding of interrelationships between ground water and surface water. • Change to critical flow statistics relative to naturalised flow, including controlled inflow/outflows. • Occurrence of impoundments or diversions of flows including flood harvesting. Proportion of flows diverted or impounded, or available allocation abstracted. • Physical change and dynamics of river and water movement resulting from natural seasonal floods and flows- movement of alluvial loads, sediments, flushing of algae and weeds. • Degree of wetland hydrology intactness.
Morphology, including structures and human modifications	• Extent of change to active bed or water surface profile. Includes training of braided rivers through straightening and narrowing of braid plain. • This could include, groynes, diversions, aggregate extractions, irrigation infrastructure, roads, bridges, transmission lines or access.
Water Quality	• Water quality and aquatic habitat quality; clarity, sedimentation, nutrient and bacterial levels etc. This should account for both the main channels of the river as well as lateral aquatic habitats, if any (including those outside of flood defences). • Habitat changes due to fine sediment, draining, stock trampling or choking by exotic trees/ shrubs.
Exotic Aquatic Flora and Fauna	• Presence of exotic aquatic flora and fauna within the river channel/wetland body or lateral habitats (including waterweeds, exotic fish, and invasive alga e.g. didymo) • Algal blooms may be evident in some rivers due to seasonal low flows. Expert ecological judgement will be required to assess extent and may have a bearing on the degree of naturalness of this primary attribute.
Indigenous taxa assemblages	• The presence of species forming aquatic communities and the level that they are in terms of representing unmodified habitat potentials.
Experiential	• Views, sounds and smells of the waterbody. • Human perception of how natural a place appears, underpinned by the biotic and abiotic attributes (above) of the water body. • Hydrological intactness.
Margins (and Context)	
Structures and human modification	• Includes, dams, groynes, stopbanks, diversions, extraction activity, irrigation infrastructure, roads, bridges, transmission lines, access, recreational tracks, facilities-carparks, camps, helipads, drill sites, toilets etc.
Terrestrial Ecology	• Vegetation – Indigenous/exotic vegetation, ecological value, quality habitat. Natural patterns and processes. • Fauna - including birds, lizards, pest animals etc.
Experiential	• Views, sounds and smells of the waterbody. • Human perception of how natural a place appears, underpinned by the biotic and abiotic attributes (above) of the water body.

In essence, the assessment of natural character considers the specific change between characteristics and qualities which influence overall levels of naturalness. This analysis was used to inform an understanding of both existing levels of natural character and modified natural character based on predicted modelled scenarios which inform the extent to which changes to natural flow within the assessed streams may occur. The resulting change in natural character can be negative, neutral or positive and informs an overall judgement of the level of potential adverse natural character effects on a standard seven-point scale between very low and very high.

Thompson Stream

Thompson Stream is a second order tributary which flows into the true right of Wharekirauponga Stream approximately 3 kilometres upstream from the lower footbridge along Wharekirauponga Walk. Within the Forest Park, Thompson Stream has two-branches which run for a total length of approximately 3.8 kilometres.

The active bed of Thompson Stream becomes wider below where it forks and includes gravel and cobble beaches along some margins. Typically, the flowing stream is a mix of shallow riffles, runs and pools. The substrate is reasonably compact, with cobbles and boulders. The underlying geology of Thompson Stream occurs on an Andesite layer which provides an impermeable layer between ground water and surface water. The wider valley has steep vegetated slopes, with Thomson Stream meandering through the narrow valley base, often with a floodplain only present on one side.

Across the total 214-hectare catchment, Landcare's current landcover database (LCDBv5) identifies that most of this area is comprised of Indigenous Forest (161 hectares) and Manuka and/or Kanuka (52 hectares), consistent with secondary growth forest following previous forestry activity.

Thompson Stream - Existing Natural Character

In natural character terms, the active bed of Thompson Stream expresses an active and changing natural process with very limited existing human influences flowing through regenerating native forest. Whilst no historic artefacts have been recorded, evidence of previous forestry activity remains apparent with vegetation adjoining the lower reaches comprising a younger and relatively less diverse cover of regenerating forest compared with elsewhere in the Forest Park. Within this context, Thompson Stream continues to represent a small mountain stream with predominately wild and scenic associations and variable seasonal flows consistent with **very high** natural character.

Thompson Stream - Modified Natural Character

Thompson Stream lies within a low permeability zone which restricts hydraulic connection between the surface water and the groundwater[83]. The current median flow of Thompson Stream is 61.58 L/s. Modelling has shown that the mean annual low flows within Thompson Stream may reduce to 15.08 L/s, for short periods of time during prolonged dry periods. This compares with existing mean annual low flows of 17.86 L/s[84].

No physical modification is proposed along the active bed or wider catchment of Thompson Stream. Whilst ecological modelling identifies potential for a slight reduction in habitat, under the worst possible case flow scenario Thompson Stream is predicted to remain a fundamentally pool dominated habitat with no expected loss of indigenous or threatened species, including changes in invasion pathways. Equally, no potential change in water quality has been identified as being likely. Within this context, Thompson Stream will continue to represent a small mountain stream within which functional natural elements, patterns and process consistent with very high natural character overall.

Based on no apparent changes across relevant natural character attributes, any changes in natural character assessed as **neutral**.

[83] GHD (2025) Wharekirauponga Hydrology – Modelling Report.

[84] GHD (2025) Wharekirauponga Hydrology – Modelling Report.

Photo 1: Thompson Stream main stem

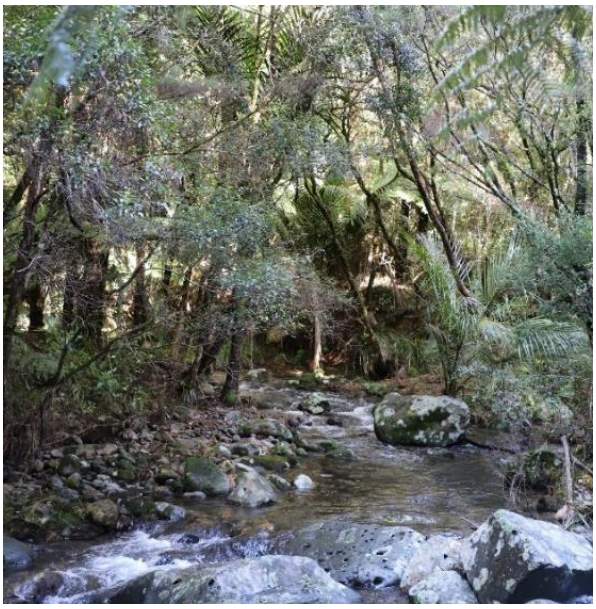


Photo 2: Thomson Stream at confluence with Wharekirauponga Stream

Natural Character Attributes		Existing Rating	Existing Description	Modified Rating (without mitigation)	Description of Predicted Change
Active Bed	**Flow regime**	Very High	Expected highly natural flow regime with no / limited modifications and no takes. No apparent existing modification within the context of its existing natural cobbles, boulders and bedrock. The water quality data shows no signs of degradation (from its natural state) and is of high quality. Limited data but no evidence of exotic flora and fauna. Limited data but high probability of very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values and natural state. High likelihood of presence of nationally threatened and At Risk native fish species. The active bed represents an isolated stream with rare human influence.	Very High	Reductions in surface water flows are not anticipated in the context of the underlying low permeability zone. Potential reductions are within the current range of actual low flow variabilities. No proposed modification within the context of the stream's existing natural form. No proposed change to the water quality is expected. No expected changes and no enhanced invasion pathway presented by any predicted flow changes. No expected loss of indigenous or threatened species. The active bed will remain an isolated forest stream with rare human influences.
	Morphology/ modification	Very High		Very High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages)	Very High		Very High	
	Experiential	Very High		Very High	
Margins	**Structure and human modification**	Very High	No apparent existing modification with exception of some isolated mining artefacts. Observations suggest high quality mature native vegetation along margins of watercourses. Very high ecological values. Extends through established and regenerating forest which remains predominantly wild and remote.	Very High	No additional proposed structures or physical modification. No change expected to terrestrial margins (riparian) vegetation. The stream will retain a strong sense of wildness and remoteness with rare human influences.
	Terrestrial Ecology	Very High		Very High	
	Experiential	Very High		Very High	
Overall Ratings		**Very High**	**A relatively small clear mountain stream through regenerating indigenous forest with variable seasonable flows expressing very high natural character.**	**Very High**	**Expected to remain a relatively small clear mountain stream through regenerating indigenous forest with variable seasonal flows and retaining very high natural character.**

Tributary R

Tributary (Trib R) forms a narrow first order stream which flows directly into Wharekirauponga Stream. This stream comprises of a total length of 0.91 kilometres within a 33-hectare catchment of regenerating native forest consistent with historic logging which remains characteristic of much of the surrounding areas of Forest Park. A former loop track along Wharekirauponga Walk previously followed the margins and crossed Trib R near the confluence of Wharekirauponga Stream, however the bridge supporting this loop track was removed on account of preventing potential for Kauri die back of regenerating forest in this area.

The stream is deeply incised, typically ~1 m high vertical banks, within a wide, floodplain that comprises of younger and less diverse regenerating vegetation compared with other elsewhere within the Forest Park. Boulders were notably less prevalent than the other tributaries, with large cobble accumulations creating a shallow-gradient pool/cascade system.

Photo 3: Trib R Main Stem

Photo 4: Trib R Main Stem with water pipe

Tributary R - Existing Natural Character

In terms of natural character, Trib R forms a small mountain stream through regenerating forest with some apparent human modification, including landform modification and isolated artifacts embedded along the river corridor. As with Thompson Stream, the lower channel comprises of a younger and relatively less diverse cover of regenerating forest compared with elsewhere in the Forest Park. Parts of the lower channel appear to have been more recently incised within the floodplain and differ from many of the surrounding streams in the Forest Park (see **Photo 3**). Notwithstanding this, Trib R retains clear flows in its lower reaches with evidence of some isolated built structures (see **Photo 4**), through recent regenerating forest which covers the whole of the catchment. The combination of natural characteristics and qualities, including naturalness are generally consistent with **high** and **very high levels of natural character** overall.

Tributary R – Modified Natural Character

In terms of natural character effects, modification of Trib R will remain limited to indirect effects on flows associated with potential effects of groundwater drawdown associated with mining. Flows within the existing stream vary from median flows of 4.31 L/s and mean annual low flows of 1.42 L/s. Under a likely 'worst case' modelled scenario during a particularly dry period mean annual low flow could potentially reduce to 1.29 L/s

a reduction of 9.15% of existing mean annual flows. Such impacts remain consistent with the streams inherently dynamic seasonal flows and within the range of historical minimum low flows. This worst-case scenario would result in small changes and retain suitable instream habitat within identifiable limits[85].

In response to changes in low flows, some changes in the proportion and assemblages of habitat features may occur, however there is no expected loss of indigenous or threatened species overall, including any likely invasion of exotic flora and fauna. No additional physical modification is proposed along the active bed, margins of Trib R and no change in water quality is predicted. When encountered, Trib R is expected to retain a strong sense of wildness and remoteness with limited ongoing human influences. In essence, the expression of natural elements, patterns and process is expected to remain.

Based on the limited changes which may occur on some attributes as a result of flows being influenced by groundwater drawdown associated with mining, no more than **very low** effects are expected which retain **very high** levels of natural character overall.

Natural Character Attributes		Existing Rating	Existing Description	Modified Rating (without mitigation)	Description of Predicted Change
Active Bed	**Flow regime**	Very High	There is limited hydrological data from this catchment, however it is expected that a highly natural flow regime with limited modifications exists. Extremely limited apparent existing built modification within the context of existing natural cobbles, boulders and bedrock. Evidence of channel modification and water take appears in the lower reach which appears incised by approximately 1 metre within the wider relatively flatten floodplain. The water quality data shows no signs of degradation (from its natural state) and is of high quality. Limited data but no evidence of exotic flora and fauna. Limited data but high probability of very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values and natural state. High likelihood of presence of nationally threatened and At Risk native fish species. The active bed represents an isolated and predominantly wild and remote stream with limited human influence.	High	During mining, a potential small reduction in low flows is predicted within long-term flow variability. There is no proposed modification within the context of its existing natural form. Any potential evidence of historic modification will remain. No change to the water quality is expected. No expected changes and no enhanced invasion pathway presented by any predicted flow changes. Small changes to suitable instream habitat with no expected loss of indigenous or threatened species. This has potential for a change in proportion and assemblages of instream biota during low flows. The active bed will remain an isolated forest stream with no additional human influences
	Morphology/modification	High		High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages)	Very High		High	
	Experiential	High		High	

[85] NIWA (2024) Instream Habitat of the Wharekirauponga Stream and Tributaries

Margin and Context	**Structure and human modification**	Very High	No apparent existing modification with possible exception of some isolated mining artefacts. Observations suggest younger and relatively less diverse native vegetation along margins of watercourses with some apparent landform disturbance. Very high ecological values. Strong sense of wildness and remoteness with rare human influence. There is no longer any formal recreation access into the area of the forest park, however the Whareikirauponga Track follows the true left spur when approaching the Wharekirauponga Stream.	Very High	No additional proposed structures or physical modification. No change expected to terrestrial margins (riparian) vegetation. The stream will retain a strong sense of wildness and remoteness with rare human influences.
	Terrestrial Ecology	Very High		Very High	
	Experiential	Very High		Very High	
Overall Ratings		**Very High**	**A small clear mountain stream with variable seasonal flows flowing through regenerating indigenous forest with very high natural character.**	**Very High**	**Expected to remain a small clear mountain stream with variable flows through regenerating indigenous forest which retains very high natural character.**

Edmonds Stream

Edmonds Stream forms a second order three-branch tributary flowing into the head waters of Wharekirauponga Stream with a combined total length of 5.69 kilometres. The active channel of the lower section of Edmonds Stream follows a wide generally square profile which remains relatively flat with limited cascades or steps. The substrate expresses a relatively diverse substrate including cobbles, boulders and small patches of fine sediment. The floodplain is relatively narrow, with steep slopes either side (see **Photos 5** and **6**).

The margins and context of Edmonds Stream are established in regenerating native vegetation. LCDBv5 identifies the entirety of this 299-hectare catchment is comprised of indigenous forest consistent with natural regeneration following historic logging which has occurred throughout this area of the Forest Park. An unformed legal road extends into the broader catchment of Edmonds Stream well beyond the margins of this stream.

Edmonds Stream - Existing Natural Character

In natural character terms, Edmonds Stream forms a lively mountain stream flowing through regenerating forest with very limited but some apparent human modification. Some mining artefacts and workings have been recorded in the lower reaches including the site of a former kauri dam within land previously cleared to support mining activity.

As with much of the Forest Park, the larger catchment has also been subjected to historic logging of Kauri in the 1800s which has gradually regenerated through successive phases of forest cover. Within this context, Edmonds Stream remains relatively inaccessible with seasonal ruffled and more gentle surface water flows over cobbles and boulders and through quiet shaded pools within an established cover of regenerating native forest, consistent with **very high** natural character overall.

Photo 5 Edmonds Stream

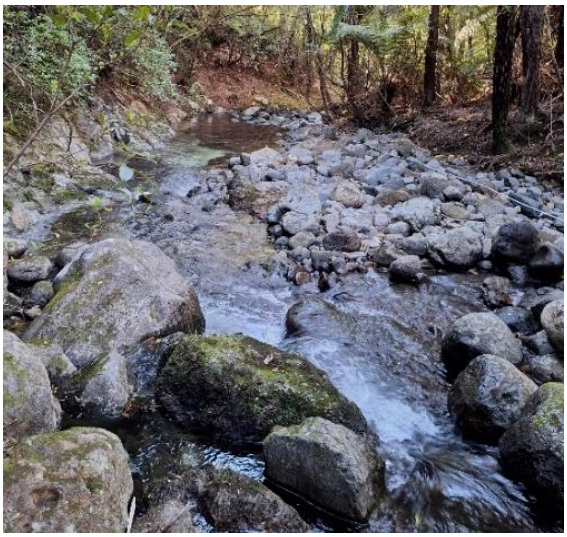


Photo 6: Edmonds Stream

Edmonds Stream - Modified Natural Character

Edmonds Stream has an existing median flow of 87.29 L/s. Current modelling of potential groundwater drawdown associated with mining identifies a worst-case reduction in mean annual low flows from 22.89 L/s to 19.32 L/s[86]. This potential reduction in flow would move this stream towards historical minimum flows but remain within the natural range of low flows. If these circumstances were to occur, there would be some measurable reduction in existing habitats[87]. This relates to the potential modification of the proportions and structure of taxa which may occur resulting from predicted reductions in stream flow. Natural elements, patterns and processes will continue to define the natural characteristics and qualities of the stream.

No additional built modification is proposed within the active bed or margin. Within the broader catchment, ongoing investigation and exploration activity and up to 4 vent raises are proposed resulting in ongoing albeit isolated mining influences within the context of Edmonds Stream which can be managed to ensure this remains well separated from the active bed and margins of the Stream. Given this context, Edmonds Stream is predicted to remain a predominantly wild and remote stream which flows through regenerating forest and retains **high** and **very high** natural character attributes.

Whilst individual factors which contribute to natural character may be modified if potential drawdown of groundwater associated with mining results in reductions in stream flow, such change would be difficult to discern within an inherently variable and dynamic natural freshwater system. There will be no apparent increase in physical modification along the stream bed or margins and natural elements, patterns and process through which existing natural character is experienced will continue. Whilst Edmonds Stream may approach historic minimum flows, any comparative reductions in flows are unlikely to be perceived and will essentially remain within established seasonal and climatic variations. Any natural character effects within Edmonds Stream are therefore considered to be **low** and will retain at least a **high** level of natural character overall.

[86] GHD (2025) Wharekirauponga Hydrology Modelling Report

[87] NIWA (2024) Instream Habitat of the Wharekirauponga Stream and Tributaries

Natural Character Attributes		Existing Rating	Description	Modified Rating (without mitigation)	Description
Active Bed	**Flow regime**	Very High	There is limited hydrological data from this catchment, however it is expected that a highly natural flow regime with limited modifications exists. Existing takes for drilling requirements are temporary (with limitations on when take can realised). Very limited apparent modification within the context of its existing natural cobbles, boulders and bedrock. There is evidence of a former kauri dam in the lower reach and informal crossings limited to rope supports. The water quality data shows no signs of degradation (from its natural state) and is of high quality. Limited data but no evidence of exotic flora and fauna. Limited data but high probability of very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values. High likelihood of presence of nationally threatened and At Risk native fish species. The active bed is predominantly wild and remote with limited human interference. Water takes introduce some local areas of disturbance and noise.	High	Some reduction in low flow volumes may occur within the predicted long-term flow variability. No additional modification within the context of its existing natural form. No proposed change to water quality is expected. No expected changes and no enhanced invasion pathway presented by any predicted flow changes. No expected loss of indigenous or threatened species. Potential modification to proportions / structure of taxa present if reduction in proportion of riffles/runs occurs. The active bed will remain predominantly wild and remote with very limited human interference. Any changes in underlying flows will remain in the context of a dynamic system for which natural systems will continue to remain predominately wild and natural.
	Morphology/modification	Very High		Very High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages	Very High		High	
	Experiential	High		High	
Margin and Context	**Structure and human modification**	High	Limited apparent existing modification with exception of isolated mining artefacts and an existing drill site and pump structure supporting existing mineral investigation. Observations suggest high quality mature native vegetation along margins of watercourses. Very high ecological values. Strong sense of wildness and remoteness with limited human influence. Previous logging and mining activity including ongoing mineral investigation introduces some isolated structures which remains predominately wild and remote with limited human interference.	High	The surrounding landcover will remain overwhelmingly natural with very limited human interference. No change expected to terrestrial margins (riparian) vegetation. The margins and context of Edmonds Stream will continue to represent a comprehensive cover of regenerating indigenous forest which retains a strong sense of wildness and remoteness with limited human influence. Ongoing investigation and exploration activity and the introduction of up to 4 vent raises will remain isolated beyond the margins of Edmonds Stream, within an established cover of forest.
	Terrestrial Ecology	Very High		Very High	
	Experiential	High		High	
Overall Ratings		**Very High**	**A clear mountain stream through regenerating indigenous forest which appears wild and remote with variable seasonable flows that express very high natural character.**	**High** to **Very High**	**Expected to remain a clear and predominantly wild and remote mountain stream with variable seasonal flows through regenerating indigenous forest, retaining at least high natural character.**

Teawaotemutu Stream

Teawaotemutu Stream encompasses occupies the headwaters of the broader Wharekirauponga catchment and forms two branches with broadly similar characteristics and qualities. The southern branch extends approximately 4.96 kilometres, and the northern branch extends some 4.07 kilometres with each fork appearing to contribute approximately 50% of overall flows. The active bed of the lower reach is typically a wide, flat channel within a relatively narrow floodplain confined by steep slopes. Larger substrates (i.e. cobbles and boulders) dominate a hard-bottom riffle / run / pool system. Water depths and widths remain relatively homogenous, albeit frequently influenced by the presence of large boulders forming audible rapids and constricting flows.

The southern tributary typically has a slightly steeper gradient that results in some deeper pools including some greater than 1 m deep (see **Photo 7**). The northern tributary appears similar with a slightly gentler fall (see **Photo 8**). Access into this area remains limited with informal often overgrown tracks supporting current exploration activity and accessing drill sites.

Photo 7: Teawaotemutu Stream (South)

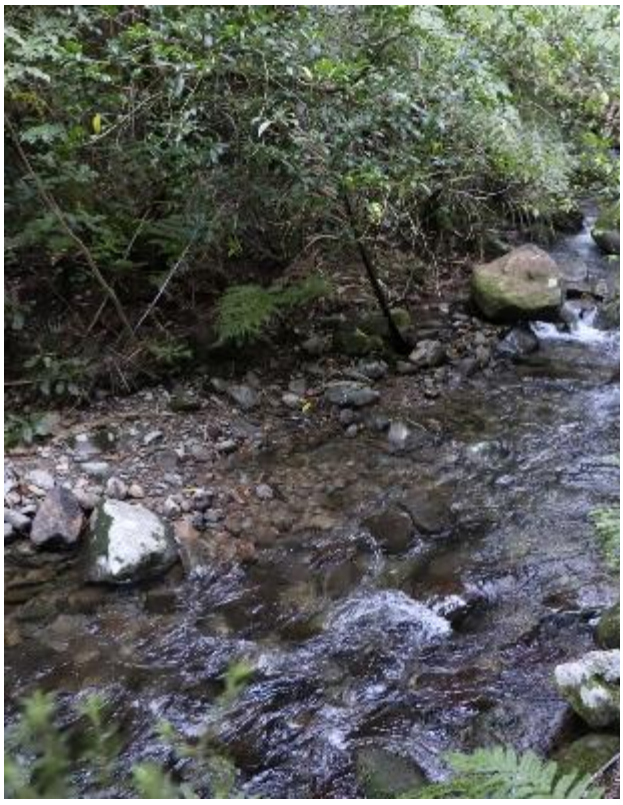


Photo 8: Teawaotemutu Stream (North)

Dense riparian vegetation remains established along the margins of both branches of Teawaotemutu Stream within a broader catchment of regenerating forest. LCDBv5 identifies the northern catchment contains 146 ha. of indigenous forest and 29 ha. of broadleaved indigenous hardwood, with the southern catchment identified as 227 ha. of indigenous forest, consistent with regeneration following historic logging activity.

Teawaotemutu Stream - Existing Natural Character

In terms of natural character, Teawaotemutu Stream represents an isolated and energetic mountain stream through regenerating forest with very limited apparent human modification. The active bed supports a legible riffle / run / pool system with large boulders often resulting in relatively deep and cool mountain pools. Water quality data shows no signs of degradation and supports very high natural aquatic ecosystem functioning. Whilst the lower reaches of both branches include some recorded historic mining artefacts including kauri dams and workings focused within the southern branch, the margins and context now comprise a dense cover of regenerating forest which includes historic logging but retaining a strong sense of wildness and

remoteness with rare human influences. Accordingly, Teawaotemutu Stream is considered to have **very high natural** character overall.

Teawaotemutu Stream - Modified Natural Character

In terms of natural character effects, modification of Teawaotemutu Stream is limited to potential indirect effects on flows resulting from groundwater drawdown. Flows within the existing stream vary from a median of 123.87 L/s and mean annual low flows of 27.98 L/ which may further reduce to 25.64 L/s under a likely worst case modelled scenario during a particularly dry period[88]. While some measurable reduction in habitat is predicted during worst-case circumstances, this change will unlikely be detectable in the context of the natural range of existing variable low flows. In ecological terms, predicted drawdown results in small changes to suitable instream habitat and keeps impacts within -1.53% for all groups of biota[89]. There are no proposed changes to water quality expected nor any additional proposed structures or modification including the broader catchment. Accordingly, the natural character of Teawaotemutu Stream is considered to remain **very high** with **negligible** natural character effects.

Natural Character Attributes		Existing Rating	Description	Modified Rating	Description
Active Bed	**Flow regime**	Very High	Measured highly natural flow regime with no / limited modifications and no takes. Very limited apparent existing modification within the context of its existing natural cobbles, boulders and bedrock. Kauri dams were previously located in the lower reach of each branch of this stream. The water quality data shows no signs of degradation (from its natural state) and is of high quality. No evidence of exotic flora and fauna. Very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values and natural state. Presence of nationally threatened and At Risk native fish species. The active bed is wild and remote with limited human interference.	Very High	Some small reduction in low flow volumes expected, however expected reductions are within the current predicted low flow variability. No proposed modification within the context of its existing natural form. No proposed changes to the water quality is expected. No expected changes and no enhanced invasion pathway presented by any flow changes. The largest impact on suitable instream habitat is for periphyton (less than 5% reduction)[90]. Potential modification to proportions of taxa present, with no expected loss of indigenous or threatened species. The active bed will remain predominantly wild and remote with very limited human interference.
	Morphology/modification	Very High		Very High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages)	Very High		Very High	
	Experiential	Very High		Very High	
Margin and Context	**Structure and human modification**	Very High	Very limited apparent modification with exception of some isolated mining artefacts in lower catchment and 3 existing drill site / helipad. Observations suggest high quality mature native vegetation along margins of watercourses. Very high ecological values. Strong sense of wildness and remoteness with isolated and rare human influence.	Very High	No additional proposed structures or physical modification. Landcover within the catchment will remain overwhelmingly natural with very limited evidence of human interference. No change expected to terrestrial margins (riparian) vegetation. The broader catchment will retain a strong sense of wildness and remoteness with isolated and rare human influences.
	Terrestrial Ecology	Very High		Very High	
	Experiential	Very High		Very High	
Overall Ratings		**Very High**	**A moderate scale clear mountain stream through regenerating indigenous forest which appears wild and remote with variable seasonable flows and expresses very high natural character.**	**Very High**	**Expected to remain a moderate scale clear mountain stream through regenerating indigenous forest which remains wild and remote with variable seasonable flows and retains very high natural character.**

[88] GHD (2025) Wharekirauponga Hydrology Modelling Report

[89] NIWA (2024) Instream Habitat of the Wharekirauponga Stream and Tributaries

[90] NIWA (2024) Instream Habitat of the Wharekirauponga Stream and Tributaries

Adams Stream

Adams Stream forms a two-branch tributary which flows into the northern, true left side of Wharekirauponga Stream through regenerating indigenous forest consistent with natural regeneration following historic logging. Wharekirauponga Walk cross the lower channel of the stream in the vicinity of the former Royal Standard Battery site. LCDBv5 identifies the entire 117.2 catchment as indigenous forest consistent with regeneration following historic logging activity.

Adams Stream - Existing Natural Character

In natural character terms, Adams Stream will remain a small mountain stream encountered when using Wharekirauponga Walk within the Coromandel Forest Park (see **Photos 9** and **10**). Previous logging and mining activity remains apparent in the vicinity of the accessible lower reach including historic workings and artifacts within regenerating native forest and which influences the extent that human modification remains apparent in this area. There is a high probability of very high natural aquatic ecosystem functioning, with indicator species suggesting very high ecological values and natural state, consistent with very high natural character overall.

Adams Stream - Modified Natural Character

The potential reduction in low flow volumes of Adams Stream will likely remain within the existing seasonal variations which occur. There are no predicted changes in habitats or water quality nor any additional proposed structures or modification including any changes to terrestrial margins or the broader catchment. Accordingly, the natural character of Adams Stream is considered to remain very high with negligible natural character effects.

Photo 9: Adams Stream looking upstream at Wharekirauponga Walk

Photo 10: Adams Stream crossing along Wharekirauponga Walk

Natural Character Attributes		Existing Rating	Description	Modified Rating	Description
Active Bed	**Flow regime**	Very High	There is limited hydrological data from this catchment. It has a likely highly natural flow regime with no / limited modifications and no takes. No apparent existing modification within the context of its existing natural cobbles, boulders and bedrock. The water quality data shows no signs of degradation (from its natural state) and is of high quality. Limited data but no evidence of exotic flora and fauna. Limited data but high probability of very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values and natural state. High likelihood of presence of nationally threatened and At Risk native fish species. Little modification remains apparent with the exception of a single unformed crossing along Wharekirauponga Stream.	Very High	Some small measurable reductions in median and low flows will occur, however this will remain well within the naturally variable flow characteristics expected. No proposed modification within the context of its existing natural form. No proposed changes to the water quality are expected. No expected changes and no enhanced invasion pathway presented by any predicted flow changes. No expected loss of indigenous or threatened species. The active bed will remain predominantly wild and remote with very limited human interference. The Wharekirauponga Walk will continue to cross the lower reach.
	Morphology/modification	Very High		Very High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages)	Very High		Very High	
	Experiential	High		High	
Margin and Context	**Structure and human modification**	High	Very limited apparent existing modification with exception of some isolated former mining artefacts. Part of the Royal Standard battery site near the confluence with Wharekirauponga Stream. Observations suggest high quality mature native vegetation along margins of watercourses. Very high ecological values. Evidence of former previous mining activity remain evidence, including tram ways and historic workings, which result in limited albeit apparent human interference.	High	No additional proposed structures or physical modification. Regenerating landcover will remain overwhelmingly natural with no/ very limited evidence of human interference. No change expected to terrestrial margins (riparian) vegetation. The margins and context of the Adams Stream will remain free of any further built modification and remain predominantly wild and remote in the context of established regenerating indigenous forest.
	Terrestrial Ecology	Very High		Very High	
	Experiential	High		High	
Overall Ratings		**Very High**	**A small clear mountain stream through regenerating indigenous forest which appears largely wild and remote with variable seasonable flows and expresses very high natural character.**	**Very High**	**Expected to remain a small clear mountain stream through regenerating indigenous forest which remains largely wild and remote with variable seasonable flows and retains very high natural character.**

Wharekirauponga Stream

Wharekirauponga Stream forms the largest 3rd order stream within the affected drawdown area and into which all 1st and 2nd order streams which have been assessed will ultimately flow. It commences from Teawaotemutu Stream and culminates at the carpark of Parakiwai Quarry Road where it flows into the Otahu River. Of the 9.13 km of total 3rd order stream length identified, 7.64 km is recognised as a natural state water body. However, this classification has been omitted as the stream approaches the bottom of the Forest Park approximately 550 metres upstream from the Wharekirauponga Footbridge.

Within the context of the Forest Park, the stream channel appears largely unmodified and includes a sequence of runs, riffles and pools, several of which are frequently accessed as summer swimming holes surrounded by regenerating forest (see Photo 11). The substrate is dominated by cobbles and boulders, with large areas of bedrock and some areas of fine gravels and silt and sand. Along the margins of much of the stream, modification associated with historic mining activity often remains apparent, including an old horse-drawn tram track along the alignment of Wharekirauponga Walk, historic workings and the old camp and battery site of the former Royal Standard goldmine near the confluence with Adams Stream. Further upstream, the end of Wharekirauponga Walk has been closed on account of protecting Kauri dieback. Now the track culminates at a swing bridge as the stream narrows into a gorge (see Photo 12) and overlooks Wharekirauponga Falls.

The broader catchment covers a total area of approximately 503 hectares which largely comprises of regenerating broadleaf and mid-successional forest consistent with historic logging. LCDBv5 identifies 226 hectares as indigenous forest, 274 ha. of manuka and/or kanuka, 25 ha. of broadleaved indigenous hardwoods. The broader catchment also contains 11 ha. of high producing grassland at the northern end outside the Forest Park with evidence of wilding pine also apparent beyond the margins of the stream in the middle and lower reaches.

Wharekirauponga Stream - Existing Natural Character

Wharekirauponga Stream provides a reasonably tranquil but energetic and relatively accessible mountain stream flowing through regenerating forest. Along the margins of Wharekirauponga Stream, evidence of former logging and mining activity remains apparent and influences natural and cultural associations including a perceived reduction in the overall level of natural character in some areas. Notwithstanding this, built modification remains subservient in the context of the active bed and remains enclosed within an established cover of regenerating native vegetation to ensure a perception of human modification remains limited overall.

General water quality is excellent and periphyton cover is extremely limited. All measured parameters are representative of good ecosystem functionality including excellent native fish abundance. Water is generally perceived as clear and occasionally turquoise against a backdrop of native forest. In this context, overall natural character is rated high.

Wharekirauponga Stream - Modified Natural Character

In terms of natural character effects, potential modification of Wharekirauponga Stream is limited to indirect effects associated with potential groundwater drawdown associated with mining. No additional physical modification is proposed along the active bed or margins of Wharekirauponga Stream. Where drawdown effects may occur, any reduction in mean annual low flows is predicted within current low flow variability. Within the upper reaches (WKP02), median flows of 266.53 naturally reduce to mean annual flows of 67.37 L/s during prolonged dry spells, which may temporarily reduce further to 56.69 L/s during the likely worst possible case drawdown predicted during the proposed mining operation. The loss of the ‘warm spring’ along the margins of upper Wharekirauponga Stream is not identified as having any detrimental downstream effects on water quality or instream habitats. Whilst the loss of this input would be apparent at its source, this will not generate any actual or perceived impacts on wider associated changes on the natural characteristics or qualities of Wharekirauponga Stream or the surrounding Forest Park.

As median flows within Wharekirauponga Stream increase downstream and reach 422.36 L/s at WKP 01, comparative mean annual flows similarly increase. Here, predicted drawdown effects identify mean annual low flows may reduce to 91.40 L/s from 108.06 L/s for short periods during prolonged dry spells coinciding with proposed mining activity as defined by the worst possible case modelled scenario. Within the active bed, there is no consequent expected loss of indigenous or threatened species or reduction in water quality. Any change in natural elements, patterns and processes occur within existing seasonal and climatic variability including variations which naturally occur during low flows. Any physical impacts within this catchment are proposed beyond the margins of the stream which remain influenced by former mining and forestry activity. Based on predicted drawdown changes, any actual or perceived human modification which impacts the natural character of Wharekirauponga Stream will be localised and temporary, remaining generally indiscernible.

Overall natural character is considered to remain **high** and is consistent with neutral natural character effects overall.

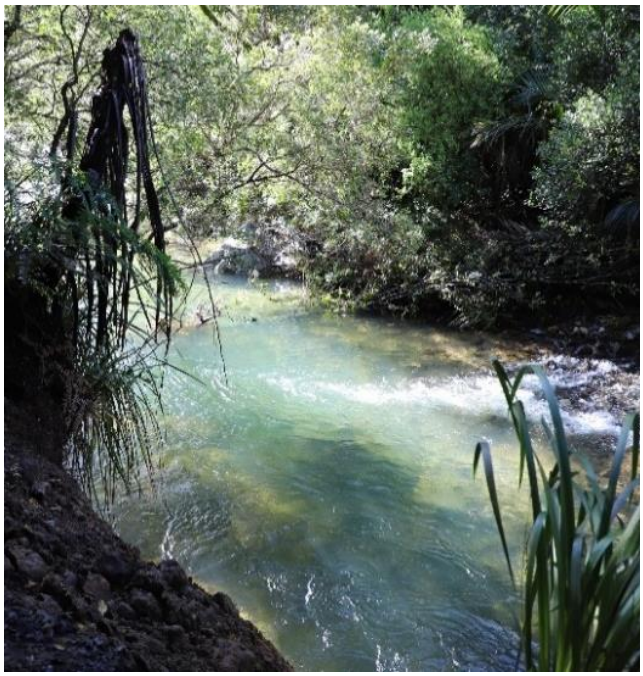


Photo 11: Wharekirauponga Stream observed from Wharekirauponga Walk

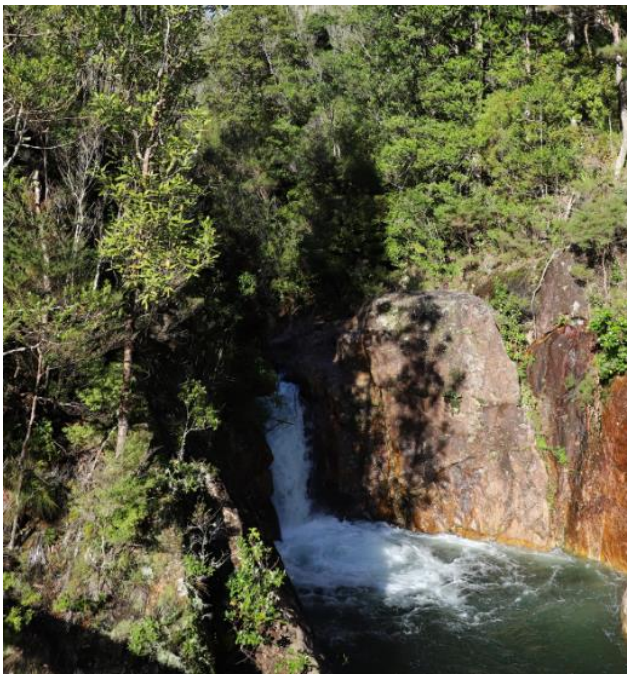


Photo 12: Wharekirauponga Falls

Natural Character Attributes		Existing Rating	Description	Modified Rating (Without Mitigation)	Description
Active Bed	**Flow regime**	Very High	Measured highly natural flow regime with no / limited modifications. Negligible influences of flows from the consented drilling take within Edmonds Stream. Very limited human intervention is apparent. Two existing footbridges span the stream and the abutments of former bridges alongside artefacts of previous mining activity in localised areas. The water quality data shows no signs of degradation (from its natural state) and is of high quality. Limited data but no evidence of exotic flora and fauna. Very high natural aquatic ecosystem functioning. Indicator species suggest very high ecological values and natural state. Presence of nationally threatened and At Risk native fish species.	High	Some reduction in low flow volumes expected, however reductions are within the current predicted low flow variability. No further physical modification is proposed within the context of its existing natural form and isolated structures. No changes to water quality are expected. No expected changes and no enhanced invasion pathway presented by any predicted flow changes. No expected loss of indigenous or threatened species.
	Morphology/ modification	High		High	
	Water quality	Very High		Very High	
	Exotic aquatic Flora and Fauna (absence)	Very High		Very High	
	Aquatic Ecosystem Functioning (Indigenous taxa assemblages)	Very High		Very High	
	Experiential	High		High	

Natural Character Attributes		Existing Rating	Description	Modified Rating (Without Mitigation)	Description
			The active bed remains predominantly wild and remote accommodating a sequence of natural pools and enclosed transient views accessed for recreation and observed along Wharekirauponga Walk with limited but some apparent human influence.		The active bed will remain predominantly wild and remote with no further human interference.
Margin and Context	**Structure and human modification**	High	The margins of the Wharekirauponga catchment predominantly extend through regenerating forest with isolated structures accommodating existing recreation opportunities and reflecting former mining activity alongside isolated ongoing mineral investigations. Observations suggest high quality mature native vegetation along margins of watercourses. There is some exotic vegetation extending into the lower catchment whilst retaining very high ecological values. The Wharekirauponga catchment remains predominantly wild and remote within a comprehensive cover of regenerating native forest containing isolated human interference, often incorporated within recreational opportunities.	High	No additional proposed structures or physical modification is proposed in the acti e bed and its margins. No change expected to structure or function of terrestrial margins / (riparian) vegetation. The Wharekirauponga catchment will remain predominantly wild and remote within a cover of regenerating native vegetation. The extent of human modification apparent will remain consistent with previous mining activity and associated ongoing recreation opportunities.
	Terrestrial Ecology	High		High	
	Experiential	High		High	
Overall Ratings		**High**	**A sizeable clear mountain stream through regenerating indigenous forest which remains predominantly wild and remote in association with evidence of former gold mining activity and ongoing recreation opportunities expressing high natural character.**	**High**	**Wharekirauponga Stream will remain a sizeable and accessible clear mountain stream associated with gold mining activity through regenerating indigenous forest and retains predominantly wild and remote qualities consistent with high natural character.**

Boffa Miskell

WAIHI NORTH

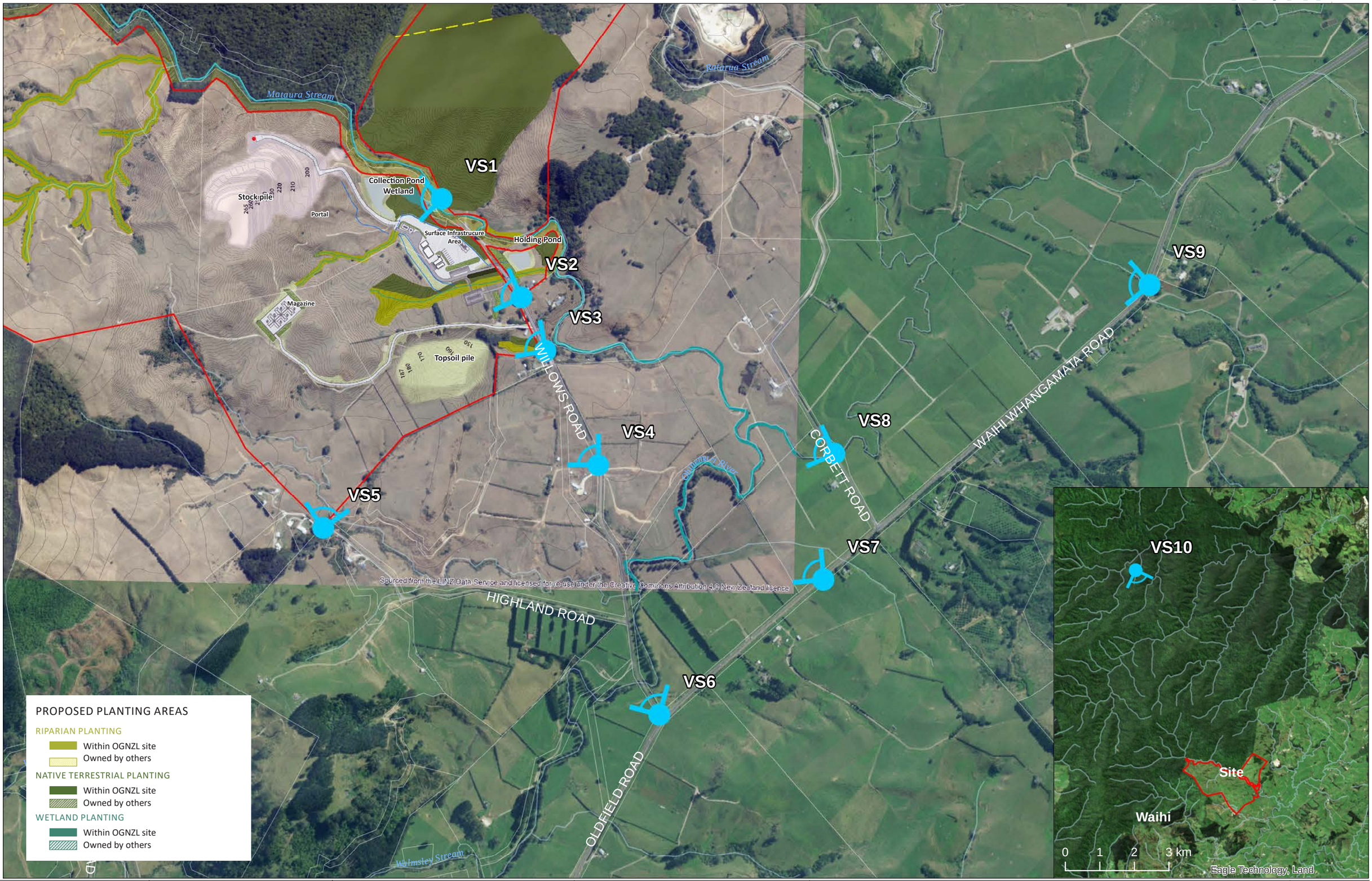
LANDSCAPE ASSESSMENT

APPENDIX 6: VISUAL SIMULATIONS

FEBRUARY 2025

WAIHI NORTH
LANDSCAPE ASSESSMENT

Contents



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Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold

Projection: NZGD 2000 New Zealand Transverse Mercator

Simulation Viewpoints

WAIHI NORTH LANDSCAPE ASSESSMENT

SIMULATIONS LOCATION MAP

Date: 17 October | Revision:1

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

Figure 1

PROPOSED PLANTING AREAS

RIPARIAN PLANTING
- Within OGNZL site
- Owned by others

NATIVE TERRESTRIAL PLANTING
- Within OGNZL site
- Owned by others
- Planted buffer
- SNA enhancement

WETLAND PLANTING
- Within OGNZL site

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Data Sources:

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LEGEND

Simulation Viewpoints

WAIHI NORTH LANDSCAPE ASSESSMENT

VISUAL SIMIULATION LOCATION PLAN

Date: 27 September 2024 | Revision: 5

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

Figure 2

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 157m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:19pm 9 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

End of Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS1A

Existing View

Proposed View, At Completion With Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 157m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:19pm 9 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

End of Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS1B

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86550 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35352 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 149m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:34pm 9 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS2A

Existing View

Proposed View, At Completion With Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86550 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35352 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 149m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:34pm 9 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS2B

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86505 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	:140m / 1.7m	Projection	: Rectilinear
Date of Photography	: 9:09am 10 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS3

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86822 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35787 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 142m / 1.7m	Projection	: Rectilinear
Date of Photography	: 8:58am 10 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Willows Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS4

Proposed View during Operation (rock stack outlined in yellow to show position in the landscape)

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.85984 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 159m / 1.7m	Projection	: Rectilinear
Date of Photography	: 8:48am 10 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Highland Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS5

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.87060 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.36442 S	Vertical Field of View	: 30°
Elevation/Eye Height	:123m / 1.7m	Projection	: Rectilinear
Date of Photography	:4:12pm 13 June 2018 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Corner Willows Road and State Highway 25

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS6

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.87580 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.36079 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 127m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:58pm 13 June 2018 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

State Highway 25

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS7

Existing View

Proposed View, During Operation Without Mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 123m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:34pm 27 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Corbett Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS8A

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 40°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 25°
Elevation/Eye Height	: 123m / 1.7m	Projection	: NA
Date of Photography	: 3:34pm 27 July 2020 NZST	Image Reading Distance @ A3 is 50 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Corbett Road

Date:10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS8B

Proposed View at completion with mitigation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 40°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 25°
Elevation/Eye Height	: 123m / 1.7m	Projection	: NA
Date of Photography	: 3:34pm 27 July 2020 NZST	Image Reading Distance @ A3 is 50 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Corbett Road

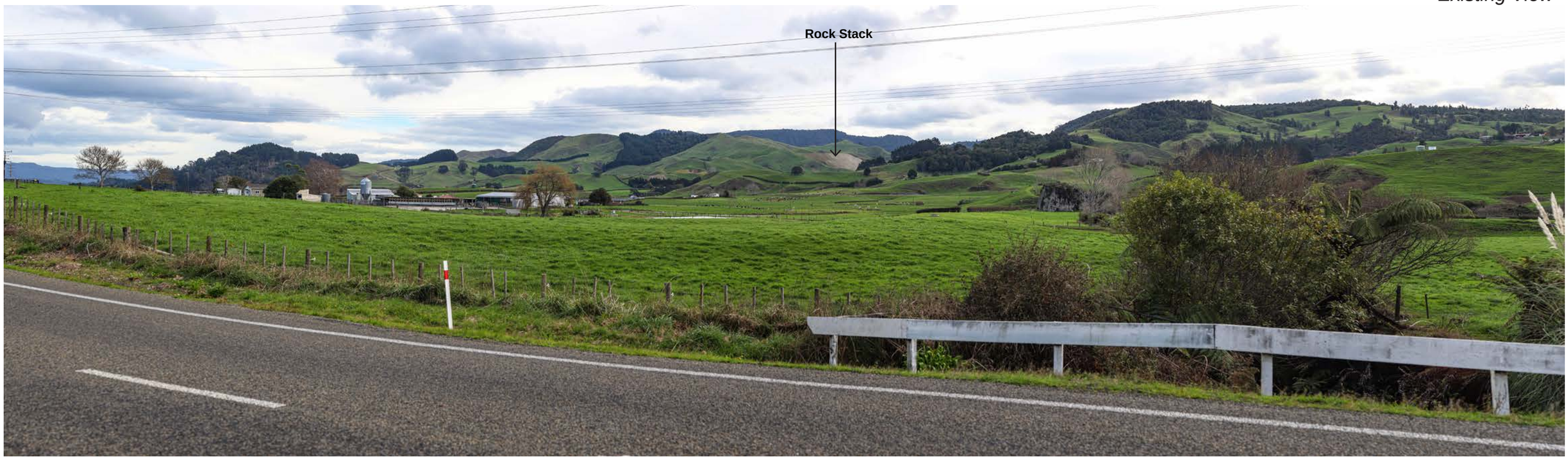
Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS8C

Existing View



Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.86297 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.35111 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 140m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:11pm 27 July 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

State Highway 25

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS9

Existing View

Note: No potential views of shaft locations idenitfied from formed walking track.

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

WGS84 Easting	: 175.8239 E	Horizontal Field of View	: 90°
WGS84 Northing	: -37.2968 S	Vertical Field of View	: 30°
Elevation/Eye Height	: 186m / 1.7m	Projection	: Rectilinear
Date of Photography	: 12:54pm 22 Sept 2020 NZST	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Wharekirauponga Walk

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS10

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 396498 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 642271 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1093m / 1.7m		Projection	: Rectilinear
Date of Photography	: 2:52pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Clarke Street

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS11

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 396576 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 642142 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1092m / 1.7m		Projection	: Rectilinear
Date of Photography	: 2:40pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Ohinemuri River

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: Dlr | Checked: RGi

VS12

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting : 396169 mE
ME 1949 Northing : 642142 mS
Elevation (mine datum)/Eye Height: 1094m / 1.7m
Date of Photography : 4:41pm 15 June 2017

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

WAIHI NORTH LANDSCAPE ASSESSMENT

Gilmour Park

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS13

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 397010 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 643127 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1118m / 1.7m		Projection	: Rectilinear
Date of Photography	: 12:46pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Barry Road

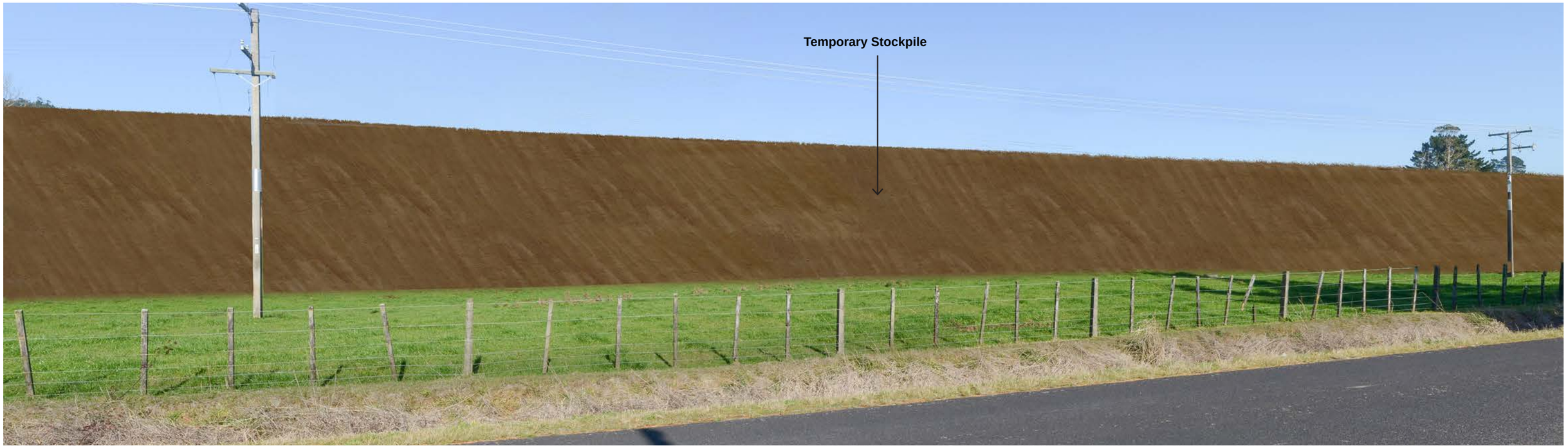
Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS14

Existing View



Proposed View During Operation (prior to seeding)

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 398188 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 643188 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1105m / 1.7m		Projection	: Rectilinear
Date of Photography	: 1:31pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Golden Valley Road

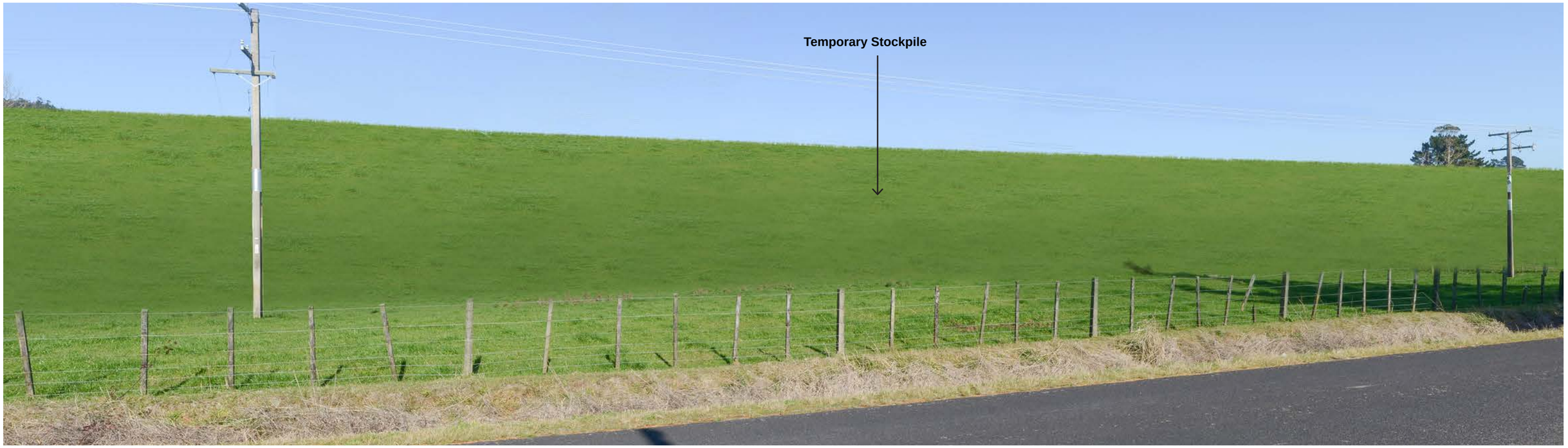
Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS15

Existing View



Proposed View During Operation (prior to planting)

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 398188 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 643188 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1105m / 1.7m		Projection	: Rectilinear
Date of Photography	: 1:31pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Golden Valley Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS15A

Existing View

Proposed View During Operation (after planting)

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 398188 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 643188 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1105m / 1.7m		Projection	: Rectilinear
Date of Photography	: 1:31pm 15 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Golden Valley Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS15B

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 398915 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 643957 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1109m / 1.7m		Projection	: Rectilinear
Date of Photography	: 10:45am 25 January 2019	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS16

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 397352 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 641630 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1225m / 1.7m		Projection	: Rectilinear
Date of Photography	: 3:45pm 15 January 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Black Hill

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS17

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting : 397316 mE
ME 1949 Northing : 641770 mS
Elevation (mine datum)/Eye Height: 1205m / 1.7m
Date of Photography : 9:33am 19 November 2019

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

WAIHI NORTH LANDSCAPE ASSESSMENT

Black Hill towards Gladstone Mine

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS17B

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting : 399056 mE
ME 1949 Northing : 639752 mS
Elevation (mine datum)/Eye Height: 1120m / 1.7m
Date of Photography : 10:19am 16 June 2017

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

WAIHI NORTH LANDSCAPE ASSESSMENT

Waihi Beach Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS18

Consented View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 400189 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 640425 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1119m / 1.7m		Projection	: Rectilinear
Date of Photography	: 10:07am 16 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS19

Consented View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 400189 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 640425 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1119m / 1.7m		Projection	: Rectilinear
Date of Photography	: 10:07am 16 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS19A

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 400922 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 640898 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1121m / 1.7m		Projection	: Rectilinear
Date of Photography	: 9:52am 16 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS20

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 400922 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 640898 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1121m / 1.7m		Projection	: Rectilinear
Date of Photography	: 9:52am 16 June 2017	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS20

Existing View

Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting : 400922 mE
ME 1949 Northing : 640898 mS
Elevation (mine datum)/Eye Height: 1121m / 1.7m
Date of Photography : 9:52am 16 June 2017

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road

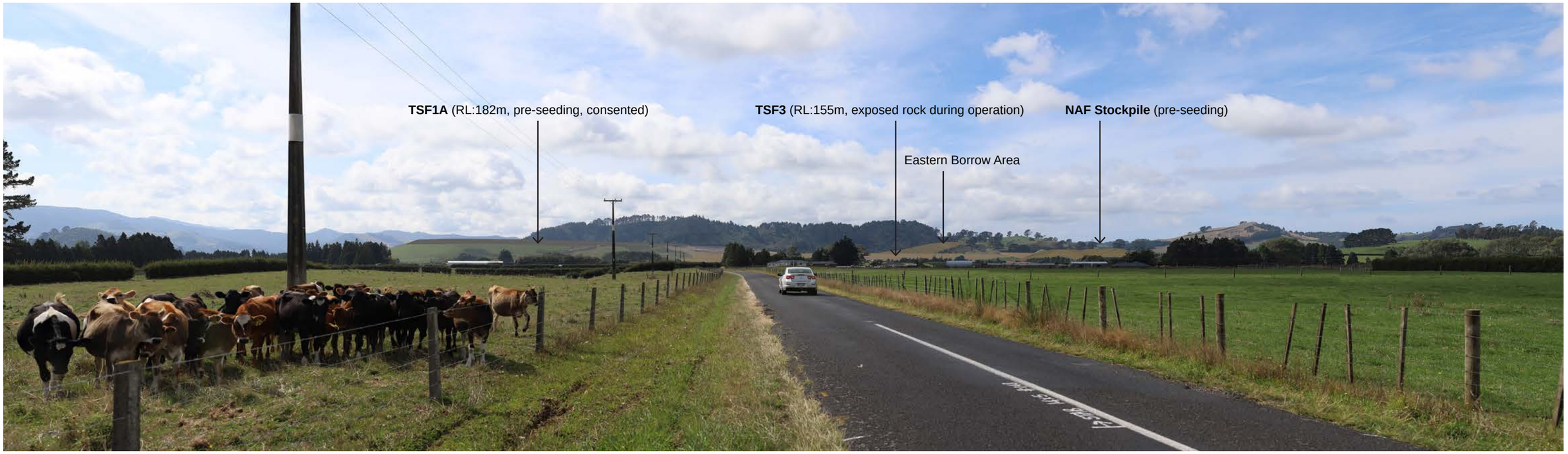
Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS20A

Existing View



Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 399470 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 639032 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1,121m / 1.7m		Projection	: Rectilinear
Date of Photography	: 16:08pm 26 February 2021	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road South

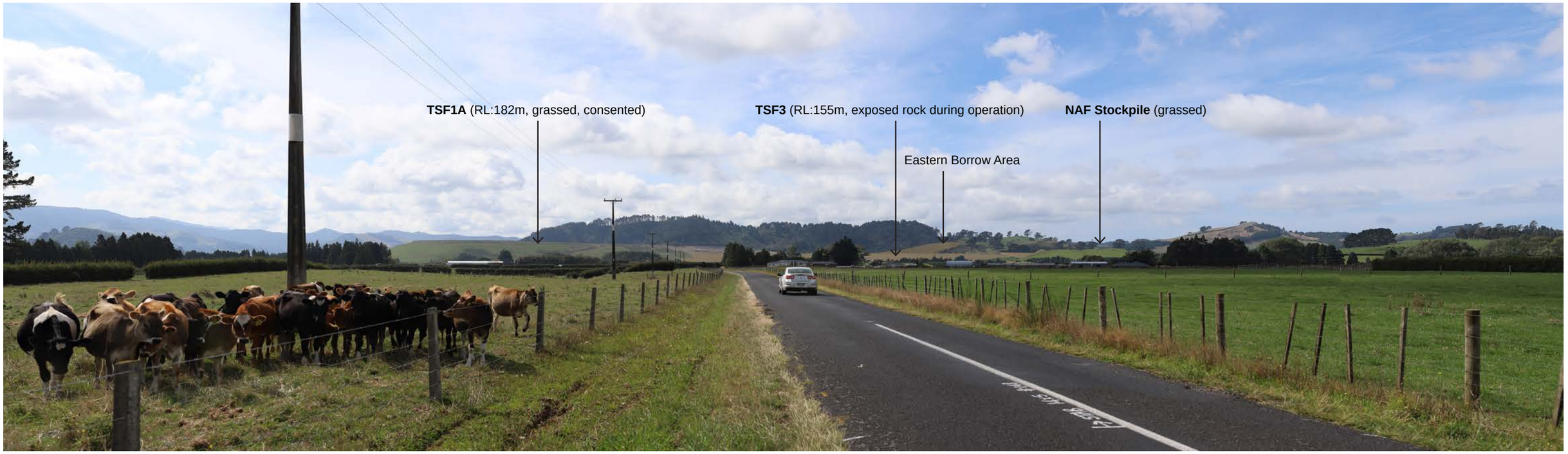
Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS21

Existing View



Proposed View During Operation

Boffa Miskell

www.boffamiskell.co.nz

Viewpoint Details

ME 1949 Easting	: 399470 mE	Horizontal Field of View	: 90°
ME 1949 Northing	: 639032 mS	Vertical Field of View	: 30°
Elevation (mine datum)/Eye Height: 1,121m / 1.7m		Projection	: Rectilinear
Date of Photography	: 16:08pm 26 February 2021	Image Reading Distance @ A3 is 20 cm	

WAIHI NORTH LANDSCAPE ASSESSMENT

Trig Road South

Date: 10 February 2025 Revision:3

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: DIr | Checked: RGi

VS21A

WAI-985-000-REP-LC-0021

Boffa Miskell

WAIHI NORTH

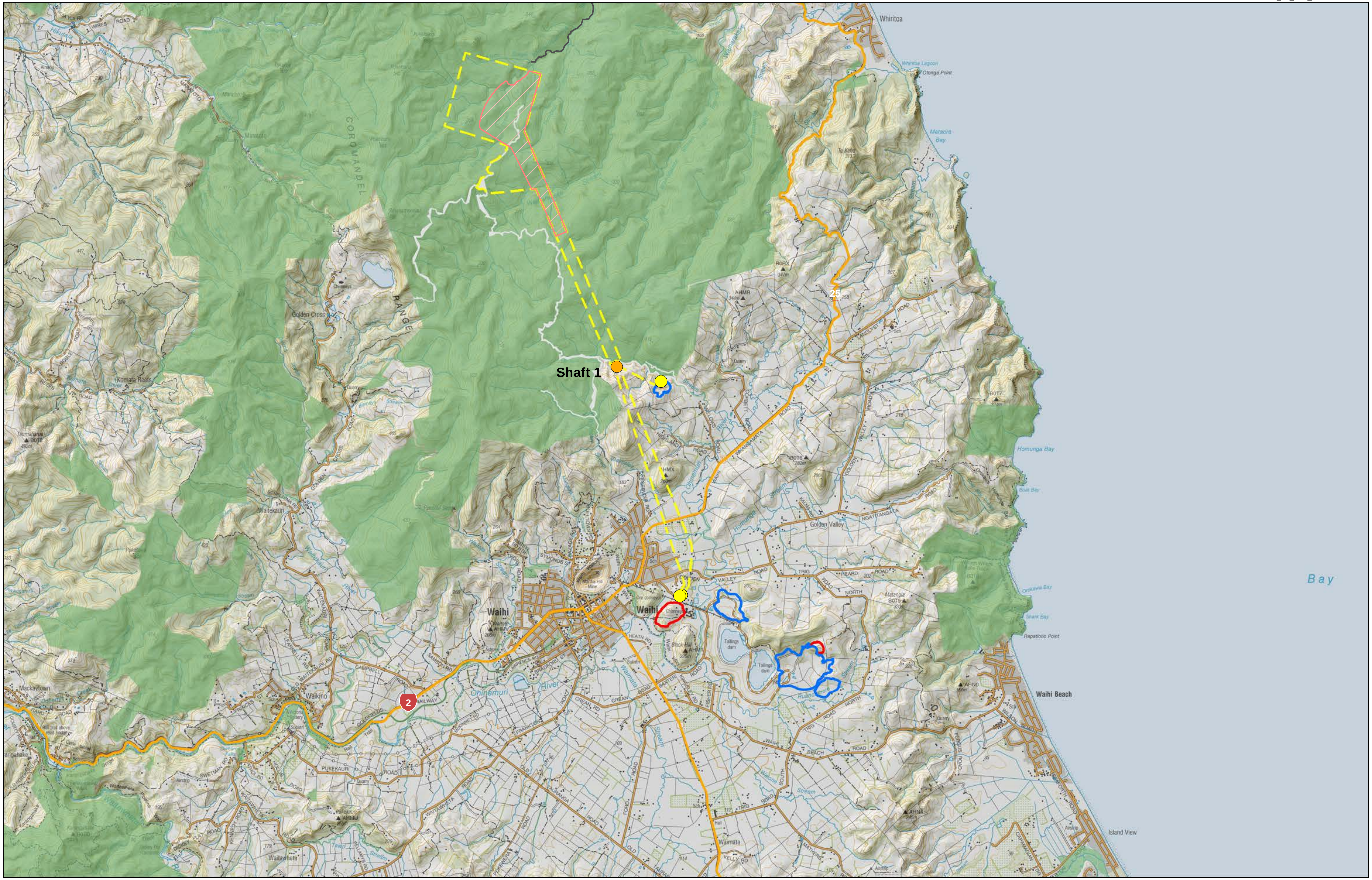
LANDSCAPE ASSESSMENT
APPENDIX 5: FIGURES

FEBRUARY 2025

Waihi North

Contents

FIGURES



Boffa Miskell

www.boffamiskell.co.nz

0 — 2 km

1:70,000 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
Public Conservation land sourced from DOC
Topo map sourced from LINZ Topo 50 map series
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Shaft 1
- Underground Mining Activity Footprint
- Proposed Hydrogeological and Vent Sites
- Proposed Fill
- Proposed Pit
- Public Conservation Land
- Paper Road
- Wharekirauponga Walk

WAIHI NORTH

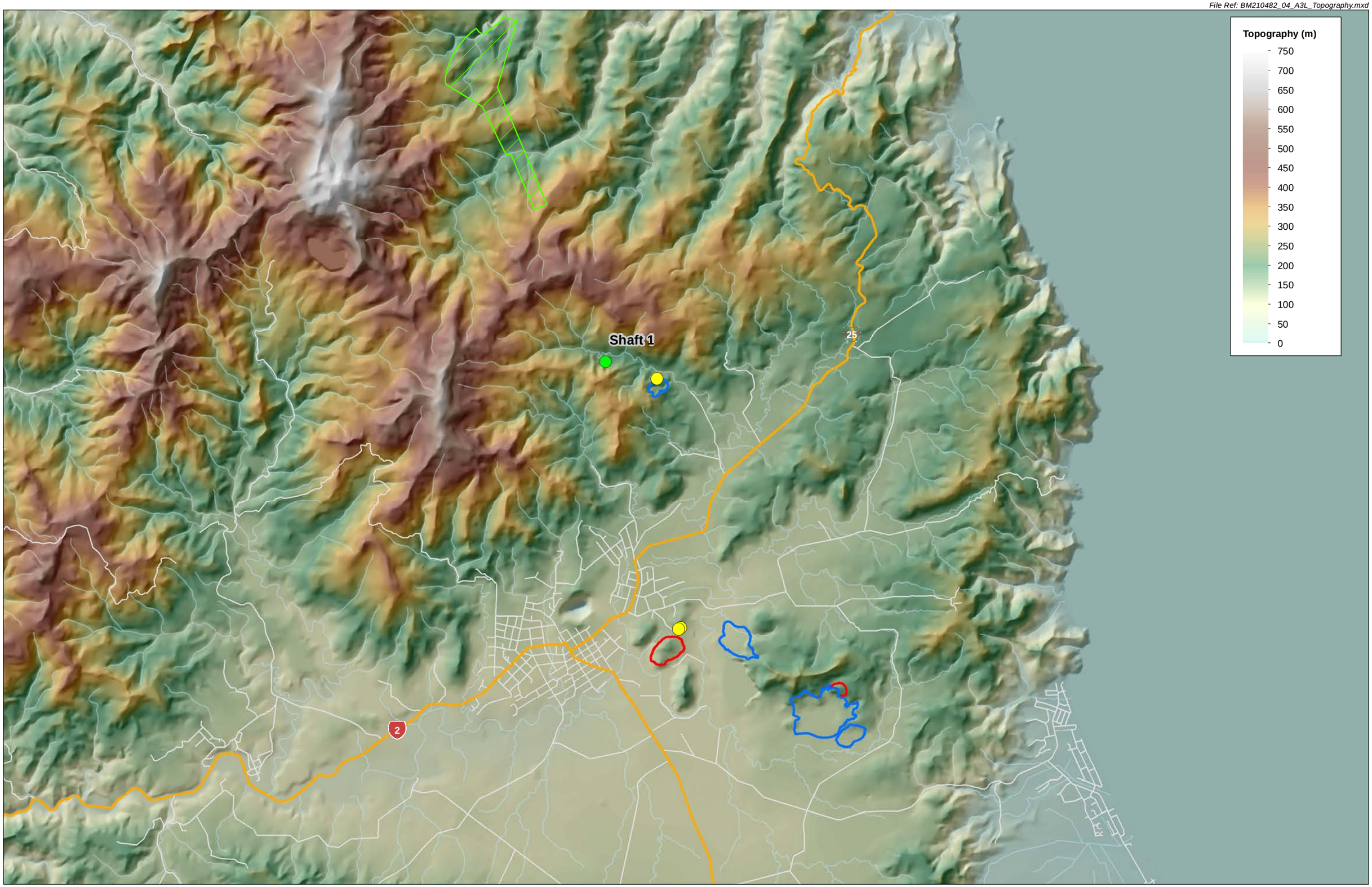
Site Context

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 1



Boffa Miskell

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0 2 km

1:60,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
DEM sourced from Geographix 8m DEM
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Shaft 1
- Proposed Fill
- Proposed Pit
- Proposed Hydrogeological and Vent Sites
- State Highway
- Road

WAIHI NORTH

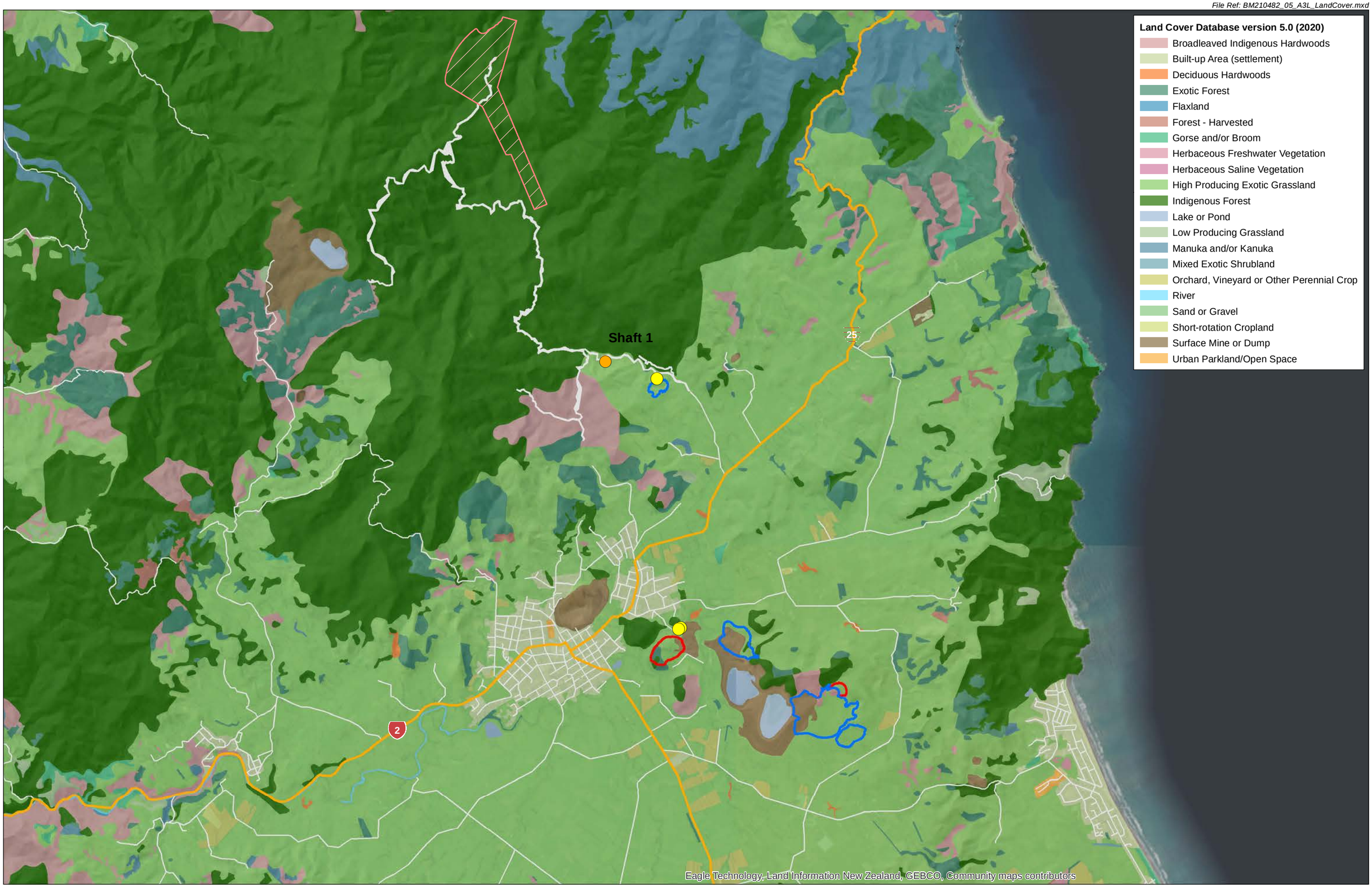
Topography

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 2



Boffa Miskell

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0 2 km

1:60,000 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
Land cover database v5 sourced from MFE

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Shaft 1
- Proposed Hydrogeological and Vent Sites
- Paper Road
- Proposed Fill
- Proposed Pit

WAIHI NORTH

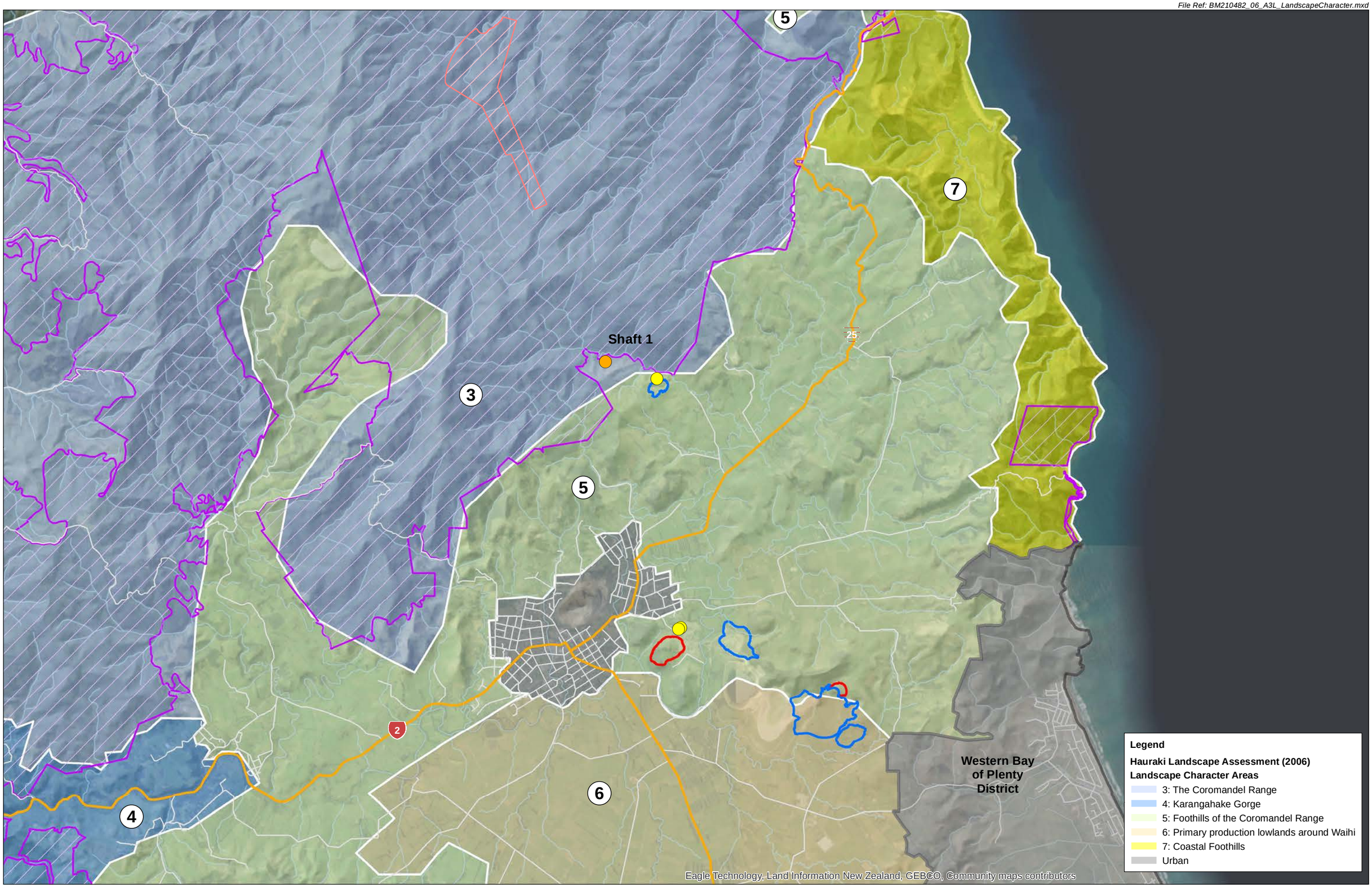
Land Cover

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 3



Boffa Miskell

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0 2 km

1:60,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Character Areas sourced from LA4 Hauraki Landscape Assessment (2006)
Outstanding Natural Features sourced from Hauraki District (2014)
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Shaft 1
- Proposed Fill
- Proposed Pit
- ONL (2014)
- Proposed Hydrogeological and Vent Sites

WAIHI NORTH

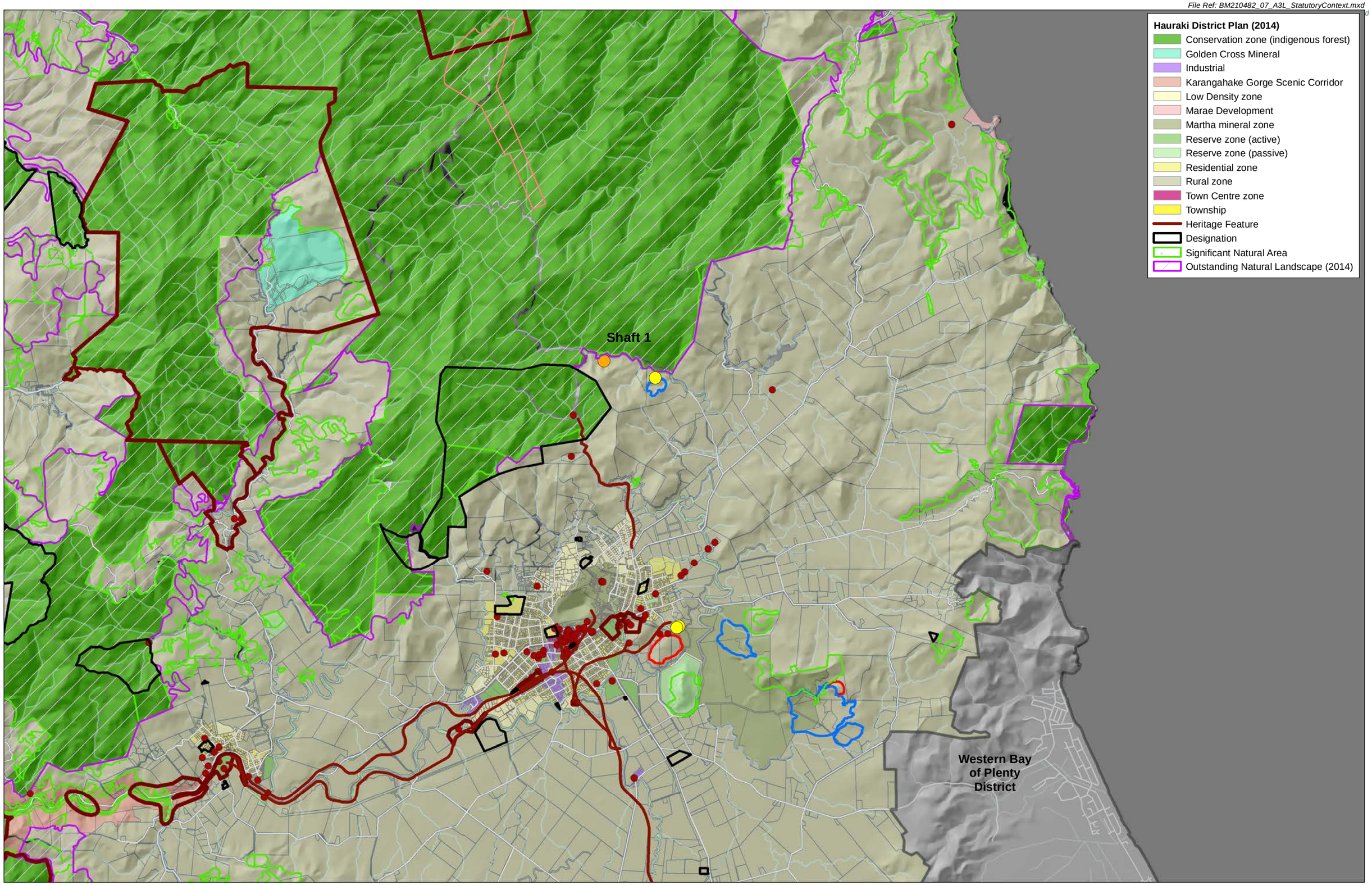
Landscape Character

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 4



Boffa Miskell

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0 2 km

1:60,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
District Plan data sourced from Hauraki District Council (2017)

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Shaft 1
- Proposed Fill
- Proposed Pit
- Proposed Hydrogeological and Vent Sites

WAIHI NORTH

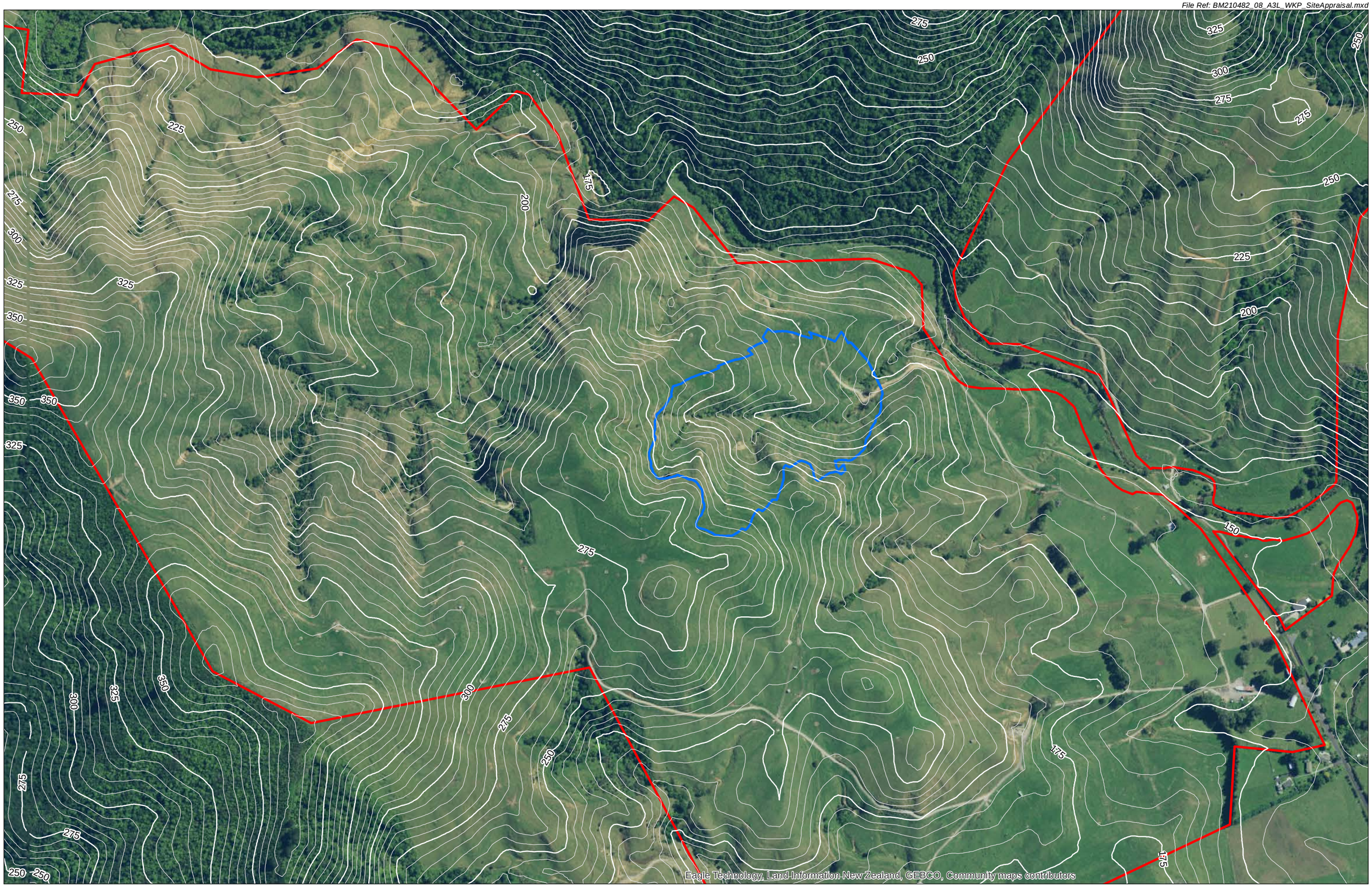
Statutory Context

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 5



Boffa Miskell

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0 200 m

1:5,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Fill
- Willows Road Site
- Existing Contours (5m)

WAIHI NORTH

Willows Road Site Appraisal

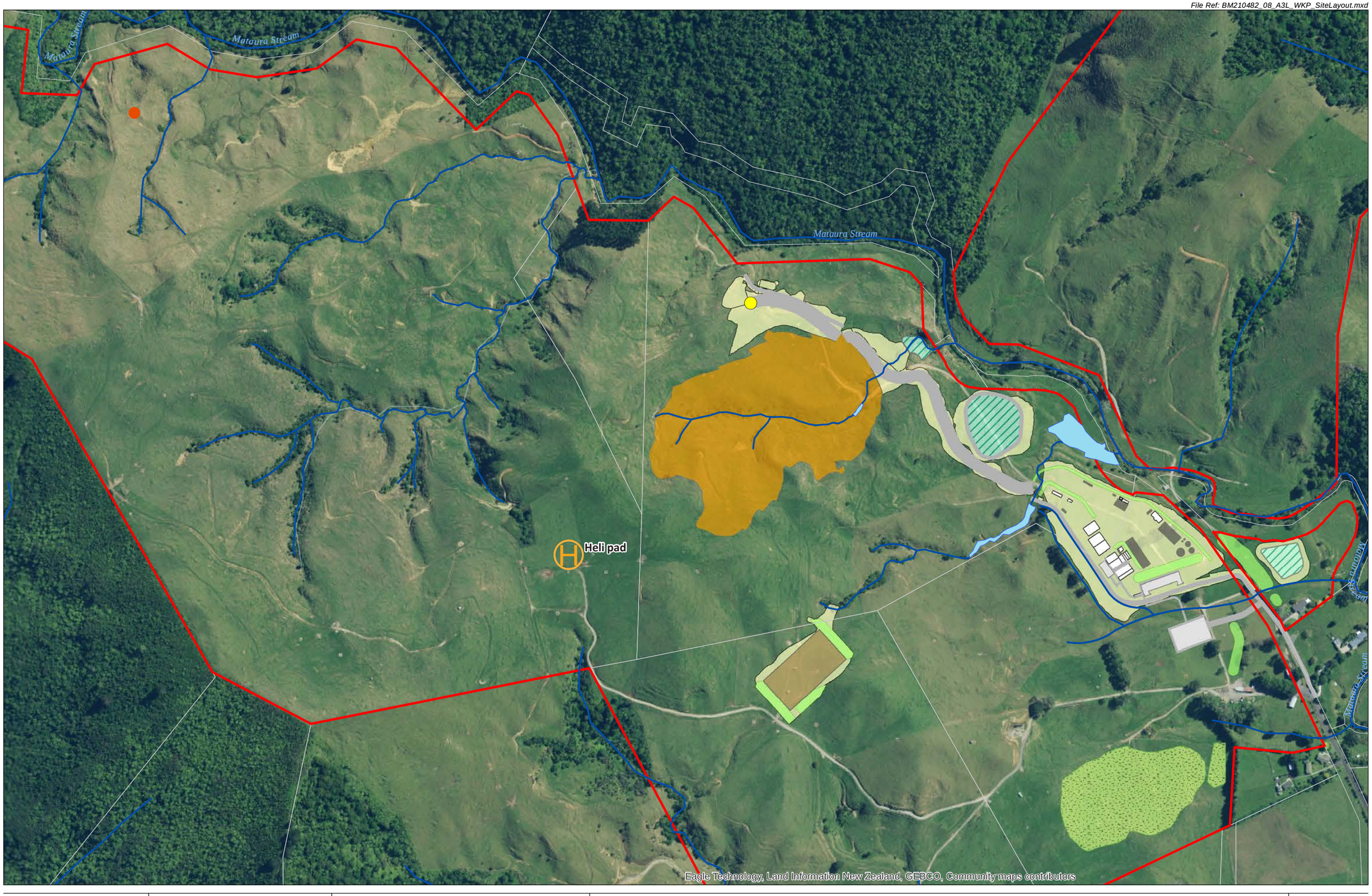
Date: 17 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 6

File Ref: BM210482_08_A3L_WKP_SiteLayout.mxd



Boffa Miskell

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0 200 m

1:5,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Indicative Shaft
- Willows Road Site
- Cadastre
- Access Road\Path
- Building Footprint
- Parking
- Bund
- Hard landscape
- Magazine Footprint
- Retention / Collection Ponds
- Willows Rock Stack
- Topsoil Stockpile
- Earthworks
- Wetland

WAIHI NORTH

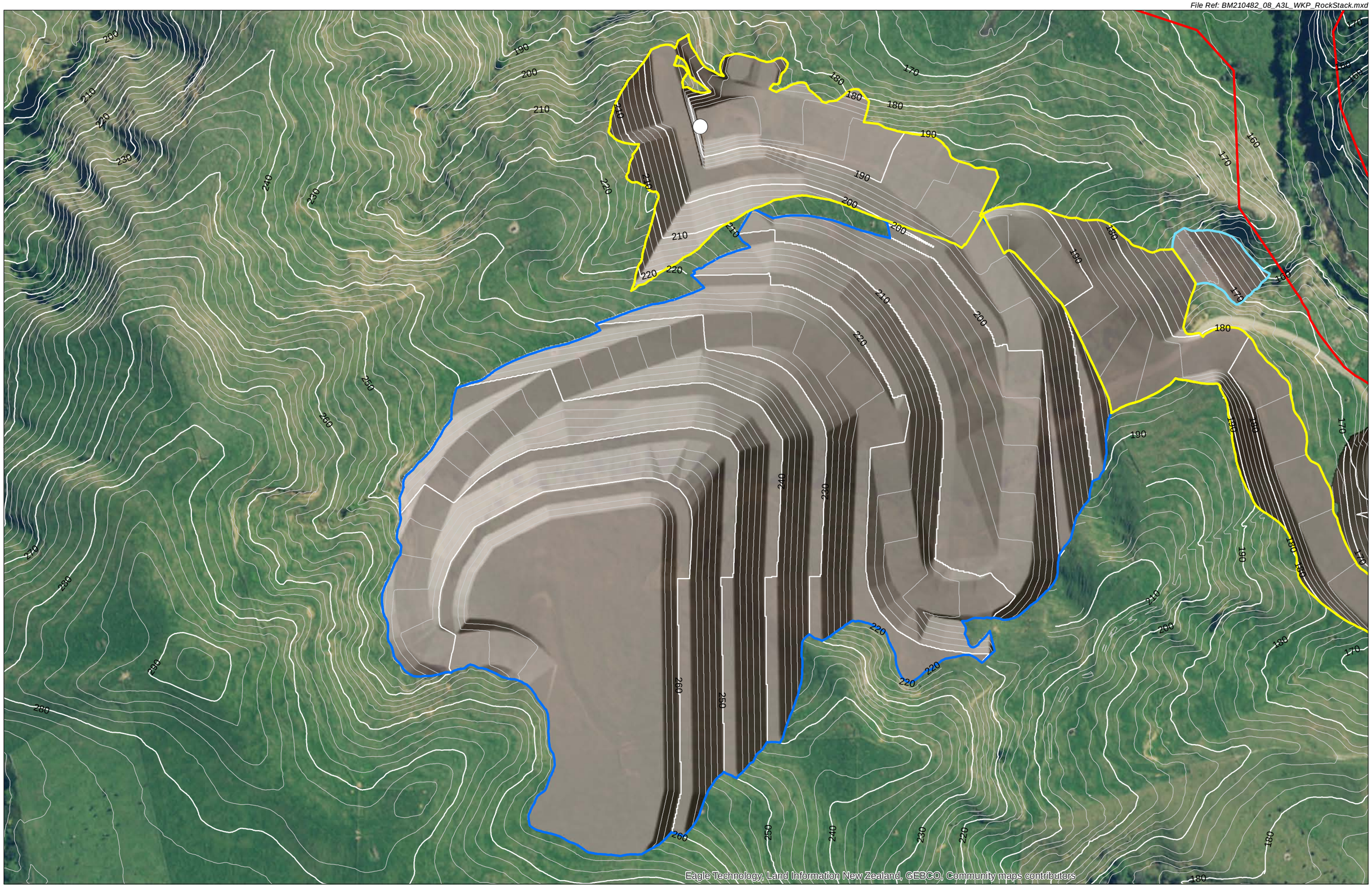
Proposed Willows Road Site Layout

Date: 17 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 7



Boffa Miskell

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0 40 m

1:1,600 @ A3

Data Sources:
Proposed Infrastructure and contours sourced from Oceana Gold

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Proposed Fill - WKP Rock Stack
- Portal and Access Road
- Toe Pond
- Willows Road Site
- Existing/Proposed Contours (2m)

WAIHI NORTH

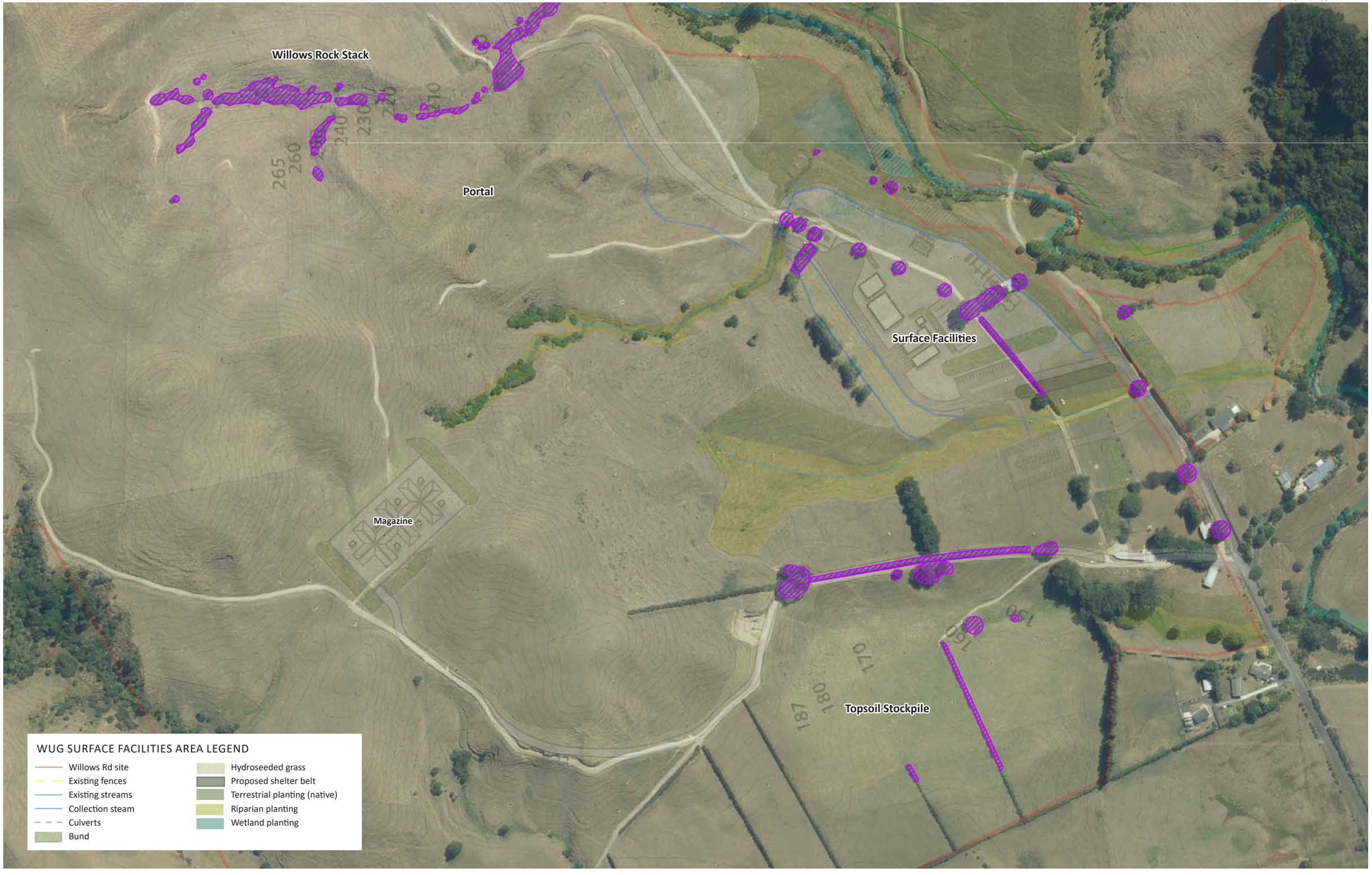
Proposed Willows Rock Stack

Date: 17 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 7a



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NORTH

0 100m

1:3,000 @ A3

LEGEND

Vegetation to be removed

WAIHI NORTH

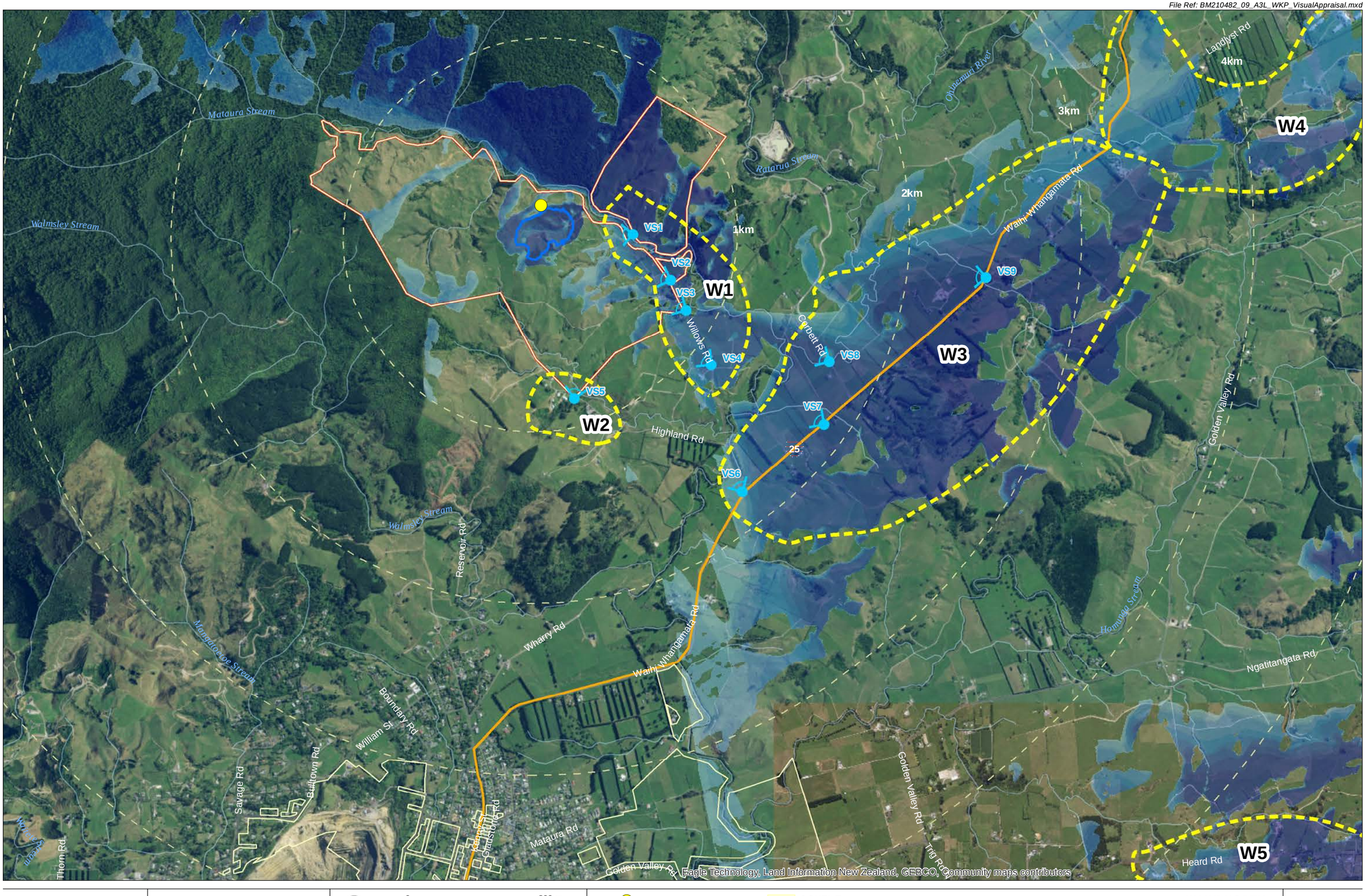
Proposed Willows Road Vegetation Removal

Date: September 2024 | Revision: 4

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 7b



Boffa Miskell

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0 800 m

1:20,000 @ A3

Data Sources:
OGNZL Tenure, Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Willows Rock Stack
- Willows Road Site
- Potential Viewing Audience
- Simulation Viewpoints
- OGNZL Tenure

Zone of Theoretical Visibility

- High
- Low

WAIHI NORTH

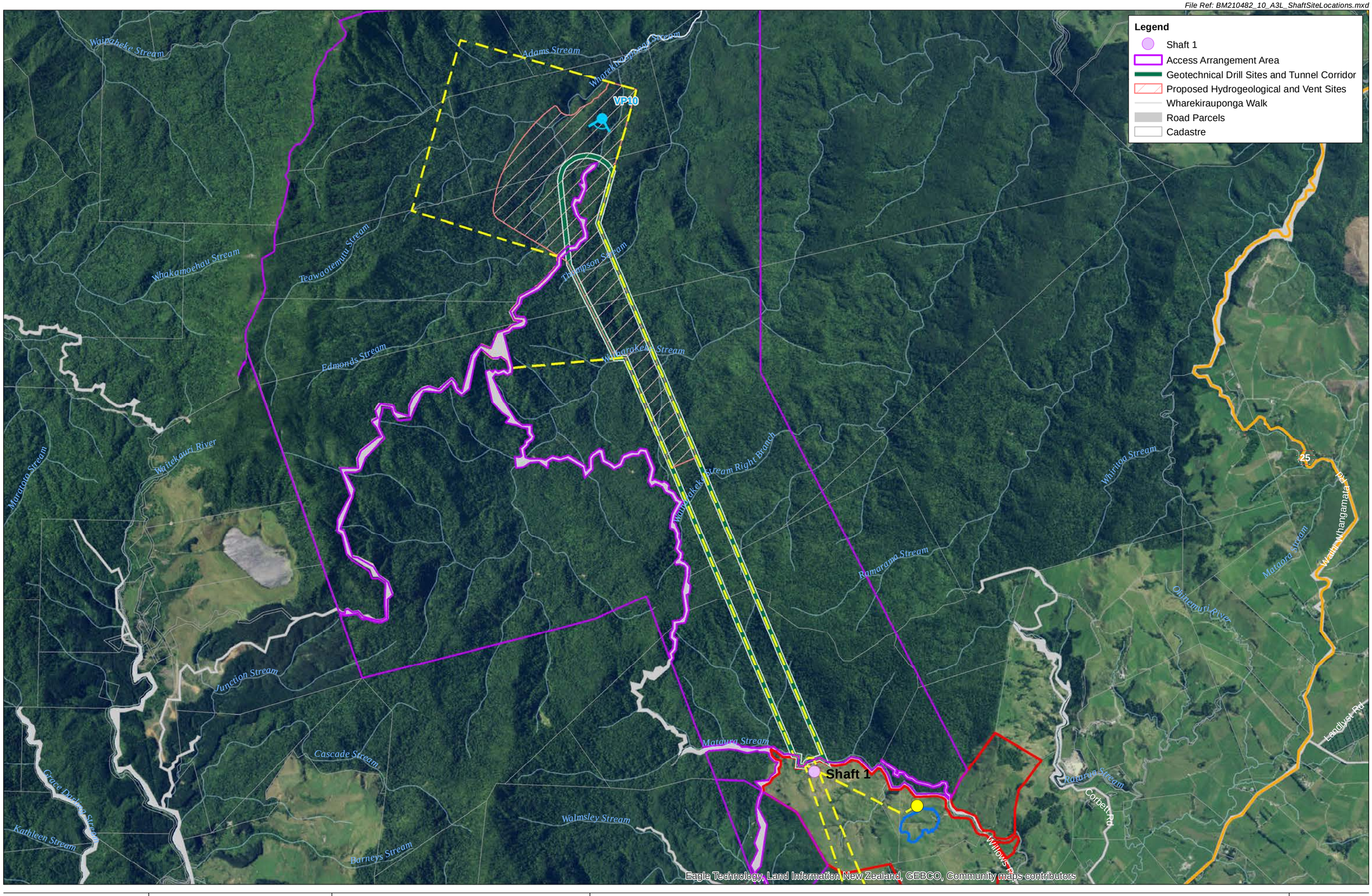
Willow Road Visual Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 8



Boffa Miskell

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0 800 m

1:30,000 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND
- Photo Viewpoint
- Tunnel Portal
- Willows Rock Stack
- Willows Road Site
- Underground Mining Activity Footprint

WAIHI NORTH

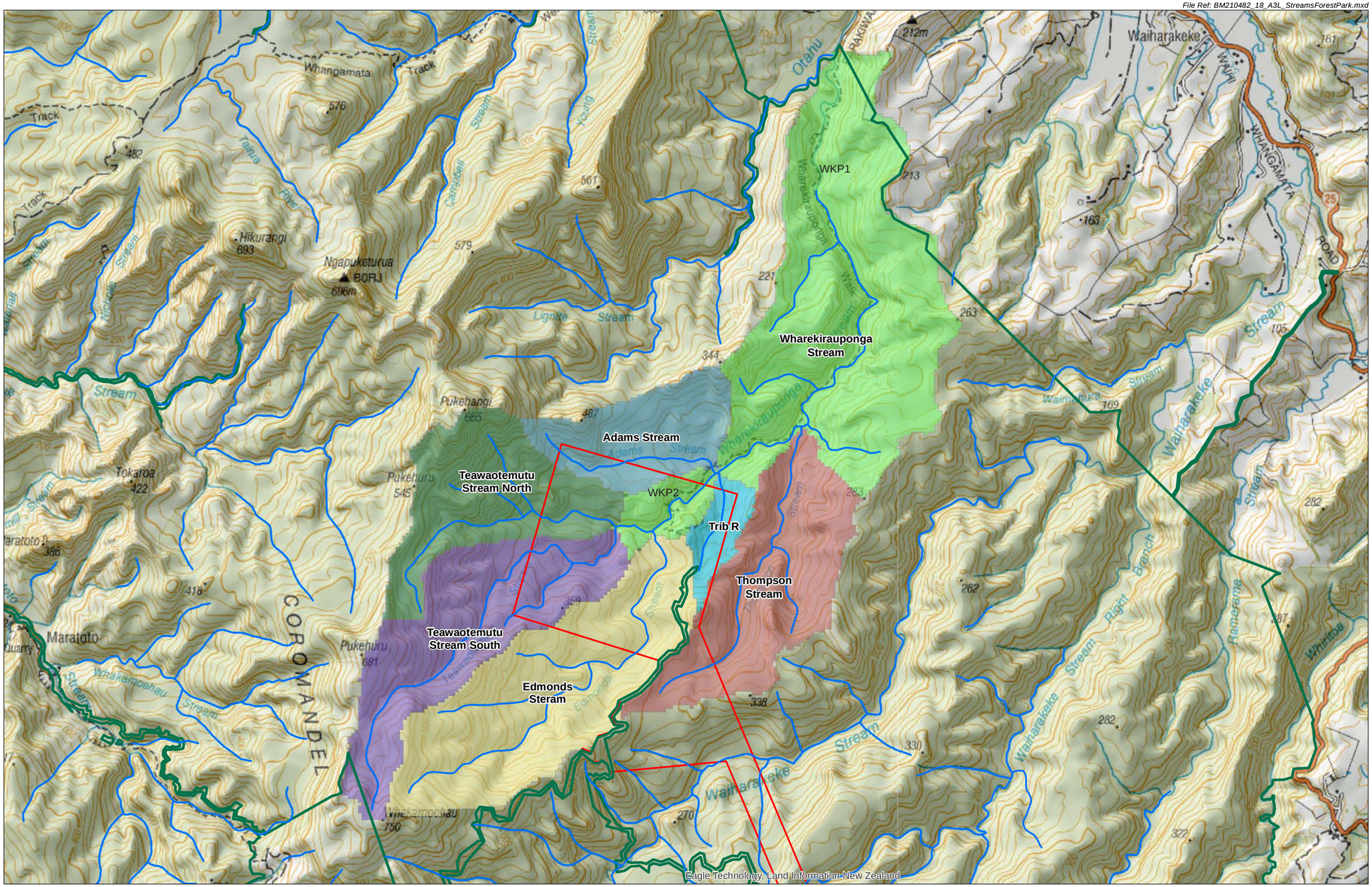
Proposed Wharekirauponga Shaft Locations

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 9



Boffa Miskell

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0 1 km

1:30,000 @ A3

Data Sources:
Catchments sourced from NIWA River Environment Classification (v5)
WRP Natural state waterways sourced from WRC
Topo map sourced from LINZ Topo 50 map series
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND
- Natural state waterways (WRP)
- Underground Mining Activity Footprint
- Coromandel Forest Park Boundary

WAIHI NORTH

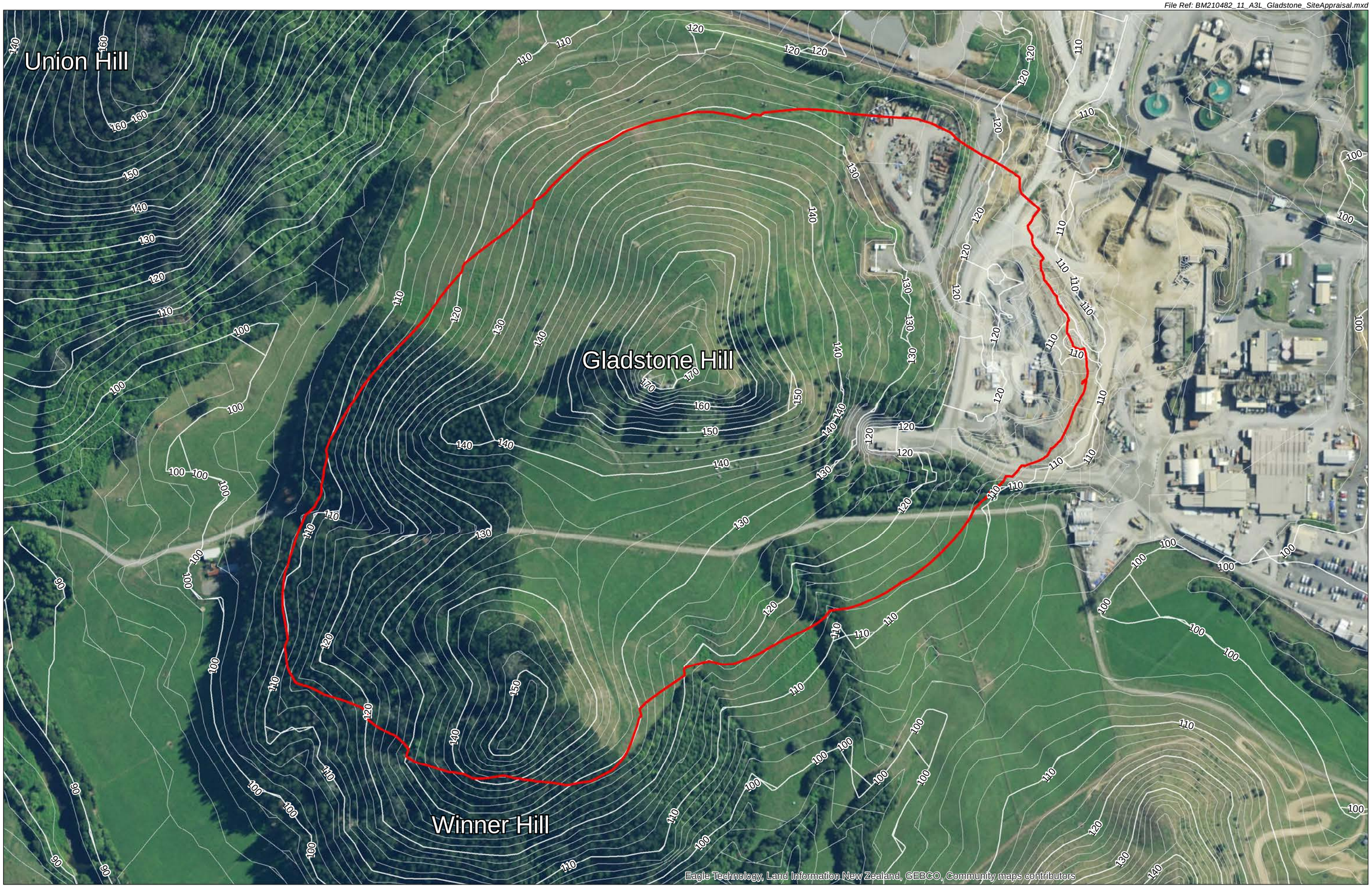
Streams within Forest Park

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 10



Boffa Miskell

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0 100 m

1:2,500 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Pit
- Existing Contours (2m)

WAIHI NORTH

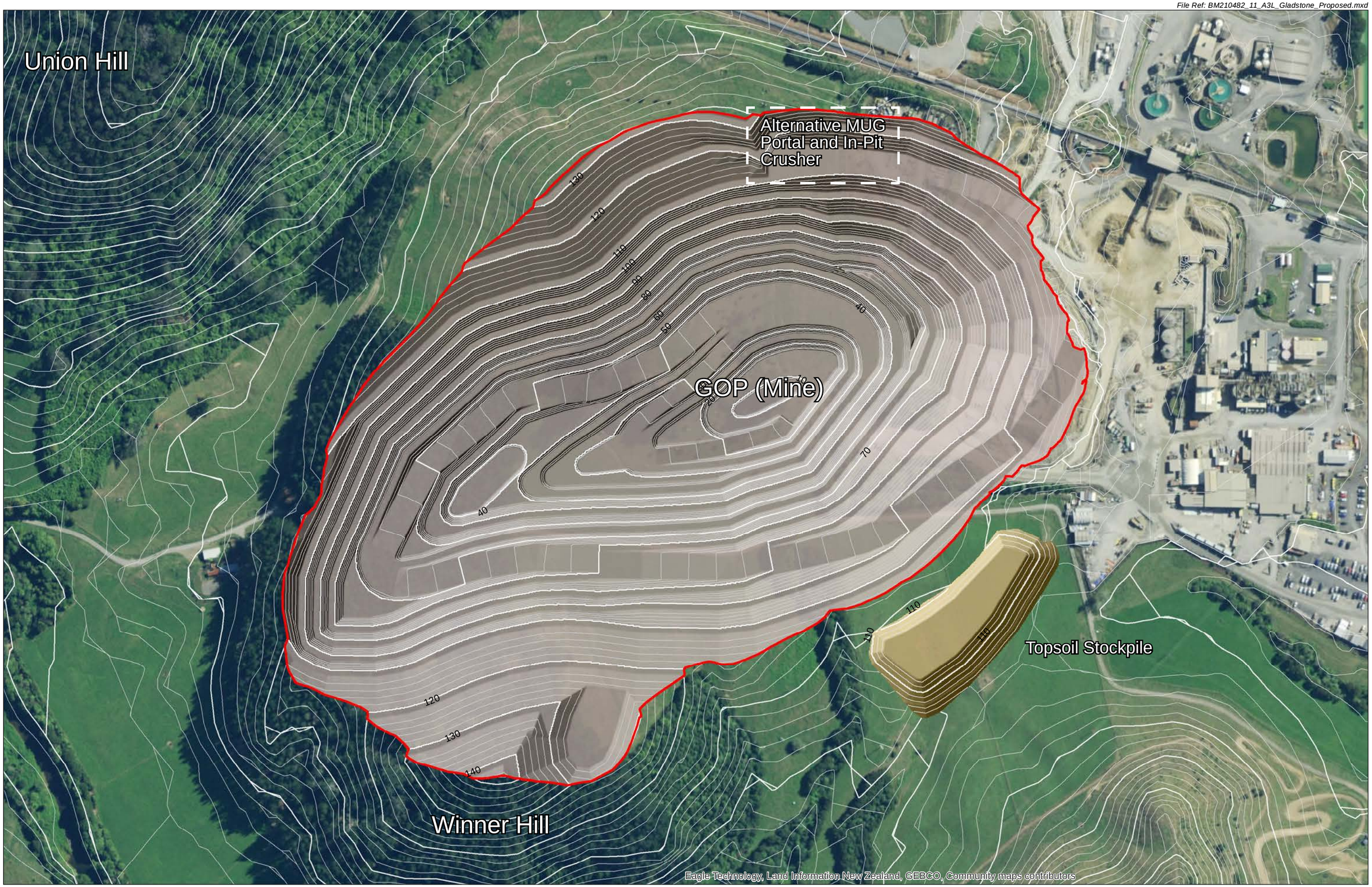
Gladstone Pit Site Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 11



Boffa Miskell

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0 100 m

1:2,500 @ A3

Data Sources:
Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

Proposed Pit

Existing/Proposed Contours (2m)

WAIHI NORTH

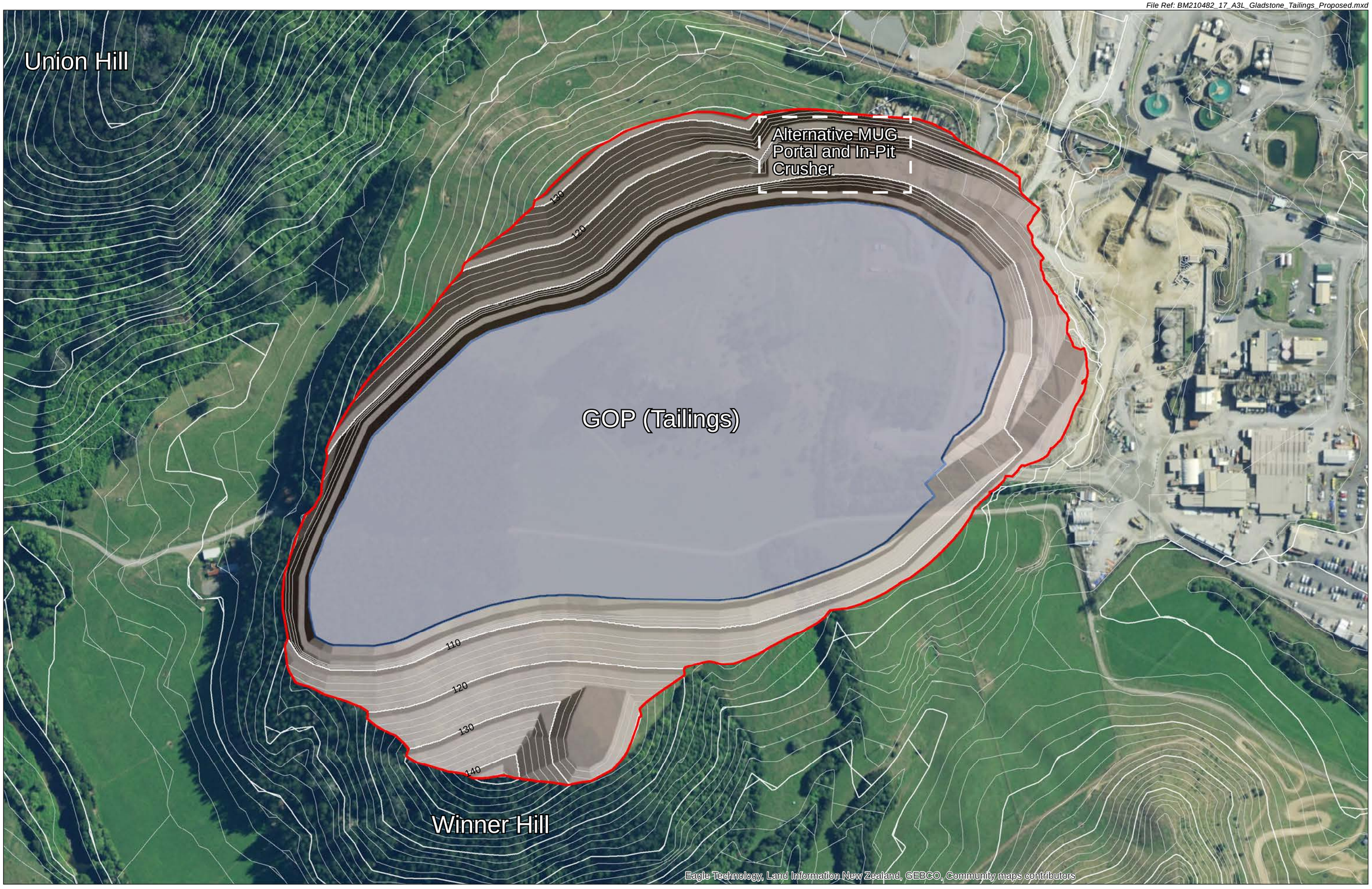
Proposed Gladstone Pit

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 12



Boffa Miskell

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0 100 m

1:2,500 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Pit
- Proposed Fill
- Existing/Proposed Contours (2m)

WAIHI NORTH

Proposed Gladstone Tailings

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 13

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0 400 m

1:10,000 @ A3

Data Sources:
OGNZL Tenure, Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Fill
- Proposed Pit
- Potential Viewing Audience
- OGNZL Tenure
- Simulation Viewpoints

Zone of Theoretical Visibility

High

Low

WAIHI NORTH

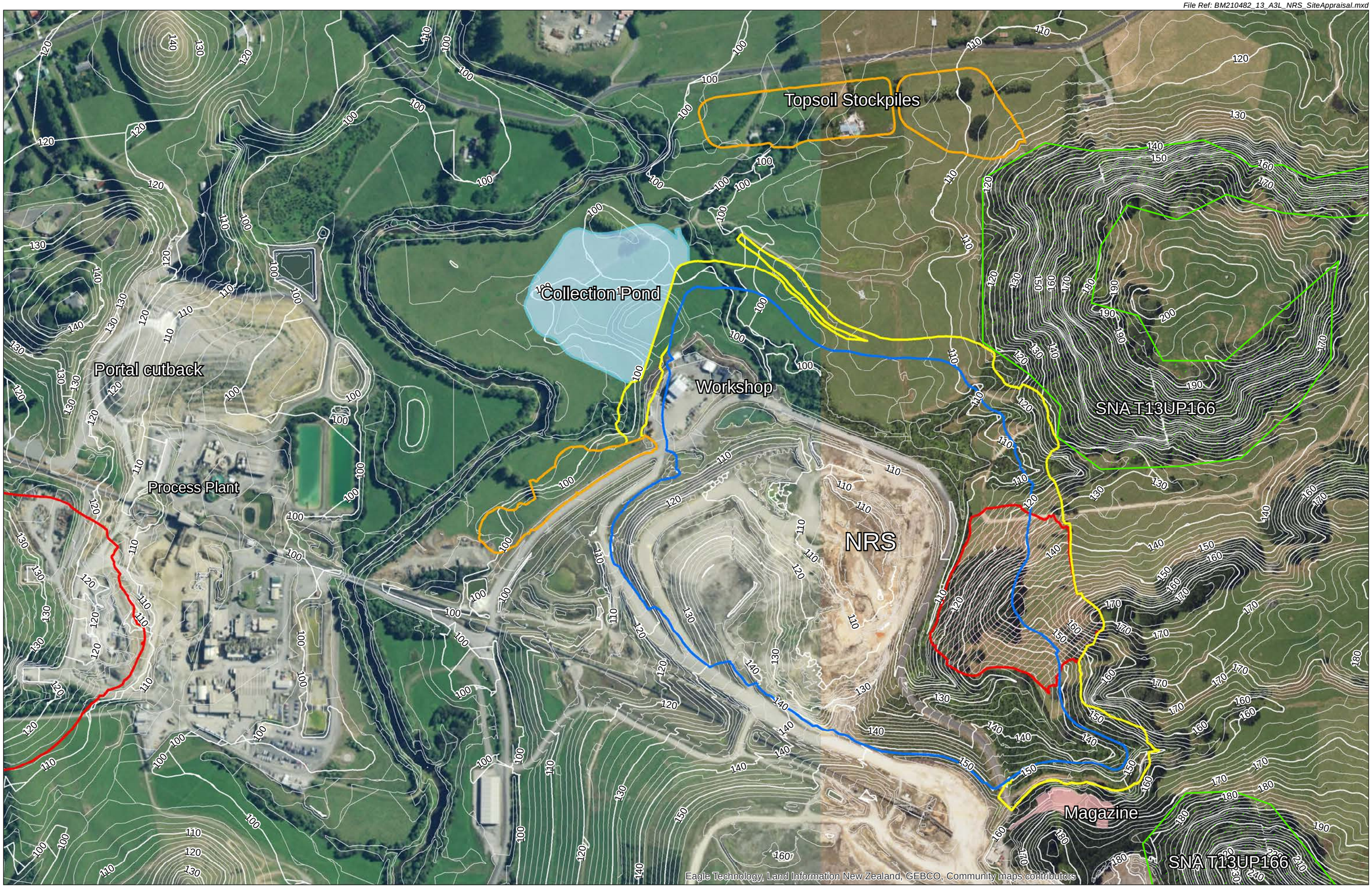
Gladstone Pit Visual Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 14



Boffa Miskell

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0 200 m

1:4,500 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Pit
- Western Borrow Area
- Proposed Fill - Northen Rock Stack
- Perimiter Road and Diversion Drain
- Temporary Stockpiles
- Existing Contours (2m)

WAIHI NORTH

Northern Rock Stack and Process Plant Site Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 15

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0 200 m

1:4,500 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Proposed Tunnel Envelope (Underground)
- Proposed Pit
- Proposed Fill - Northen Rock Stack
- Perimiter Road and Diversion Drain
- Temporary Stockpiles
- Existing/Proposed Contours (2m)

WAIHI NORTH

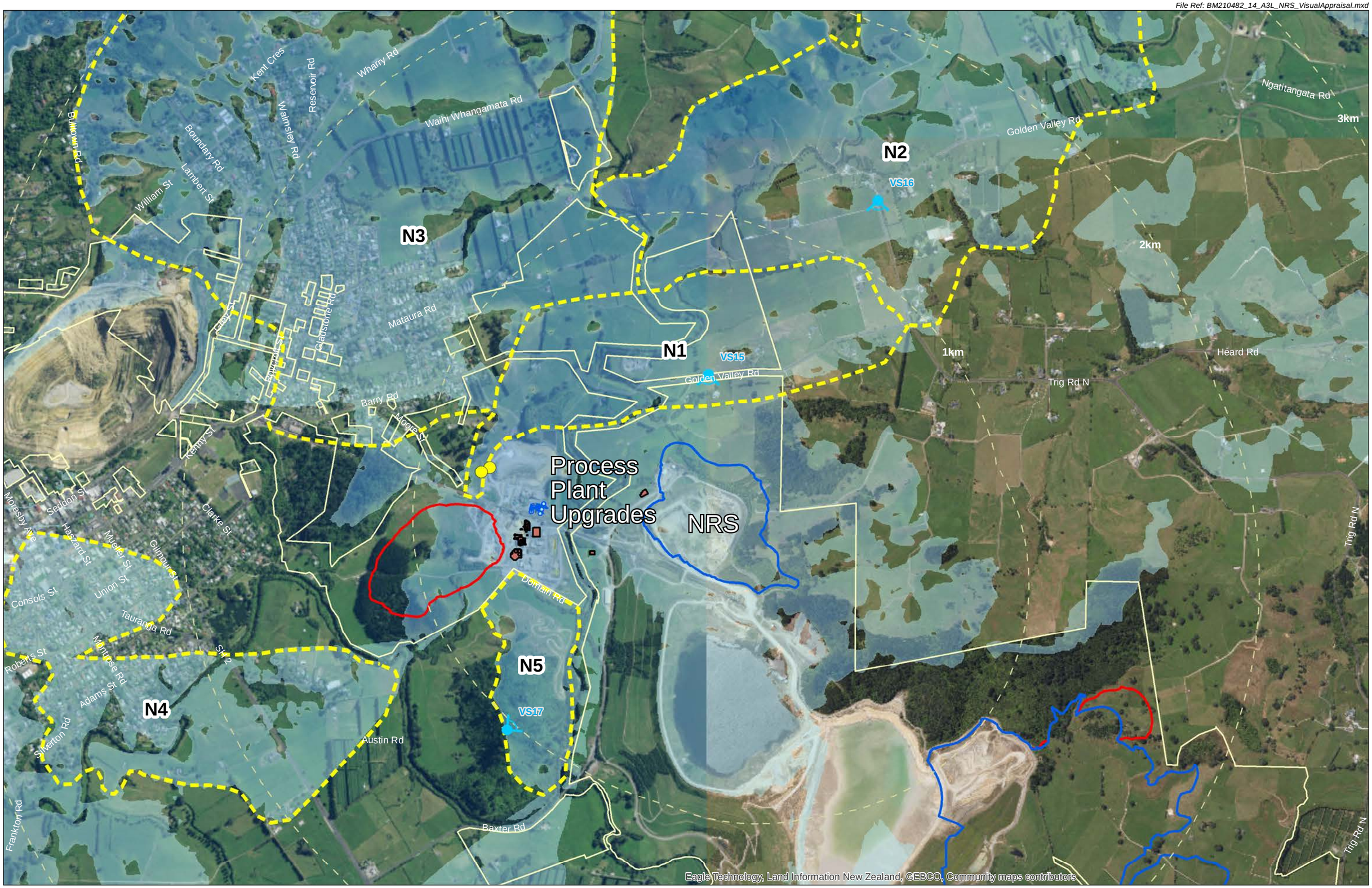
Proposed Northern Rock Stack and Process Plant

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 16



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0 400 m

1:15,000 @ A3

Data Sources:
OGNZL Tenure, Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Tunnel Portal
- Proposed Fill
- Proposed Pit
- Potential Viewing Audience
- OGNZL Tenure
- Simulation Viewpoints

Zone of Theoretical Visibility

High

Low

WAIHI NORTH

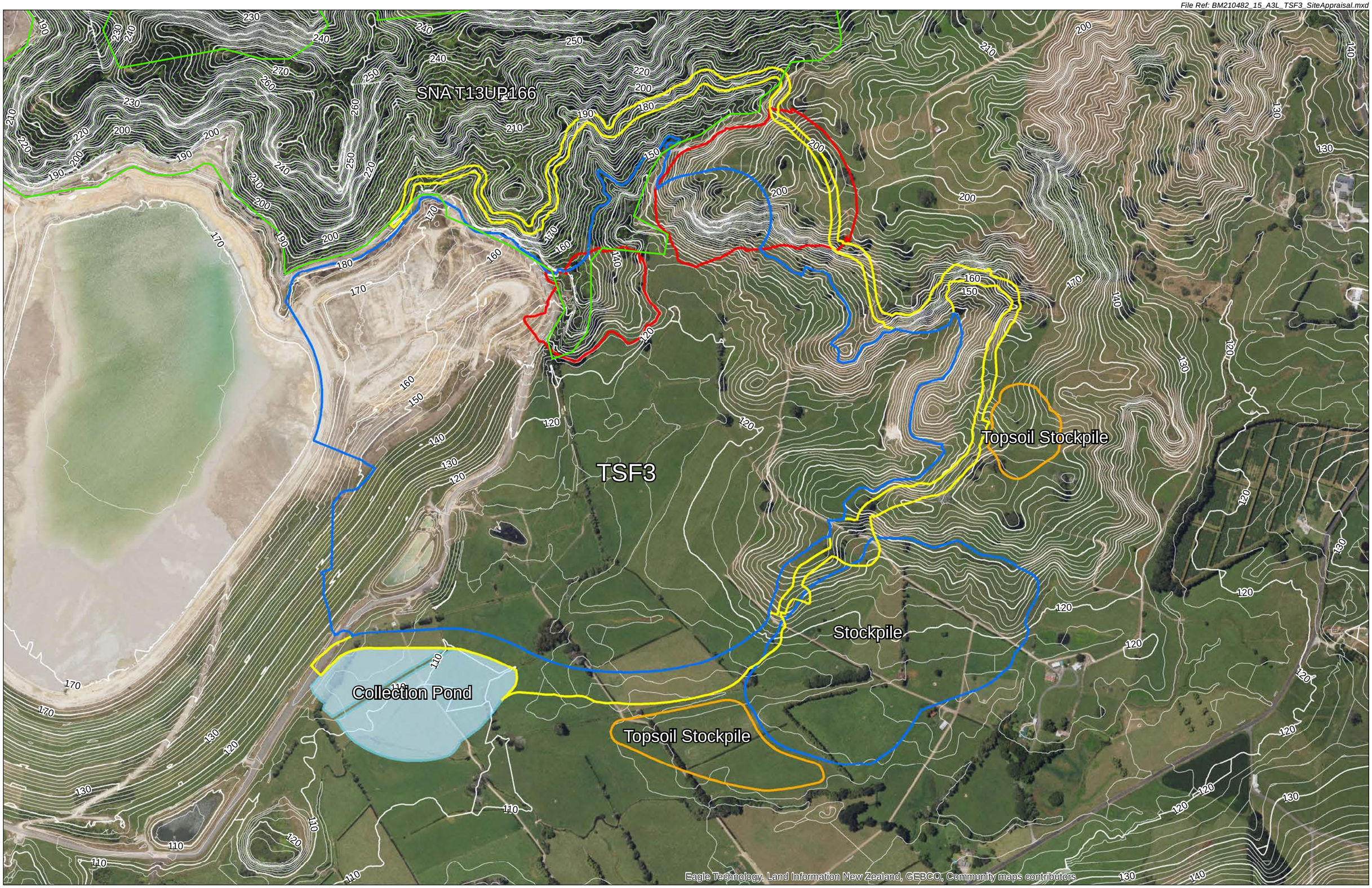
Northern Rock Stack and Process Plant Visual Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 17



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0 200 m

1:6,000 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Significant Natural Area
- Borrow Areas
- Perimiter Road and Diversion Drain
- Proposed Fill - TSF3
- Temporary Stockpiles
- Existing Contours (2m)

WAIHI NORTH

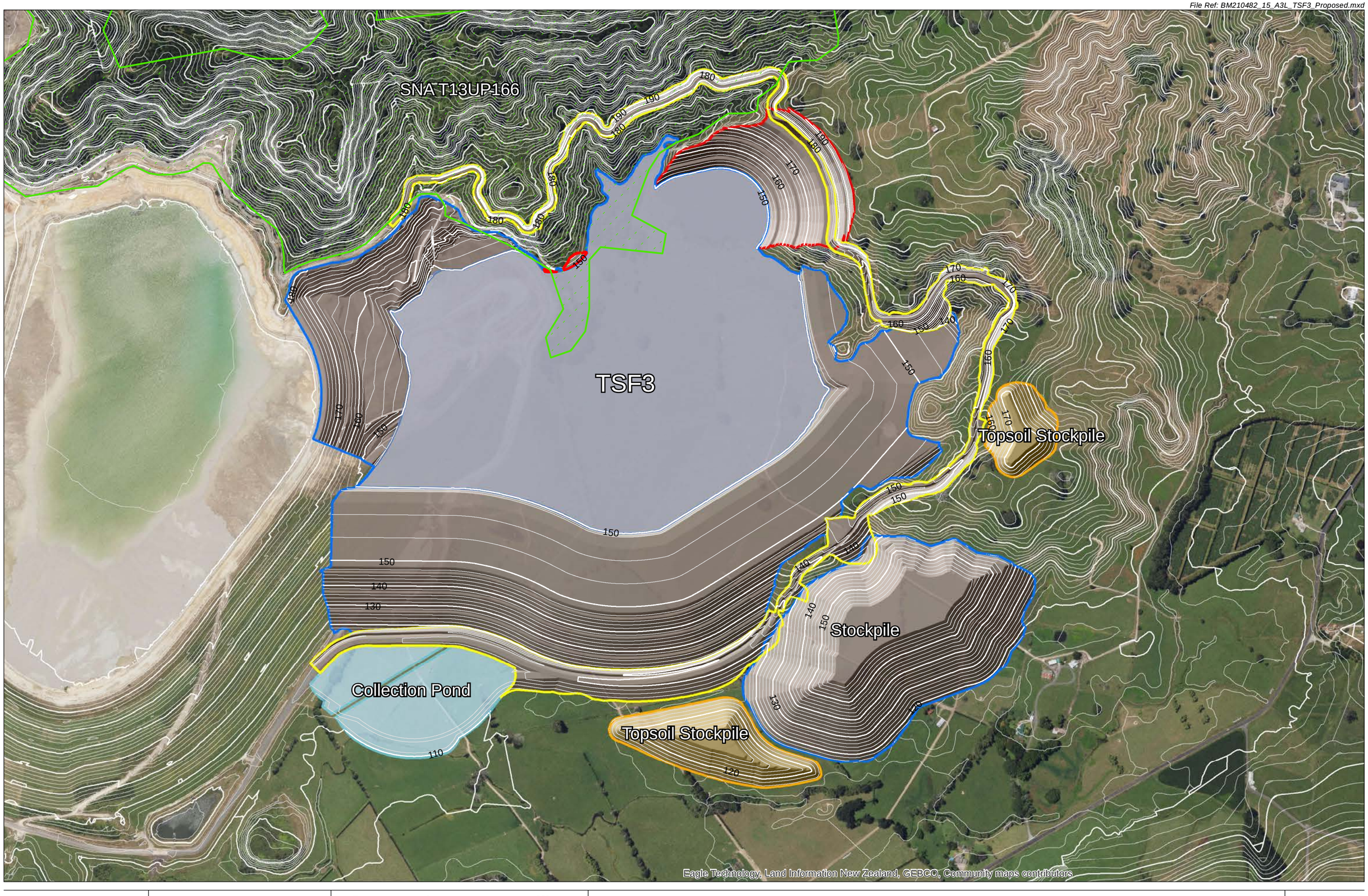
Tailings and Storage Facility 3 Site Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 18



Boffa Miskell

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0 200 m

1:6,000 @ A3

Data Sources:
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Significant Natural Area
- Borrow Areas
- Perimiter Road and Diversion Drain
- Proposed Fill - TSF3
- Temporary Stockpiles
- Existing/Proposed Contours (2m)

WAIHI NORTH

Proposed Tailings and Storage Facility 3

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 19

File Ref: BM210482_16_A3L_TSF_VisualAppraisal.mxd

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0 400 m

1:15,000 @ A3

Data Sources:
OGNZL Tenure, Waterways and Roads sourced from LNZ data service
Proposed Infrastructure sourced from Oceana Gold
LIDAR sourced from WRC
Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Proposed Fill
- Proposed Pit
- Potential Viewing Audience
- OGNZL Tenure
- Simulation Viewpoints

Zone of Theoretical Visibility

- High
- Low

Private viewpoints assessed

WAIHI NORTH

Tailings and Storage Facility 3 Visual Appraisal

Date: 14 February 2025 | Revision: 6

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: BMc | Checked: RGi

Figure 20

Portal
MATAURA STREAM
WUG Surface Facilities Area
Fig. 20A
OHINEMURI RIVER
SHWY 25
Martha
Union Hill
Portal
Gladstone
Northern Rock Stack
Winner Hill
Gilmour Lake
OHINEMURI RIVER
Black Hill
TSF2
TSF1A
TSF3
RUAHOREHORE STREAM
TRIG RD
Fig. 20B

PROPOSED PLANTING AREAS
- Proposed riparian planting
- Proposed terrestrial planting - native
- Proposed wetland planting
- Additional riparian link opportunity

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NORTH
0 1km
1:30,000 @ A3

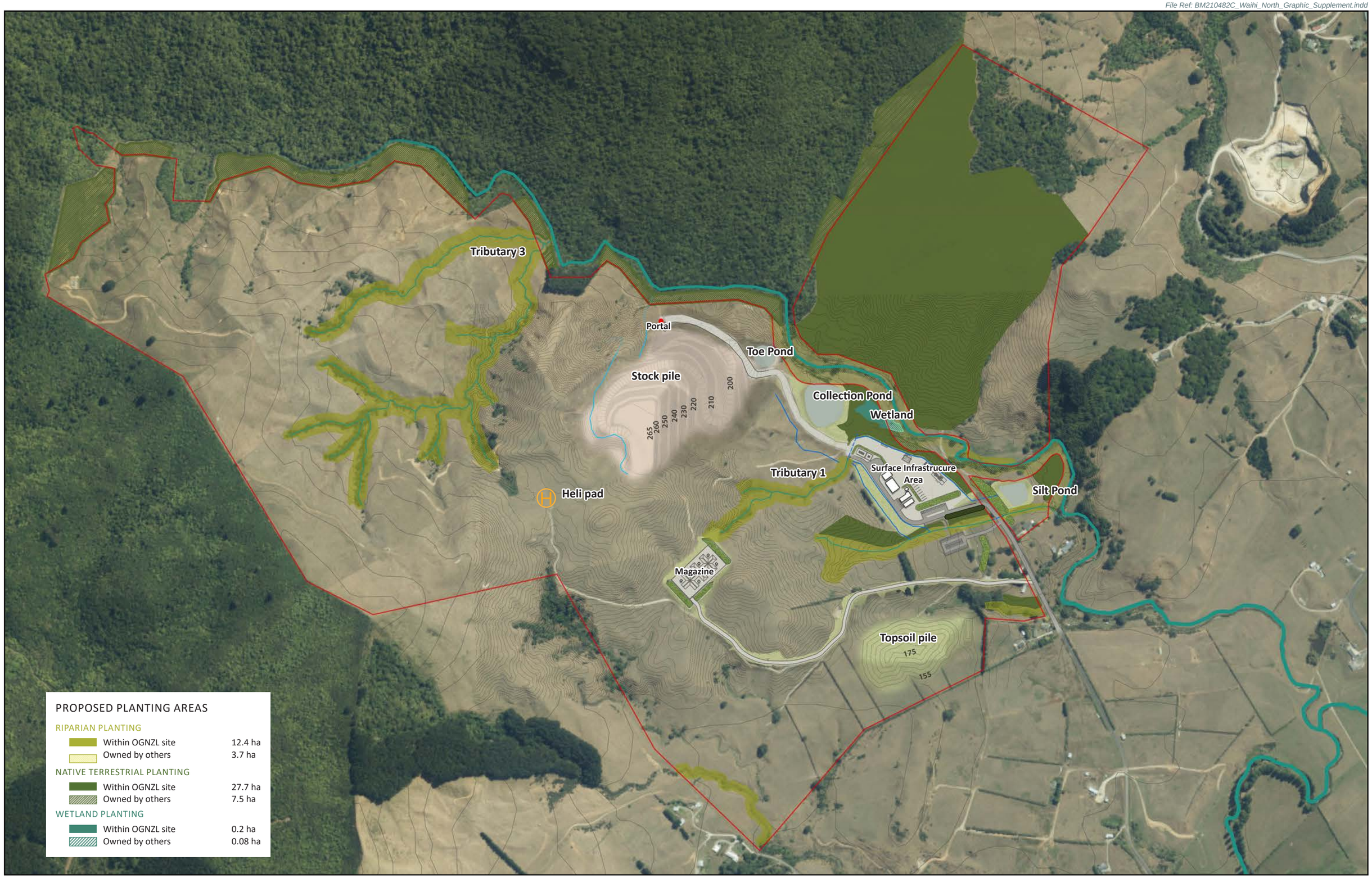
LEGEND
- OCG land boundary
- Existing streams
- Existing recreational trails

WAIHI NORTH

Proposed Integrated Mitigation

Date: 18 February 2025 | Revision: 5
Plan prepared for Oceana Gold by Boffa Miskell Limited
Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: EFa | Checked: RGi

Figure 21



PROPOSED PLANTING AREAS

RIPARIAN PLANTING	
Within OGNZL site	12.4 ha
Owned by others	3.7 ha
NATIVE TERRESTRIAL PLANTING	
Within OGNZL site	27.7 ha
Owned by others	7.5 ha
WETLAND PLANTING	
Within OGNZL site	0.2 ha
Owned by others	0.08 ha

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NORTH

0 250m

1:7,500 @ A3

LEGEND

- Willows Rd site
- Existing fences
- Existing streams
- Collection steam
- Culverts
- Proposed shelter belt
- Hydroseeded grass
- Bund

WAIHI NORTH

Proposed Integrated Mitigation - WUG Surface Facilities Area

Date: 18 February 2025 | Revision: 5

Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: EFa | Checked: RGi

Figure 21a

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NORTH

0 500m

1:15,000 @ A3

LEGEND

- OCG land boundary
- SNA boundary
- Existing streams
- Diversion stream (existing)
- Collection steam
- Proposed access road
- Existing recreational trails
- Screening planting retained during GOP operation
- MTB trail
- Hydro seeded grass

WAIHI NORTH

Proposed Integrated Mitigation - GOP, NRS and TSF3

Date: 25 February 2025 | Revision: 6

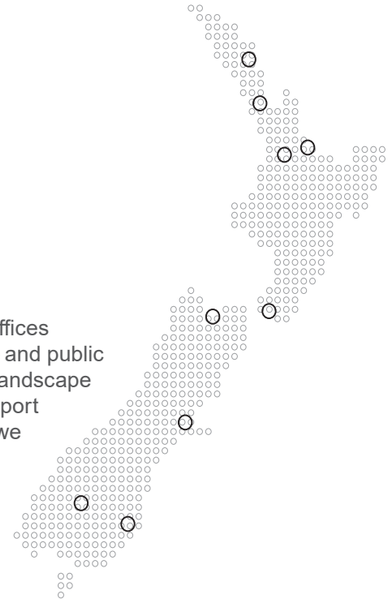
Plan prepared for Oceana Gold by Boffa Miskell Limited

Project Manager: rhys.girvan@boffamiskell.co.nz | Drawn: KBo | Checked: RGi

Figure 21b

Together. Shaping Better Places.

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



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