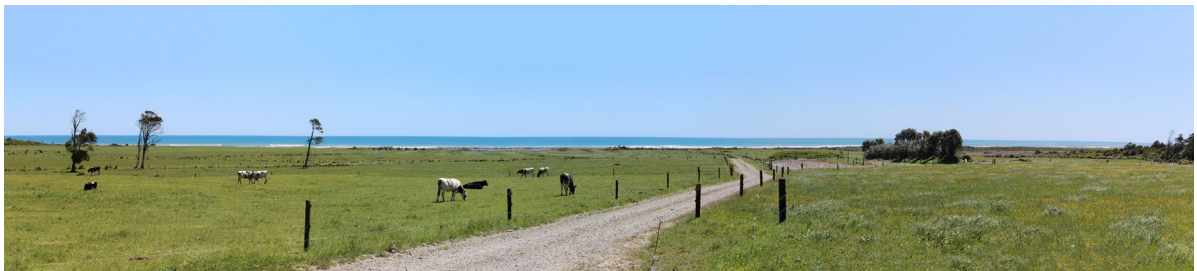




Barrytown Mineral Sands Mining Project

Landscape and Visual Assessment of Effects



By

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1 EXECUTIVE SUMMARY

TiGa Minerals and Metals Limited seeks to obtain consent to extract ilmenite, garnet, and the possible extractions of lesser concentrations of zircon and gold. These minerals are present within a 115-hectare site of privately owned farmland at 3261 Coast Road (SH6), Barrytown, in the Grey District on the West Coast of New Zealand.

The Landscape and Visual Assessment which follows, has determined the potential landscape and visual effects arising from the proposed mining extraction and processing activity. As part of this, the existing landscape character and amenity value of the location has been evaluated. The landscape and visual effects during and at the end of the mining operation have been assessed against this, as well as the relevant statutory provisions. Design principles have been incorporated by way of mitigation and rehabilitation to assist where values may be potentially affected.

Overall, when comparing the landscape effects of the mining activity compared to the existing farming operation, it is determined that the proposed changes are appropriate for the location. The Project is considered to have a *low level of effect on landscape character*, during the Project and a *very low level of effect on landscape character* in the longer term. This is primarily due to the short timeframe, the graduation of effects across the Project (largely dependent on when and where the mining activity is occurring), the mitigation proposed and the ability for rehabilitation to occur.

In terms of the visual effects generated by the Project on public and private receptors, these will primarily arise from the visibility of the mining pit, the movement of vehicles, and the addition of new structures and planting. In general, as the mining progresses through the different stages, the effect on visual receptors will vary, due to the distance between them and the activity. The Project will have a *low short-term effect for the users of SH6 and the Pakiroa Beach foreshore*. On private receptors, the visual effect varies, *from very low through to low to moderate*.

The establishment of mitigation planting will assist to screen mining activity from view, reducing the visual effect for all parties. The final rehabilitated site will appear similar to the current situation, (albeit with a lower landform) and with the added benefit of additional new bund, riparian and coastal planting.

2 INTRODUCTION

Glasson Huxtable has been engaged by TiGa Minerals and Metals Limited ('the applicant') to undertake a Landscape and Visual Assessment ('Assessment'). This assessment is based on the site at 3261 Coast Road (State Highway 6), Barrytown, in the Grey District on the West Coast of New Zealand. The applicant seeks to obtain resource consent to undertake mineral sands mining and processing to obtain ilmenite, garnet, and other minerals, and to construct the necessary infrastructure to do so. The proposed activity is approximately 63 hectares in size within an area of privately owned farmland known as the Nikau Deer Farm Limited.¹

This assessment looks to determine the potential landscape and visual effects arising from the extraction activity ('the Project'). As part of this, the existing landscape character and amenity value of the location has been evaluated. The landscape and visual effects during and at the end of the mining operation have then been assessed against this, as well as the relevant statutory provisions. Design principles have been incorporated by way of mitigation and rehabilitation to assist where values may be potentially affected.

This Landscape and Visual Assessment is one of a number of specialist assessments, which will determine the effects arising from the Project. It forms part of the overall application for Resource Consent from the *Grey District Council* and the *West Coast Regional Council*.

3 METHODOLOGY

This Landscape and Visual Assessment follows previous work done by Mr Christopher Glasson (Landscape Architect),² for the same site and applicant as part of a former Resource Consent application. As part of this work, Mr Glasson prepared a Landscape and Visual Assessment accompanied by a Graphic Supplement contributing to a Resource Consent Application. He also prepared and presented Landscape and Visual Evidence, and Supplementary Evidence for a hearing held in September 2021.³ This new assessment written by the author supersedes all previous work done to date and should be considered independently, as there are material differences between this proposal and the previous application.

¹ This area includes material to be used in final site contouring and rehabilitation. However, the actual area to be mined, referred to as the 'mining disturbance area' will be less than this amount due to mining feasibility constraints.

² Christopher Glasson of Glasson Huxtable, Fellow of the New Zealand Institute of Landscape Architects.

³ Further information pertaining to the previous landscape work is covered in Appendix 3.

3.1 Assessment Process

This assessment has been prepared in accordance with the concepts and principles outlined within *Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines*.⁴ A summary of the landscape and Visual Assessment Criteria is appended as Appendix 1. A Graphic Supplement appends this assessment as Appendix 2. A list of the background documents reviewed in preparing for this assessment is contained in Appendix 3.

Desktop Study

As part of preparing to write this assessment, site information was compiled through a desktop study. This included understanding and collating the following:

- Specific issues and feedback received from the Council and commissioners to date.
- Existing site aerials, topography, vegetation, neighbouring properties, and land uses.
- Site layout (including boundaries and mining areas), staging, and mining methodology.
- Design details and the location for the Processing Plant.
- Final levels and rehabilitation information.
- Relevant planning information and statutory provisions.

Site Visit

A site visit was conducted by Naomi Crawford of Glasson Huxtable on the 10th of November 2022 alongside Luke McNeish of Tai Poutini Resources and the owners of the site, George and Caryl Coates. The weather on the day was hot and sunny with clear visibility. The site visit assisted with understanding the site, its wider context and taking photographs. It also informed the assessment of landscape and visual effects and recommendations for mitigation.

3.2 Relevant Experience

As well as being an NZILA Registered Landscape Architect with more than ten years' experience, the author has undertaken relevant previous projects involving mining and quarrying activity throughout New Zealand. Her experience has included Aylesbury Quarry (Canterbury), Nine Mile Mineral Sands (Buller), Kakaramea Sand Extraction (Waikato), and Ngaruawahia Sand Extraction (Waikato). The author also has experience conducting Landscape and Visual Assessments for complex projects involving multi-disciplinary team approaches across Aotearoa.

⁴ *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022. These are the recently released national guidelines for preparing landscape assessment. For further information, refer to: <https://nzila.co.nz/about/te-tangi-a-te-manu>.

4 EXISTING LANDSCAPE CONTEXT

This chapter of the assessment includes two parts:

1. Identifying the relevant landscape context. It is important to understand the context of the Barrytown area to ensure that any modification can be integrated without unacceptable effect.
2. Describing, and interpreting the character and the values of the Project area – physical, associative, and perceptual. Analysing these attributes is pertinent to understanding the potential effects of the Project on these values.

Definition of the Term ‘Landscape’

Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines recommends the following definition for landscape: “Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meanings associated with it.”⁵ This definition focuses on landscape as the relationship between people and place. The following sections outline the relevant landscape context and describe the character of the Project area – at a Wider Context (West Coast), Intermediate Context (Barrytown) and for the site itself.

4.1 Wider Context – West Coast of the South Island of New Zealand

The site for this Project is located on the West Coast (*Te Tai Poutini*) of the South Island of New Zealand. It is one of the more remote areas of the country and stretches from Kahurangi Point in the north to Awarua Point in the south, a distance of 600 kilometres covering an area of 23,276km². To the west is the Tasman Sea and to the east are the Southern Alps. Much of the land is rugged, and the sea is rough, with the majority of the population residing on the coastal plains. The landscape is scenic, with wild coastlines, mountains, rivers, and a high proportion of native bush. The west coast is the only part of New Zealand where significant tracts of lowland forest remain. The region has high rainfall due to the prevailing north-westerly wind pattern and the location of the Southern Alps.

The region has an important history which is associated with prospecting materials and minerals. This includes the West Coast Gold Rush (between 1864 and 1867), the mining of coal (beginning in 1860’s, hitting a peak in the 1880’s and with several coal mines still in operation today) and the felling of native timber. These days, the region is also valued for its abundance of greenstone (pounamu), mining opportunities, tourism ventures, and small-scale farming. The main centres of

⁵ *Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines*, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022, refer to page 76, section 4.20.

Westport, Greymouth and Hokitika, are located on the coast and at river mouths.⁶ The establishment of businesses in these locations is due to the availability of flat land, ease of access and proximity to transportation (sea, river, and road).⁷ The flat coastal land is also more productive than the steep hill country and forested areas.

4.2 Intermediate Context – Barrytown and Surrounds

The intermediate context of the site is known as the ‘Barrytown Flats’ and is well defined on four sides. It includes the 17-kilometre stretch of coastline between Razorback Point in the north to Seventeen Mile Bluff in the south, and the skyline above the Paparoa Ranges in the east to the Pakiroa Beach coastline in the west. Here, the thin stretch of coastal plain reaches just 1.5 kilometres wide between the coast and the ranges. (Refer to the Graphic Supplement, Wider Context Plan).

Barrytown itself (originally known as Seventeen Mile Beach, Fosebery and Barryville) is situated on State Highway 6 (SH6), between the township of Greymouth (30 kilometres to the south) and the famous tourist attraction of Punakaiki, home of the ‘Pancake Rocks’ (16 kilometres to the north). The area has a rich Māori and European history. The local hapū is Ngāti Waewae of Ngāi Tahu who travelled through and occupied the Barrytown Flats. For them, this area was an important food source, and this is evident through the presence of historical middens with tuatua (clam) shells.

European history has included the clearing of native forest along the coastal plain, the mining of alluvial gold and pastoral farming. The gold rush in the 1860’s led to the dramatic growth of the area. This was based around Seventeen Mile Beach (Barrytown) and Canoe Creek (adjacent to the Project site). By 1879, approximately 2000 miners were living in the area. This culminated in a Catholic Church, a state school, two lodging houses, a blacksmith, a hotel and two general stores. However, this growth did not last, by 1901 the gold rush was over, and the population declined to just 64 residents (with an additional 60 residents in the surrounding area). This sparse and scattered population spread is similar to the present day.

⁶ These three main centres are home to the three local government districts: Buller, Grey, and Westland.

⁷ Many industries are well established, but there are also instances where activities have now closed down.

Landform

The landform of the Barrytown Flats is in distinct contrast to the areas along the coast, both north and south, where the coastal landscape is made up of bluffs, islets, deep ravines, vertical river cliffs and an often-pounding sea. Along the Barrytown Flats, which is wider and more open by comparison, the land is undulating, with several streams dividing the old dune ridges and the Barrytown Hills and Paparoa Ranges rising up behind. Canoe Creek, which has a large catchment in the hinterland, becomes a fast-flowing river emptying into the sea at the southern end of the site. Elsewhere, there are open water bodies which are remnant dredge ponds and wetlands. There are also springs for domestic and stock water supply. In places, the surface drainage of the coastal plains has been altered to improve farming production. SH6 traverses the length of the coastal plain.

Landcover

The landcover is made up of the high and steep forested hills of the Paparoa Ranges, incised by several rivers. In stark contrast to these hills, is the undulating green pasture of the coastal plain, with smaller pockets of vegetation and swampland. This coastal plain has largely been cleared of its indigenous coastal forest to make way for farming, mining, and timber harvesting, although some isolated remnant stands of bush remain.⁸

Notable landscape and conservation features on the coastal plain include:

- Canoe Creek Lagoon - within the site.
- Collins Creek - on the southern boundary of the site.
- Canoe Creek - close to the southern boundary of the site.
- Devery's Creek - immediately north of the site.
- Lawsons Creek - also called 'Waiwhero', north of Maher Swamp.
- Langridge Scenic Reserve - directly south of Canoe Creek.
- Nikau Scenic Reserve - north of the site.
- Te Ara Taiko Nature Reserve - north of the site.
- Waiwhero Scenic Reserve - north of the site.
- Maher Swamp - north of the site.

⁸ In pre-European times, the vegetation on the flats was dominated by podocarp forest, mainly kahikatea and rata, along with swamp vegetation. The latter is still in existence today due to the difficulty in draining the coastal plains.

Landuse

Over the years the landuse of the Barrytown Flats has been substantially modified by vegetation removal, farming, and gold mining. Today, pastoral farming (sheep, deer, beef, and dairy cattle), cropping and forestry occur on the coastal plain. This is supported by a scattering of farm dwellings on the flat land and houses or baches on the forested hillside. Human incursions onto the Barrytown coastal plain are well established, but relatively tentative on the hillside. The flanks of the hillside lead to Paparoa National Park. This 43,000-hectare park⁹ was created in 1987 in order to protect a limestone karst area as well as increase the tourism potential for the district. The recently opened Paparoa Track (a nationally recognised 'Great Walk') can be accessed from Barrytown Village.

Today Barrytown village has a number of residential dwellings, a general store/café, a Hotel, Settlers Hall, and a small school. It is known for its stone carving and knife making. Several roads in the vicinity come off SH6 and lead across to the coast, providing access to the beach.

4.3 The Project Site – 3261 Coast Road (SH6)

The Project site itself is located at 3261 Coast Road (SH6), Barrytown (with the geographic location coordinates 42°12'15.89"S and 171°19'46.25"E). It is currently being used to support dairy operations and graze cattle.¹⁰ It is bordered to the east by SH6 and to the west by Pakiroa Beach and Canoe Creek Lagoon. Private land holdings border the site immediately to the north and south.

Landform

The Project site is based on the coastal plain of the Barrytown Flats. It is surprisingly undulating with a change in height of approximately 23 metres from SH6 to the coast. This reflects fluctuations resulting from coastal and geological processes. There are remnant sand ridges from old shorelines running in a north to south direction, as well as man-made drainage channels and small farm ponds. Together these result in a site that has been highly modified with many humps and hollows.

There are a number of landscape features on the site (and nearby). They include the deeply incised Collins Creek running along the southern boundary of the site, the northern drain, and Devery's Creek. Collins Creek feeds slowly into Canoe Creek Lagoon at the bottom of the site,

⁹ In 2015 a further 3,580 hectares of land was added to the Paparoa National Park after the liquidation of Pike River Coal.

¹⁰ Owned and managed by George and Caryl Coates of Nikau Deer Farm Limited.

which contains large areas of peripheral marsh habitat. The flow of the creeks is impeded at the coast by a northward longshore drift. This causes the creeks to be displaced parallel to the coast, with creek mouths being closed by narrow shingle ridges for lengthy periods.

At times, the sea can breach the lagoon, leading to saltwater intrusions. These backwater bodies are therefore not permanent, with natural processes ongoing and constantly changing them. Also affecting the area from time to time, is the much larger and faster flowing Canoe Creek. This is located not far from the southern boundary of the site and Collins Creek. In flood events, Canoe Creek sometimes flows through from behind the beach. Drains and waterbodies bordering the site have not been fenced from stock, other than a small section of riparian planting alongside Collins Creek. As such, the banks of waterbodies are unstable and subject to erosion due to stock access and lack of vegetation.

Landcover

The landcover of the majority of the site is of a pastoral character with the addition of sedges following drainage channels. There are also isolated pockets of native vegetation. This includes flax (planted for a wind break), and four trees, which are of very low value due to being accessible to stock. The riparian margin on the southern boundary of the site alongside Collins Creek, contains species such as ferns, rata, kahikatea, ngaio, harakeke, kiekie, mingimingi and tī kouka. Canoe Creek Lagoon has species such as flax, sedge and rush adorning its edges. The grazed area behind the lagoon supports rough exotic pasture species such as creeping bent, Yorkshire fog, buttercup, swamp kiokio, carex, oioi, mākaka and tī kouka. The vegetation north-east of the lagoon includes gorse, mahoe, bracken, pohuehue, tree fern and blackberry. The shoreline itself is sparsely vegetated and includes oioi, shore bindweed, muehlenbeckia, flax and raupo.

Landuse

Over the years there has been significant modification to the site as a result of vegetation removal, recontouring for better drainage, farming practices and intensive cattle grazing. Today, cattle generally have access to most of the site, with little revegetation occurring, apart from around waterbodies. Internal gravel tracks provide vehicle access to the furthest extents of the farm. There is a farmhouse and outbuildings located about halfway along the eastern site boundary adjoining SH6 on a separate parcel of land.

4.4 Neighbouring Properties

SH6 links the various coastal settlements of the area together. Properties neighbouring the Project site are generally nestled into the surrounding vegetation.¹¹ On the seaward side of SH6, neighbouring properties include:

- 3261 Coast Road (SH6), Lot 2 DP 412689 (The farmhouse bordering the application site) – B O’Neil and J Costello
- 3323 Coast Road (SH6), Lot 2 DP 3375 (North of the site, furthest away) – S Langridge and R Wildbore.
- 3323 Coast Road (SH6), Lot 3 DP 3375 (North of the site, closest) – R Langridge and D Van den berg.
- 3195 Coast Road (SH6), Lot 1 DP 3574 (Between Collins and Canoe Creeks) – G and G Langridge.

On the inland side of SH6, neighbouring properties on the elevated flank of the hillside include:

- 3316 Coast Road (SH6), Lot 2 DP 3403 (North of the site) – R Mirza and S Hillerby
- Rural Section 6674 (Adjacent to the site) - C Cowan.
- 3172 Coast Road (SH6), RS 5327 (By Canoe Creek) – M Morgan and M Radford.

All properties are orientated towards the coast, with views seen as viewshafts and sometimes limited by the surrounding vegetation. (For further information refer to Section 10.3: Private Viewpoints from Neighbouring Residential Properties).

¹¹ Many property owners own more than one parcel of land. The parcel numbers given in the description above relate to the dwelling associated with each address.

5 **PROPOSAL**

5.1 **Background to the Project**

Mining activity has occurred on the West Coast of the South Island of New Zealand (and in other regions such as Central Otago) since early European settlement. Although new mines have been established in recent years, a number of these are limited in size, depth and/or duration, restricting the amount of material which is available for extraction. Records show that mining activity has been proposed for the Project site at 3261 Coast Road (SH6) in Barrytown for a number of years. A mining proposal for the whole of the Barrytown Flats was proposed in the early 1990's. The current Project revives the possibility of mining part of the area.

The Barrytown Flats (primarily the land between SH6 and the coast) is known to contain mineral concentrations of ilmenite, garnet, gold, and other associated heavy minerals. These concentrations are a result of longshore drift and subsequent wave action, which has transported minerals inland. The sandy barriers along the coast have resulted in mineral deposits accumulating into a series of concentrated strandlines along and behind the beachfront.

5.2 **Proposed Operations**

The applicant, TiGa Minerals and Metals Limited, is applying for consent to undertake extraction activity at 3261 Coast Road (SH6). Work will include mineral sands mining and processing to obtain ilmenite, garnet, and other minerals, alongside the necessary infrastructure to do so. The application area is approximately 63 hectares in size, however, the actual area to be mined, (referred to as the 'mining disturbance area') will be smaller due to mining feasibility constraints.

The consent application proposes a 12-year Project duration, with extraction activity anticipated for 5 to 7 years.¹² Over this time, there will be approximately 4,800,000 tonnes of sand ore recovered from within the mining area, with a yearly extraction rate of 1,100,000 tonnes. Approximately 250,000 tonnes of this is anticipated to be Heavy Mineral Concentrate (HMC).

¹² This calculation is based on an extraction rate of 350 tonnes per hour. The remaining years are set aside to cover contingencies and to provide operational certainty given the level of investment.

5.3 Project Staging

The mining methodology for this Project will be similar in nature to a strip-mining process which is commonly employed in coal mines, where the mining follows a seam of coal. The strip-mining process is suitable for fairly flat bedded deposits. After extraction has taken place, a heavy mineral concentrate (HMC) will be produced and trucked off site via SH6 towards either Westport or Greymouth. The Project will include preparation, mining, processing, backfilling, and rehabilitation (all outlined in further detail below).

Preparation (Pre-Mining)

Pre-mining preparation is anticipated to take 8 months and will include:

1. Constructing a bund along SH6 (1 month). This bund will be created using an excavator to pull material up into a bund formation. It will then be contoured and planted. The bund will provide visual screening for the users of SH6, as well as help to accelerate the rate of planted screening on top. The bund will be 1.8 metres tall and 13 metres wide and follow the contour of the land. It will be located from the north-eastern corner of the site and head south, running parallel to SH6 for 300 metres. The new bund will remain as a permanent feature on site even once the Project is complete.
2. Installing an electric fence along the eastern limit of the planned working area, as well as removing all existing internal fences within the mining disturbance area.
3. Excavating and installing the central drain running diagonally across the site (1 week).
4. Constructing the water facilities (3 months total):
 - a. Excavating the two Mine Water Facility (MWF) ponds to the west of the Processing Plant with an excavator and trucks. Topsoil and waste will be carted to the southern end of the eastern bund (stockpile bund)¹³ (approximately 135,000m³ of material, 125 metres wide, 280 metres long and 4.5 metres high).
 - b. Excavating the two Clean Water Facility (CWF) ponds in the north-western corner of the site with an excavator and trucks. These CWF ponds will be used for water management during mining and upon completion of the Project converted to wetlands. Topsoil and waste will be carted to the northern end of the eastern bund

¹³ The stockpile bund is also referred to as the 'eastern bund' by other disciplines. For the purpose of this assessment there is the 'visual bund' near SH6, and the 'stockpile bund' running across the centre of the site.

(stockpile bund) (approximately 150,000m³ of material, 125 metres wide, 360 metres long and 4.5 metres high).

- c. Carting by truck all mineralised sand from both ponds' excavation to the north ore stockpile, located inside (to the west) of the stockpile bund.

As mentioned above, topsoil and overburden material from the construction of the ponds will be used to create a large stockpile bund in the centre of the site.¹⁴ This bund will run from north to south, parallel to SH6 (offset by approximately 360 metres). There will be a small, diagonal gap in the bund to allow the central drain to flow through. A large proportion of the bund will be hydroseeded in grass to reduce its susceptibility to sediment run-off. However, the southern end will be planted to assist with visually softening the Processing Plant for neighbouring properties and users of SH6.

5. Clearing the area for the Processing Plant (Wet Concentrator Plant) and associated facilities to be built, plus the preparing for the new access road. Topsoil and excess waste will be carted to the south end of the stockpile bund (2 months).
6. Constructing the access road from SH6 to the plant, including installation of the culvert over Collins Creek (1 month).
7. Clearing the initial mining area and setting up the full fleet of mining machinery and vehicles. Topsoil and waste will be carted to southern end of stockpile bund and ore will be stockpiled. (2 months duration). Activity will involve approximately 180,000m³ of material and be undertaken during the final 2 months of the construction of the plant.
 - a. Approximately 150 metres of the mining void (starter pit) will be excavated as shown in the Mining Staging Plan (refer to the Graphic Supplement). This will allow for tailings to be deposited into the mining void once mining commences.
 - b. Approximately 150 metres in the three sequences to the right of the mining sequence diagram will be in various stages of excavation, with one pre-stripped for mining commencement.

¹⁴ Any additional material excavated on site that does not go into the two bunds will be temporarily stockpiled on the western side of the stockpile bund as part of the ore stockpile.

8. Constructing the Processing Plant (Wet Concentrator Plant) and associated facilities and hardstand (6 months).¹⁵
9. Concurrently establishing mitigation on site using seed collected and propagated from the local area. Planting will occur in the following locations on site:¹⁶
 - Adjacent to Collins Creek.
 - Along the southern side of the northern drain.
 - Along the top and eastern side of the visual bund parallel to SH6.
 - Along the top and outer edge of the southern end of the stockpile bund.
 - Along the south-west coastal edge.
 - Around the Canoe Creek Lagoon.
 - On the north-western edge of the CWF.
 - Along the north-eastern boundary.

Mining and Processing

A mining disturbance boundary is set 20 metres off the northern and southern property boundaries and Collins Creek, avoiding mining of the stream and lagoon areas.¹⁷ In addition, there is a 20-metre offset from the lagoon and a 200-metre offset from SH6.¹⁸ The mining operation will be completed in stages, moving across the site in strips, known as panels. Mining activity will start in the southwest of the site (Panel 1) and progressively move eastwards from the coast towards SH6.¹⁹ Once a panel is complete, mining activity will resume one panel to the north, moving from west to east again. Working in this sequence will allow the mining team to work uphill, allowing water to drain towards the coast. It will also minimise the pumping distances between the mining unit and the Processing Plant.

Each panel will be approximately 100 metres wide and 300 metres long (3 hectares in size), (refer to the Mining Staging Plan in the Graphic Supplement for more details).²⁰ Within this,

¹⁵ For a full list of the facilities refer to Section 5.4: Further Details on the Proposal.

¹⁶ Refer to 'Section 11.3: Recommendations - Before Mining Commences' for a detailed description of the landscape and visual mitigation measures to be undertaken as part of pre-mining site establishment. The Landscape Mitigation Plan and Plant Species and Growth Rates in the Graphic Supplement also provide more information on planting.

¹⁷ Roads or buildings can be located outside of the mining disturbance area, but mining activity must stay inside. There is a zero metre stand off so mining can occur right up to the mining disturbance area boundary.

¹⁸ The 200-metre offset boundary from SH6 covers an area of approximately 19 hectares. TiGA considers it unlikely there is suitable material to mine in this location due to the existing topography. As such, the economic mining limit has been determined as the area to the west of the stockpile bund.

¹⁹ With the exception of Panel 9, which is located in the southwestern most extent of mining.

²⁰ A possible exception to this proposed staging is the area near the lagoon, where depending on the season, mining might occur out of sequence to minimise the effects on birds.

there will be 0.5 hectares of stripping occurring ahead of the 2.0 hectare mine pit and 0.5 hectares of active rehabilitation occurring behind. The Processing Plant area will be 2.5 hectares in area including the mine access road. Therefore, the total disturbed area of the mine pit is approximately 5.5 hectares in area.

Note: Currently not included in the above calculation is the MWF ponds adjacent to the processing plant (1 hectare) and the CWF ponds in the northwest corner of the site (1.4 hectares). As the northwest CWF ponds and the access road will remain post mining, they have been removed from the disturbed area calculation above. As such, the total disturbed area of the Project will include:

- 3.0 hectares at the mining pit.
 - 2.0 hectares at the Processing Plant
 - 1.0 hectare for the MWF ponds.
 - 2.0 hectares for a contingency area for progressive rehabilitation following mining.²¹
- = 8.0 hectares total.

Mining will progress based on the following sequence:

1. Removing topsoil and overburden at approximately 0.5 hectares at a time. This will be preserved (stockpiled) for rehabilitation using an 85-tonne excavator, and 40 tonne articulated trucks. Once in mining sequence, topsoil will be removed ahead of mining and placed straight onto rehabilitated ground behind the mining pit.
2. Mining and feeding ore into the in-pit mining field unit. Approximately 1 hectare of ore exposed as bench where the mining field unit and desliming unit are located on skids. Extraction of the ore is undertaken with the use of an 85-tonne excavator, which will place the ore on the bench. Ore is then feed into the mining field unit with the use of a front-end loader. Rate of mining advance will be approximately 5 metres per day (35 metres per week).
3. Undertaking mining during daylight hours only, in order to provide enough material to enable 24-hour operation of the Processing Plant. Extraction activities will take place

²¹ The 2.0-hectare contingency for progressive rehabilitation is to allow for weather and seasonal impacts. In winter grass may be slower to establish. At a rate of advance of 35 metres per week on average, 2.0 hectares will provide approximately 6 weeks contingency.

seven days per week during the hours of 0700 and 2200.²² Extraction will occur until base gravel is reached, where it is apparent there are no further minerals to be removed. The maximum mining depth will be 9 metres from ground level.

4. Processing the excavated material at the Processing Plant to extract the HMC. The HMC produced from this plant will then be pumped to a dry storage area ready for trucking off site. Un-mineralised sand, clay slimes < 53micron and gravel and rock greater than 2mm will be returned to the excavated area, with a cyclone used to remove the water from them before they are discharged to the mining void.
5. Receiving tailings back to the mining void, which will be progressively filled as the mine pit progresses. The tailings will be allowed to naturally spread out. The cyclone will be moved as required to distribute the tailings as necessary.
6. Levelling and contouring tailings with the use of excavators and bulldozers ready to receive the pre stripped overburden and soil. The mining void will be progressively rehabilitated as the mining activity advances (refer to the Rehabilitation Management Plan which is a separate document).
7. Sowing vegetative cover (grass) over the progressively rehabilitated areas. The newly sown area will be removed from the 'disturbed area' once 80% vegetative cover is achieved. Each mining panel will take between 4 and 6 months to be mined and rehabilitated (dependant on the volume of ore and weather conditions during rehabilitation).
8. Dry mining panels 9, 10 and the stockpiled ore, with material trucked to the mining field unit which will be located in panels 8 and 10. Reject material from the mining field unit will be directed to into panel 8 and 10 for use in rehabilitation along with tailings from the processing plant.
9. Topsoil and overburden will be recovered from the stockpile bund and used in the rehabilitation and final contour of panels 8 , 9 and 10.

²² Mining activities will occur between 0630 and 0930 during the period of 1st of November to the 31st of January to avoid night-time mining during the peak fledgling season for Taiko.

Final Rehabilitation (Post-Mining)

Most of the final rehabilitation work will be undertaken concurrently. It will be completed within approximately 12 months and involve:²³

1. Using topsoil and waste from the eastern stockpile bund to fill in the water treatment ponds, leaving those required as part of the final landform. (2 Months) Ponds 1 and 2 will be backfilled, and Ponds 3 and 4 will be converted to wetlands. As part of this, ponds 3 and 4 may utilise some 'fill' in order to create an island in the centre for nesting birds.
2. Reworking the Clean Water Facility into a wetland design, as detailed in the ecology *Wetland Coastal Riparian Planting Plan (WCRPP)*. (1 Month)
3. Deconstructing and removing the Processing Plant and associated facilities as agreed with the landowner. (2 months) Only a shorter part of the Processing Plant, the hardstand around it, and the new access road will be retained long term for farming purposes.²⁴
4. Progressively re-contouring the property above the eastern stockpile bund area to the edge of the mining disturbance area. This will involve blending the unmined area with the mined area in 3-hectare strips to achieve the desired end landform, slope, and drainage. Utilising material from the unmined area will ensure that the final landform marries in with the existing landform and is of a sufficient height above the water table. Approximately 20 hectares will be recontoured, which will take 8-12 Months. This activity will occur progressively in order to ensure no more than 8 hectares is disturbed at any one time.

It is anticipated that the final landform will be gently contoured with mounds and hollows to promote good drainage. It will largely resemble the previous landform, falling towards the coast, albeit at a lower final elevation and with more gently undulating humps and hollows due to the extraction activities having taken place.

²³ Please refer to the Rehabilitation Management Plan (a separate document) for more information.

²⁴ For more information about what is short term and what is permanent, refer to Section 11:Recommendations.

5. Reinstating fences, internal farm roads and culverts to prepare for grazing to occur once again. Once the final levels are confirmed (in conjunction with the site owner), approximately 100-150mm of topsoil will be added as a growing medium for pastoral grass. This will be hydroseeded as soon as practicable to minimise erosion. Undertaken in conjunction with the final landform contouring mentioned above. (1-2 Months)

5.4 Further Details on the Proposal

Site Access

The existing site access will be maintained for farming operations. New access to the site for mining purposes will be constructed off SH6 near the south-eastern corner of the site. It will include a gravel access road with a crossing over Collins Creek, and a parking bay, leading to the Processing Plant itself.²⁵ It will have a 4.0-metre lane width and 1.5-metre-wide shoulders with 1:3 sloped batters. The new mine access road will be a permanent new feature, remaining long term to provide farm access.

Vehicle Movement

It is predicted that there will be an average of 50 heavy vehicle movements per day (25 trucks laden with HMC) travelling toward either Westport or Greymouth between the hours of 0500 and 2200.²⁶ (Refer to the Transport Plan which is a separate document). On site itself, carparking will be provided for approximately 50 vehicles. Light vehicle movements to and from the site for workers will not exceed 160 movements per day. Machinery proposed to be used on site includes three dozers, one grader, three front end loaders, four integrated tool carriers, three 6WD trucks and two excavators.

The Processing Plant Area

The Processing Plant, associated facilities and access road will be made up of the following components:

- A WCP Processing Building: 73 x 25 metres (1825m²), 15 metres high.
- A HMC Stockpile Building adjoining the above: 45 x 22 metres (990m²), 10 metres high.
- Two staff amenities buildings: 6 x 3 metres (35m²).
- Two showers and toilets: 3.6 x 3 metres (12.6m² total).

²⁵ This new access road is located inside of the existing farm access track.

²⁶ Any vehicle movements to the north will not occur 30 minutes after sunset to 30 minutes before sunrise to avoid effects on the Taiko. There will be no more than 3 trucks per hour prior to 7am.

- Site offices: 6 x 3 metres (18m²).
- Stores: 12 x 3 metres (36m²).
- Two Thickeners Overflow Tanks, diameter of 18 metres, height of 5.3 metres (508m² total).
- A Fire Water Tank, diameter of 10.5 metres, height of 6.5 metres (86m²).
- Maintenance shelter (200m²).
- A 40,000-litre diesel fuel storage tank.

The structures and buildings mentioned above will cover an area of 3,720m², however consent is sought for up to 3,800m².²⁷ Buildings will be clustered together in one location, with compacted hard fill surface between them. Facilities will be housed in farm implement type buildings, a specific fit for purpose processing shed, shipping containers connected by a curved shelter, and storage tanks. All buildings will be painted in a recessive colour such as 'Colorcote Mudstone' to reduce the visual effects generated.

The largest building on site is the Processing Plant, which is also known as Wet Concentrator Plant (WCP). (Refer to the Graphic Supplement illustrating the proposed building layout and elevation). It is an 'L' shaped building, constructed from coloursteel, located halfway along the southern boundary of the site. The longer side of the building will measure 72 x 24 metres and the shorter side will measure 45 x 22 metres, with a total footprint of 2783m². The plant will be fully enclosed and have roller doors.

The corner of the 'L' (approximately 25 x 25 metres) will have a roof with a height of 15 metres to the top of the gable and 12.75 metres to the top of the eaves.²⁸ The two shorter sides of the 'L' will be 10 metres high to the top of the gable and 7.75 metres high to the top of the eaves. The pitch of the roof throughout will be 8 degrees.

A portion of the Processing Plant building will remain long term and be converted to farming use. All other buildings and facilities near the Processing Plant will be decommissioned and removed once mining activity is complete.

²⁷ This additional area will enable small additional portable buildings (no more than 3.5 metres in height) to be located on height if the operational need arises.

²⁸ Note, the 15 metre height of the Processing Plant is over the permitted height limit in the *Grey District Plan*.

Fencing

As well as the safety fencing previously mentioned, there will be new fencing along Collins Creek and the northern drain to comply with the future fencing legislation requirements.²⁹ These new fences will be retained at the end of mining activity for continued compliance.

Lighting

Lighting on site has been specifically designed to reduce the effect of the Project on the Taiko. All lighting will not exceed 2.0 lux light spill (horizontal and vertical) onto any adjoining property. It will also have blue light filtered or reduced to operate primarily within the yellow-orange spectrum of the light pollution guidelines, be pointed downwards, and shielded to avoid light spill. It will only illuminate the object or area intended and be mounted as close to the ground as possible. External lighting will be minimised on the seaward side of the buildings to minimise light spill towards the coast.

Water Management

The Processing Plant will require an initial water take from Canoe Creek which will be located adjacent to the existing farm access track near the coast (or via a direct surface water take) to fill up the Processing Plant circuit including the fire water tank. A water take may be required sporadically during mining to top up the water circuit, and to augment flows in Collins Creek and the Northern Drain.

Management Plans

The site will be operated in accordance with the following management plans in relation to landscape and visual effects:

- Landscape Mitigation Plans and Schedule of Species (refer to the Graphic Supplement).
- Erosion and Sediment Control Plan.
- Water Management Plan.
- Wetland Construction and Riparian Planting Plan.
- Rehabilitation Plan.

²⁹ This is part of the *Resource Management (Stock Exclusion) Regulations*, which will apply to dairy support from 2025.

6 PERMITTED BASELINE

6.1 **Activities Permitted on the Site 'As of Right'**

There are a wide range of activities permitted on the site 'as of right' under the *West Coast Land and Water Regional Plan* and the *Grey District Plan*. These activities (listed below) provide an indication of the acceptable level of effects permitted in this rural environment. They include:

- Humping and hollowing, flipping or 'v blading' of land outside of riparian margins up to 5 hectares per annum – including the visual effect arising from exposed land.³⁰
- Earthworks - including the ability to extract material at a rate of 5,000m³ per hectare per year, which could result in ground level reduction.
- Dairying – including activity such as tanker movements and night-time lighting.
- Large scale rural buildings covering up to 10% of the site area – including structures such as glasshouses or milking sheds.
- The establishment of shelterbelts and/or woodlots – for example the applicant could lawfully establish planting or a forestry block (which would be an option for revenue generation from the Emissions Trading Scheme), which has the potential to block neighbouring views.

6.2 **Previous Certificate of Compliance for New Buildings**

In August 2022 a *Certificate of Compliance (COC)*³¹ was issued for non-mining related activity at the same address as the Project site. This certificate allows for the construction of two farm buildings (for animal food storage, fertiliser, and farm equipment), as a permitted activity that can be carried out without resource consent. The COC proposed that, buildings shall be located within the application area and compliant with the necessary setbacks from SH6, site boundaries, Collins Creek, and the mean high-water springs. Access is to be from the existing entranceway off SH6. In terms of scale, the farm buildings under the COC are: (a) 30 x 20 metres (600m²) and (b) 25 x 30 metres (700m²). They are to be constructed from Coloursteel cladding and painted in a recessive colour. They are 9.5 metres tall, of an enclosed style, with steel portal frames, and with access via large roller doors. This description describes two large farm structures which are allowed on the site as of right. They are of a slightly smaller scale but similar to the proposed Processing Plant. This contributes to understanding the activities permitted on site.

³⁰ Keeping in mind, that humping and hollowing activity usually would occur to a depth of 1-2 metres, whereas mining activity goes to a greater depth (in this case down to 9 metres).

³¹ A *Certificate of Compliance*, Section 139 (1) was issued by *Grey District Council* on the 15th of August 2022 for non-mining related activity.

6.3 Proposed Te Tai o Poutini Plan

The Proposed *Te Tai o Poutini Plan (TTPP)* is the proposed combined District Plan for the Buller, Grey, and Westland District Councils. Once adopted, it will replace the individual District Plans. (Refer to Section 7.5 for further discussion). Although the TTPP is not yet operational, it is worth noting the zoning implications. Within the TTPP, the site is listed as being within a Mineral Extraction Zone (MEZ). This is independent of this application and means that mineral prospecting, exploration, and ancillary activities are a controlled activity; and that consent must be granted.

6.4 Permitted Baseline Conclusion

In evaluating the permitted baseline content in the section above, it is feasible to rely on the outcomes to inform possible effects. However, in the context of this assessment, the author has been asked to conservatively consider effects independent of the permitted baseline, which has been done.

7 STATUTORY PROVISIONS

This section of the assessment reviews and summarises the statutory provisions relevant to landscape matters. The purpose of reviewing the provisions is to help frame the assessment. It is not to undertake a full planning assessment of the Project against the provisions.³² The identified statutory provisions include the:

- *Resource Management Act (RMA), 1991.*
- *New Zealand Coastal Policy Statement (NZCPS), 2010.*
- *The West Coast Regional Policy Statement (WCRPS), 2020.*
- *Grey District Plan (GDP), 2005 (Updated 2014).*
- *Te Tai o Poutini (TTPP), a proposed plan notified on the 14th of July 2022.*

7.1 Resource Management Act

This assessment responds to the *Resource Management Act (RMA)*, which provides a statutory framework for managing the effects of activities on the environment and is therefore a critical component to any development. Section 6 and 7 of the RMA, and its elaboration in the lower order statutory documents, provides the framework for most landscape assessments, including this one. The concept of ‘landscape’ outlined within *Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines* mirrors the approach undertaken in the RMA, including the definitions for both ‘environment’ and ‘amenity values.’

Section 6 - Matters of National Importance:

“...managing the use, development, and protection of natural and physical resources”

including:

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

³² As recommended by the *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* on page 237.

Natural Character

Section 6(a) refers to the preservation and protection of natural character. This is not the same as natural features and landscapes or amenity values (which are assessed later in this assessment). Natural character is not defined under the RMA, but *the New Zealand Coastal Policy Statement (NZCPS)* makes suggestions on elements that contribute to it. This includes significant indigenous flora and fauna, landscapes, seascapes, spiritual, historical, and cultural places, processes, and patterns (e.g., movement of water and sediment), natural landforms (e.g., wetlands and freshwater springs), the darkness of the night sky and experiential attributes (e.g., the sound of the sea).

Some of the above elements exist on the coastline adjacent to the site. This assessment requires assessing the effect that the proposed mining activity could have on the natural character of the coastal area, including the lagoon, creeks, and their margins.³³ For this particular site on the Barrytown Flats, there is the need to assess the effect of the Project on both the natural character of the land and the coastline.

The site is dominated by its coastal character, openness, expansiveness, pastoral flats, humps and hollows, lagoon, streams, a riparian strip, isolated stands of vegetation and the Paparoa Ranges. Natural character occurs in greater to lesser degrees in a continuum from the largely untouched landform and vegetation of the Paparoa National Park and the coastline, through to the modified and open pastoral plain and the settlement of Barrytown. The former generally exhibits a high value of naturalness through the forested and unmodified hillslopes, and the land and water interface of the beach and wave action. Whereas the latter, has a downgraded natural character due to the removal of vegetation, land disturbance to improve drainage, and the scattering of houses throughout the landscape. There are, however, pockets of greater 'naturalness', with native vegetation, lagoons, creeks, and rocky outcrops.

The built environment consists of SH6 and Burke or Cargill Roads providing access to the coastline. There are also tracks (to the Paparoa Ranges), powerlines, farm fences, isolated farm buildings and the small village of Barrytown. All of these objects are small structures in a large-scale landscape dominated by the natural elements of the sea and the steep hills of the ranges.

³³ The natural character of the site is further described under Section 4: Existing Landscape Context.

During mining activity, a 20-metre buffer between the active mining disturbance area and natural features such as Collins Creek and Canoe Creek Lagoon will offer protection. Likewise, other mitigation measures such as planting and fencing of riparian, coastal and wetland areas and progressive site rehabilitation will assist to restore these areas. Once mining activity is complete, the site will be returned to pastoral grazing with addition of further riparian vegetation along the stream, the northern drain, the coastal edge, around the lagoon, and adjacent to SH6. There will not be any adverse long-term effects to the natural features or landscape of the coastal plain, but there will be long-term benefits arising from additional new planting across the site (Refer to Section 11: Recommendations for further information on Rehabilitation).

Outstanding Natural Features and Landscapes

Section 6(b) of the RMA refers to the protection of Outstanding Natural Landscapes (ONL's) and Outstanding Natural Feature (ONF's). Each of these are determined through an assessment process that identifies whether the landscape or feature is "*conspicuous, eminent, especially because of excellence or remarkable.*"^{34,35} The courts have recognised that a spectrum of naturalness exists from pristine natural landscapes through to cityscapes, within which a 'cultured' landscape may still be an ONL. In general, such landscapes should be so obvious that no further need for expert analysis is required, aside from determining where the landscape begins and ends.³⁶ The scale of an ONL should also be identified within the plan of the decision-making body.

The Environment Court has defined relevant criteria for assessing outstanding landscapes as being: "*The natural science factors – the geology, topography, ecological and dynamic components of the landscape; its aesthetic values including memorability and naturalness; its expressiveness (legibility); how obviously the landscape demonstrates the formative processes leading to it; transient values; occasional presence of wildlife; or its values at certain times of the day or of the year; whether the values are shared and recognised; its value to tangata whenua and its historic associations.*"³⁷ These criteria clearly show that landscape is not restricted to the visual and is not merely the picturesque and scenic.

³⁴ As defined by: C180/99, Wakatipu Environmental Society Inc v Queenstown Lakes District Council, paragraph 82.

³⁵ Outstanding Natural Features and Landscapes are also referred to in *Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines* on pages 187-189.

³⁶ As defined by: C180/99, Wakatipu Environmental Society Inc v Queenstown Lakes District Council, paragraph 99.

³⁷ As defined by: C180/99, Wakatipu Environmental Society Inc v Queenstown Lakes District Council,

Under the *Grey District Planning Maps*, the site is not listed as having either ONL or ONF values, likely due to the previous felling of vegetation, the partially modified landform, and existing farm tracks. However, beyond the site, the west facing slopes of the Barrytown Hills and the Paparoa Ranges (between Razorback Point and Seventeen Mile Flat) to the east of SH6 are considered to be an ONL. This finding is also supported by a previously commissioned landscape study (the '*Brown West Coast Landscape Study, 2013*')³⁸ which also identifies the hillside area as having ONL values.

As the landscape study is non-ratified, it has little weighting. Nevertheless, it is considered that any adverse effect of the mining activity on the 'outstanding-ness' of the Barrytown Hills and Paparoa Ranges will be very limited. This is due to

- The separation distance of the mining activity and the hillside.
- SH6 and vehicle movements dividing the plains from the ranges.
- The fact that there will only be up to 8.0 hectares of active mining disturbance at any one time.
- The existing farming activity on the coastal plain.
- The hillside ranges largely being considered a separate landscape entity.

Section 7 – Other Matters:

7. "...managing the use, development, and protection of natural and physical resources" including:

c) "The maintenance and enhancement of amenity values."

f) "Maintenance and enhancement of the quality of the environment."

Amenity Values

Section 7 requires decision makers to have regards to "*amenity values*" and the "*quality of the environment*." A definition for the term 'amenity' is found under Section 2 of the RMA and includes: "*...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.*"

³⁸ This landscape study (known as the '*Brown West Coast Landscape Study*') commissioned by *Grey District Council* identified outstanding landscapes and natural features located in areas outside of the public conservation lands administered by the Department of Conservation (which are already offered some protection). For further information, refer to '*West Coast Landscape Study (2013), Coastal Outstanding Natural Landscapes/Features, Map 7/10.*'

Amenity values can be influenced by factors such as viewing position (roads or walking tracks), who is viewing it (recreationalists or travellers), the degree of change in the landscape a viewer can accommodate, and the value inhabitants and travellers place on a location. The amenity values for this location relate to:

- Natural character.
- Openness and the generally unbuilt landscape.
- The coastline.
- The ability for long views, particularly towards the coast.

A definition for the term 'environment' is found under Section 2 of the RMA, and includes:

- Ecosystems and their constituent parts, including people and communities.
- All natural and physical resources.
- Amenity values.
- The social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters.

When considering the term 'maintenance and enhancement' (Sections 7(c) and 7(f)) it is important to understand that the RMA also provides for positive effects and environmental enhancement, including restoration and rehabilitation. This is something which can sometimes be overlooked in the focus of avoiding, remedying, and mitigating adverse effects.

Section 7 involves an assessment of effects on the physical landscape. This has been referred to as 'landscape effects' within this assessment (refer to Section 9: Landscape Assessment), and considers:

- Landform (earthworks including cut and fill).
- Loss of vegetation.
- Effects on landuse.

Section 7 also requires an assessment of effects on landscape amenity. Amenity values have been considered under the 'visual effects' section of this assessment (refer to Section 10: Visual Assessment), which considers:

- The 'fit' within existing landscape character and patterns.
- The visual amenity in relation to the appearance of structures such as buildings.
- The visual effects from public and private property.

7.2 New Zealand Coastal Policy Statement

The *New Zealand Coastal Policy Statement* (NZCPS) includes objectives and policies with respect to the preservation of the natural character of the coastal environment. It also includes protection of ONF and landscape values, and the maintenance and enhancement of open space and recreational opportunities within the coastal environment. The NZCPS recognises the competing tension between the need to maintain and enhance natural character, natural landscapes, open space, and recreational values in coastal areas, with the functional need for primary production activities to be located in appropriate places.

Policy 1: Determining the Extent of the Coastal Environment

Policy 1 assists to determine the extent of the coastal environment, and therefore the extent of the receiving environment for the Project. Part 1 of this policy defines the extent and characteristics of the coastal environment by: *“Recognising that the extent and characteristics of the coastal environment vary from region to region and locality to locality; and the issues that arise may have different effects in different localities.”*

The policy above assists with determining what is considered to be the extent of the coastal environment. For this particular assessment, the extent of the coastal environment is summarised under Section 4.2: Intermediate Context which describes the ‘Barrytown Flats’, which is well defined on four sides (and which the site is part of).³⁹

Policy 13: Preservation of Coastal Natural Character

Policy 13 provides for preservation of coastal natural character:

1. *“To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:*
 - a) *Avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character, and*
 - b) *Avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment.”*

Preservation of coastal natural character has been discussed in the previous RMA Section.

³⁹ The extent of the coastal environment is also mapped in the Proposed *Te Tai o Poutini Plan (TTPP)*.

Policy 15: Natural Features and Natural Landscapes

Policy 15 provides for the protection of natural features and landscapes:

1. *To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:*
 - a) *Avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment.*
 - b) *avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment.*

Identifying and assessing the natural features and natural landscapes of the coastal environment can be done by assessing landscape characterisation. This means having regards to natural science factors, water and vegetation, legibility, or expressiveness (for example, formative processes), historical and heritage associations, aesthetic values, transient values, shared and recognised values, and wild or scenic values, amongst other things.

Both Policy 13 (Preservation of Natural Character) and Policy 15 (Protection of Natural Features and Landscapes) are relevant in regard to this assessment, as both are effects based in their operation and rely on an understanding of adverse effects. In particular, the potential adverse effects of the Project (mining activity) on the Barrytown Flats area and Pakiroa Beach coastline.

The important questions raised by Policies 13 and 15 are:

- Will the Project cause adverse effects on the natural character of the Barrytown Flats area and Pakiroa Beach coastal environment?
- Will the Project cause adverse effects on the natural features or landscape of the Barrytown Flats area and Pakiroa Beach coastal environment?
- If there are any adverse effects, will any of those be significant?
- Are there any adverse cumulative effects?

The processes and patterns naturally occurring on this coast, the natural landforms and the movement of water and sediment have been highlighted under Section 4: Existing Landscape Context. Likewise, the darkness of the night sky and the experiential attributes of the site are discussed under Section 10: Visual Assessment.

7.3 West Coast Regional Policy Statement

The *Regional Policy Statement (RPS)* provides a broad framework for managing the West Coast's natural and physical resources under the RMA. It includes the significant resource management issues that are important to the West Coast, and identifies regionally significant issues and objectives, policies, and methods. An assessment of the relevant sections of the RPS is as follows:

Natural Character

Section 7A of the RPS identifies that activities which contribute to people's wellbeing that may adversely affect the natural character of the region's wetlands, and lakes and rivers and their margins. This natural character and the associated amenity values are enjoyed by both residents and visitors. Ensuring that the region retains those aspects that are attractive requires management of potential adverse effects on natural character values. Policy 2 seeks to protect the elements, patterns, processes, and qualities of the natural character of wetlands, and lakes and rivers and their margins from adverse effects arising from inappropriate subdivision, use and development. What is 'inappropriate' is assessed by reference to what is to be 'protected'. Policy 3 is to assist decision-makers to determine whether a proposed subdivision, use or development is appropriate.

Section 7A, Policies 2 and 3

2. Protect the elements, patterns, processes, and qualities that together contribute to the natural character of wetlands, and lakes and rivers and their margins from inappropriate subdivision, use and development.

3. When determining if an activity is appropriate, the following matters must be considered:

- a) The degree and significance of actual or potential adverse effects on the elements, patterns, processes, and qualities that contribute to natural character.*
- b) The value, importance, or significance of the natural character at the local, or regional level.*
- c) The degree of naturalness*
- d) The potential for cumulative effects to diminish natural character, and the efficacy of measures proposed to avoid, remedy, or mitigate such effects.*
- e) The vulnerability of the natural character to change, and its capacity to accommodate change, without compromising its values.*

Natural Landscapes and Features

Section 7B of the RPS identifies that activities which contribute to people's wellbeing may adversely affect Outstanding Natural Features (ONF's) and Outstanding Natural Landscapes (ONL's). This natural landscapes and features section of the RPS covers the area inland from the landward coastal environment boundary.⁴⁰ Internationally recognised for its ONF and ONL's, the West Coast is attracting large numbers of tourists seeking natural experiences. Ensuring that the region retains those aspects that are attractive to tourists and residents requires management of significant adverse effects.

Coastal Environment

Section 9 of the RPS identifies resource management issues of regional significance affecting the West Coast's coastal environment. The West Coast has a dramatic coastline with extensive areas of scenic and natural values in a largely unmodified state. A large proportion of the development and land use activities is located in, or traverses through, the coastal environment. While there is currently a relatively low level of development pressure for new activities, particularly in the coastal marine area, there is the potential for further resource use and development. Natural materials such as sand, gravel, driftwood, and minerals can be used to provide for people's social and economic wellbeing.

Section 9, Policy 1

1. Protect indigenous biological diversity, and natural character, natural features, and natural landscapes from inappropriate subdivision, use and development by:

- a) Identifying in regional and district plans areas of significant indigenous biological diversity, outstanding and high natural character and outstanding natural features and landscapes...*
- b) Avoiding adverse effects on significant indigenous biological diversity, areas of outstanding natural character and outstanding natural landscapes and features.*
- c) Avoiding significant adverse effects and avoiding, remedying, or mitigating other adverse effects on indigenous biological diversity, natural character, natural features, and natural landscapes.*

The policy above only allows activities to occur where significant adverse effects are avoided on natural character, natural features, and natural landscapes.

⁴⁰ The preservation of natural landscapes and features in the coastal environment is addressed under the following 'Coastal Environment' heading, as the New Zealand Coastal Policy Statement provides specific direction on these matters.

7.4 Grey District Plan

The *Grey District Plan (GDP)* is a framework of environmental standards that sets out how the Council and the community would like the natural and physical resources in the district to be used, developed, and managed. Under the GDP, the mining activity triggers a Resource Consent application to conduct a discretionary activity. Relevant landscape and visual policies include:

Landscape: Objective 4.3

1. *The protection of outstanding natural features and landscapes in the Grey District from inappropriate subdivision, use and development.*

Landscape: Policy 4.4

1. *To recognise areas of outstanding natural features and landscapes in accordance with the criteria listed below:*
 - a) *Naturalness (Intactness)- The landscape is natural, open and spacious and is largely unmodified by human activity or development (relative to other landscapes).*
 - b) *Coherence - The area is complete and in intact as an integrated unit thereby producing a high visual coherence or pleasantness.*
 - c) *Distinctiveness - The area has one or more of the following:*
 - i) *Outstanding size, shape, diversity or pattern of natural features or landforms.*
 - ii) *Outstanding area of predominantly indigenous vegetation.*
 - iii) *Outstanding or popular accessible viewpoints/key views.*
 - d) *Sensitivity - the area is high in visual sensitivity to change*
 - e) *Visibleness - The area is visible from public places such as roads, tourist routes.*
 - f) *Scientific, Historic or Cultural value - The area is of significant scientific (e.g., Geo preservation site), historic or cultural value.*
2. *Proposed subdivision, use and development should be undertaken in accordance with Objective 4.3, and in a manner that avoids, remedies, or mitigates adverse effects on outstanding natural features and landscapes identified in Table 4.1 or outstanding natural features and landscapes that through a resource consent process are determined by Council to exist within the areas identified in Table 4.2 having regard to the criteria in Policy 4.4.1(a) – (f).*

As mentioned previously, under the planning maps, the site itself is not listed as having either ONL or ONF values. (Refer to 'Section 7.1: RMA – Outstanding Natural Features and Landscapes'). The effect of the Project on natural character has also been previously discussed.

The Coastal Environment: Objective 7.3

1. *To preserve the natural character of the coastal environment and the protection of it from inappropriate subdivision, use or development.*

The Coastal Environment: Policy 7.4

1. *Development, use, or subdivision affecting the natural character of the coastal environment shall have particular regard to the following:*
 - *The extent of existing and likely potential modification as a result of human presence*
 - *The presence of significant indigenous vegetation or natural habitats.*
 - *The life supporting capacity of ecosystems.*
 - *The presence of distinctive landscapes, seascapes, and landforms.*
 - *The maintenance and enhancement of high-water quality.*
 - *Coastal natural hazard areas*
2. *Any development within the coastal area should take place in modified areas such as existing settlements in preference to unmodified areas.*

Rural Environment: Objectives 19.3

2. *The retention of the character of the rural environment in which existing amenities include its openness and spaciousness, natural features, and presence of indigenous vegetation.*

Rural Environment: Policies 19.3

- *A wide range of activities are carried out in a manner that avoids, remedies, or mitigates adverse effects, including those referred to in Policies 4 - 5.*
- *Patterns of subdivision and development should ensure that the openness of the rural environment is retained. The bulk and location of structures should not affect the character of the rural area or affect the amenities of adjoining properties.*
- *Activities should not adversely affect the amenities of the rural area or adjoining properties in terms of such matters as effluent disposal, noise, traffic generation, air emissions, odour, shading and visual impact.*

Within the GDP the site is located in the Rural Zone. Important considerations in the rural area under the Plan include:

Setbacks

- 10 metre setbacks for buildings from road boundaries.
- 100 metre setbacks for buildings from the Mean Water High Springs (MWHS)
- 20 metre setbacks from any wetland greater than 2 hectares in size.
- 10 metres from the bank of a river or stream which is more than 3 metres in width.

Building Design

- Buildings are permitted if the site coverage does not exceed 10% of the site area or, 1500m², whichever is greater.
- Buildings and structures are permitted if the maximum height of any building is a maximum of 10 metres high. Note: The Processing Plant exceeds this being 15 metres high.
- The proposed location of the building on the site and their visibility off site.
- The extent to which the proposed buildings will be compatible with the character of the local environment, including the scale of other buildings in the surrounding area.
- The effect on adjoining properties in terms of sunlight, noise, and privacy.
- The extent to which a proposed building will detract from the pleasantness, coherence, openness, and attractiveness of the site as viewed from the street and adjoining sites.
- The effect of the increased height in terms of visual dominance by buildings of the outlook from other sites, roads, and public open space.

Planting

- The ability to mitigate any adverse effects of a proposal on adjoining sites, including through the provision of landscape plantings.

Natural Character

- The effect of a proposal on the natural character of the coastline.
- The effects on natural character and amenity values associated with lakes, rivers, wetlands, and their margins.
- The extent to which the character of the site will remain dominated by open space and garden plantings, rather than buildings.
- The effects on adjoining sites in terms of visual effect.

7.5 Proposed Te Tai o Poutini Plan

The *Te Tai o Poutini Plan (TTPP)* is the proposed combined District Plan for the Buller, Grey, and Westland District Councils. Once adopted, it will replace the individual District Plans. The TTPP sets out the objectives, policies, rules, and methods to manage landuse activities and subdivision across the districts.

The proposed zoning map is included in the appended Graphic Supplement and illustrates that:

- The site is proposed as a Special Purpose Zone: ‘Mineral Extraction Zone’ (MINZ).
- The area around the site is to be zoned as a General Rural Zone (GRUZ), with an Open Space Zone (OSZ) assigned to the part of the Paparoa Ranges further away.
- To the south of the site is a waterbody with an Open Space Zone around Canoe Creek.
- There is a Significant Natural Area (labelled ‘PUN-W034’) proposed in the north-west of the site.⁴¹ This is the coastal wetland sequence, with a lagoon and a series of small waterbodies bordered by flax wetlands and coastal forest.
- There are two further Significant Natural Areas (‘PUN-044’ and ‘PUN-043’) proposed further north, which include the lowland forest and wetland adjoining the Maher Swamp with adjacent coastal hill forest.
- The entire of the Barrytown Flats area is proposed to be within the Coastal Environment for the purposes of General District Wide Matters.
- Part of the hillside, west of SH6 and opposite the site, is proposed as having at least High Coastal Natural Character. There is a ‘c’ shaped exclusion area opposite the site, which appears to be a portion of the previous exotic forestry on the Cowan land.
- The hillside is proposed as being an Outstanding Natural Landscape due to the sequence of coastal foothills comprising of limestone outcrops and deeply incised river gorges and valleys.

As the TTPP is not yet operational, it has been given limited consideration within this assessment.⁴²

However, it is worth noting the zoning implications. The site has not been identified as being outstanding or in an area of outstanding natural coastal character. The site is listed as being within a Mineral Extraction Zone, meaning it is a location identified by the relevant authorities where mineral extraction and ancillary activities are anticipated to take place. Mineral extraction would be a controlled activity, which means that consent must be granted with the relevant controls (conditions) in place.

⁴¹ These ponded areas were created as a result of mining activity between 1932 and 1948, however today they function as a natural wetland.

⁴² The *Te Tai o Poutini Plan* has been notified and submissions closed on the 11th of November 2022.

8 IDENTIFIED ISSUES

This section helps to frame the assessment of landscape and visual effects. All landscape issues are unique to this assessment and arise from the Project. They include:

- The short-term change in landscape character from rural to mining extraction and processing.
- The short-term effects arising from construction activity associated with site establishment.
- The change of landcover (with limited vegetation loss).
- The addition of new structures, buildings, fences, drains, roads, machinery, ponds, bunds, and planting in order to support the mining operation.
- The effects arising from the mining activity itself.
- The change in amenity experienced from private properties neighbouring the Project site (e.g., changes to outlook and privacy).
- The ability to maintain long distance views from private properties towards the coast.
- The change in visual amenity as experienced from users of SH6.
- The change in visual amenity as viewed from users of the Pakiroa Beach foreshore and Tasman Sea.
- The proximity of the Paparoa National Park and newly opened Paparoa Track (a nationally recognised 'Great Walk') in the Paparoa Ranges adjacent to the site.
- The proposed Processing Plant being over the 10-metre permitted height limit (by *Grey District Council*) and its visibility from site.
- Managing the effects of the Project in relation to statutory obligations to preserve and protect, maintain, and enhance coastal natural character, amenity values and the quality of the environment.
- The maintenance of natural systems (wetlands, wildlife habitats, scenic bush, and farmland) and identified visual values (important viewpoints and vistas).
- The viability of farming once the mining operation is complete.

9 LANDSCAPE ASSESSMENT

9.1 Preface

Change in a landscape does not necessarily constitute an adverse landscape or visual effect. Landscape is dynamic and is constantly changing over time in both subtle and more dramatic transformational ways. These changes are both natural and human induced. Often, they can be the result of landform or vegetation modification or the introduction of new structures, infrastructure, activities, or facilities into the landscape. What is important in managing landscape change, is that adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change as required.

The degree to which landscape effects are generated by the Project depends on:

- The degree to which the Project contrasts, or is consistent, with the qualities of surrounding landscape.
- The predictable and likely known future of the locality.
- The quality of the resultant landscape, its aesthetic values and contribution to the wider landscape character of the area.

Landscape and visual effects generated by a Project can be perceived as:

- Positive (beneficial) contributing to the visual character and quality of the environment.
- Negative (adverse), detracting from existing character and quality of the environment.
- Neutral (benign), with essentially no effect on the existing character or quality of the environment.

9.2 Landscape Assessment

The landscape assessment that follows, evaluates the effects of the mining activity on landscape character and amenity when compared to the existing rural activity. It also assists in determining whether the proposed changes are appropriate for the location.

Landform

The existing landform of the site is similar to the surrounding environment with the undulating coastal plain flanked by the Paparoa Ranges behind. Topographical features (as described within Section 4.3: The Project Site) are a result of ongoing coastal and geological processes as well as man-made interventions. They include remnant sand ridges from old

shorelines, man-made drainage channels, small farm ponds, the deeply incised Collins Creek, and the Canoe Creek Lagoon. There is a change in elevation of approximately 23 metres in height across the site, falling towards the coast.

Due to the proximity to the coast, this is an evolving and ever-changing landform. Longshore drift has resulted in narrow shingle ridges closing creek mouths for lengthy periods. In contrast, unpredictable storm surges and times of flood mean the landscape can change quickly. This can result in saltwater intrusions breaching the lagoon, shingle ridges being wiped out, and erosion of the coastal edge.

The main changes to the landform as a result of the Project will include:

- Earthworks to excavate the two CWF and two MWF ponds, plus drainage channels.
- Earthworks to construct the Processing Plant and other facilities, hardstand and access road.
- Earthworks to construct the permanent visual bund adjacent to SH6.
- Earthworks to construct the short-term stockpile bund running across the centre of the site from north to south.
- Preparation earthworks to strip topsoil and overburden prior to each panel being mined.
- Extraction earthworks to conduct the mining activity.
- Stockpiling of material for processing.
- Backfilling of sands, overburden, and topsoil into the mine void.
- Progressive rehabilitation to work towards the final landform.
- Final rehabilitation to achieve the completed landform, slope, and drainage.⁴³

Some of the activities listed above are permitted 'as of right' on the site. They include:

- Humping and hollowing, flipping or 'v blading' of land outside of riparian margins at a rate of 5 hectares per year – including the disturbance of exposed land, which could be considered similar to the effects of mining.⁴⁴
- Earthworks, including the ability to extract material at a rate of 5,000m³ per hectare per year, which could result in ground level reduction.⁴⁵

⁴³ For further details including locations and dimensions for the ponds, bunds, Processing Plant, and other facilities, refer to Section 5: Proposal and sections 5.3 and 5.4 within it.

⁴⁴ Keeping in mind, that humping and hollowing activity usually would occur to a depth of 1-2 metres, whereas mining activity goes to a much greater depth, and in this case, up to 9 metres.

⁴⁵ The with the yield for this Project is anticipated to be approximately 250,000 tonnes of Heavy Mineral Concentrate (HMC) per year and a total of 1,100,000 tonnes across the Project.

Nevertheless, these permitted activities have not been relied upon in this assessment of landscape and visual effects.

Changes to the landform as a result of the Project, will occur within the application area, with a mining disturbance area offset within this. There will be a 20-metre offset from the existing landscape features of Collins Creek and the Canoe Creek Lagoon. Similarly, there will be a 20-metre offset from the coastal edge of the site and the neighbouring property boundaries. There will be an arbitrary 200-metre offset from the SH6.⁴⁶

Mining activity will move across the site in panels, with the associated mine pit being substantially lower and therefore different to the surrounding landform.⁴⁷ Progress of the mine will start from the southwest, with the first panel running from west to east.⁴⁸ The next panel will start again one panel to the north and travel west to east again. The overall size of the active mining disturbance area plus processing area will be limited to 8.0 hectares at any one time (refer to Section 5: Proposal).

Once extraction has taken place, progressive rehabilitation will occur following the mining sequence. The overburden which was removed during the preparation phase will be mixed with the tailings from the WCP and used as fill into the mined-out voids.⁴⁹ This dumped material will then be levelled out and recontoured using bulldozers and graders.

Once mining activity is complete, final site remediation will occur when there is sufficient area available to achieve the desired landform, slope, and drainage. This will involve filling in some ponds, redistributing the central stockpile bund, and adding a final layer of topsoil across the disturbed areas of the site. At this point, land on the eastern side of the bund may also be regraded in order to seamlessly merge the existing and new landforms together.

It is anticipated that the final landform will be recontoured to reflect the previous land formation (or be an improvement of it with better drainage), but that the finished elevation will be lower in volume than what it is now due to extraction having taken place. This final

⁴⁶ The 200-metre offset boundary from SH6 is arbitrary as it is unlikely there is suitable material to mine in this area due to the existing grading.

⁴⁷ There will also be a central drain running diagonally across the middle of the site and a perimeter drain running around the mining disturbance area.

⁴⁸ With the exception of Panel 9, which is located in the southwestern most extent of mining.

⁴⁹ This will include un-mineralised sand, clay slimes, gravel, and rock greater than 2mm.

landform won't be out of context with the existing landform or the surrounding Barrytown environment. (For detailed information, refer to Section 5.3: Project Staging). Once the Project is complete the land will once again return to undulating pasture, falling towards the coast.

For these reasons outlined above, it is deemed there will be a *low to moderate (minor) effect on landform* during the mining activity (due to the active mining disturbance area being limited in size), and a *very low (less than minor) effect on landform* once the Project is complete.

Landcover

The existing landcover is discussed under Section 4.3: The Project Site. In summary, the majority of the landcover on the site is made up of undulating green pasture on the coastal plain. The site has been previously cleared of its indigenous forest to make way for farming activity, although some sedges alongside drainage channels and isolated small stands of vegetation remain. The two onsite landscape features are Collins Creek and the Canoe Creek Lagoon. On the northern and southern boundaries of the site there are more significant regenerating native bush areas along with riparian planting.

The site and the wider area, including the Barrytown Flats and the Paparoa Ranges to the east, exhibit a number of natural systems including the sea, lagoons, rivers, springs, wildlife habitats, bush, and farmland. It is a careful balancing act to maintain the conservation of these natural systems and the progression of mining activity of a natural resource. Given the proximity of the Paparoa National Park (and the identified Outstanding Natural Landscape value ascertained to it), the proposal seeks to find a balance between mining and conservation.

The main change to the landcover during the Project will be the short-term change from grassland to mining. Vegetation removal on site (other than the clearance of pastoral grasses) is proposed to be kept to a minimum. The only exception to this, is in places where it cannot be avoided, such as the isolated small stand of vegetation in the middle of the site (planted flaxes surrounding a standoff pad). Much of this vegetation is of low value due to stock interference, and the remainder will be transplanted for mitigation planting elsewhere. All

existing vegetation along the coastal edge, Collins Creek and in and around the lagoon will remain untouched by the Project.

Along SH6, and outside of the site, there is one small strip of vegetation that will need to be removed to provide clear sightlines for traffic entering and exiting the site. The vast majority of this vegetation is located within the *Waka Kotahi (NZ Transport Agency)* road corridor, with a smaller amount along the boundary of G and G Langridge at 3195 Coast Road.

To safeguard and enhance the identified landscape features on site a number of landscape mitigation measures are proposed. They include:

- Having offset areas before the mining disturbance area begins (as previously discussed).
- Planting on top of a visual bund which runs adjacent to SH6.
- Planting on the southern end of the stockpile bund adjacent to the Processing Plant and associated facilities.
- Including additional riparian planting alongside Collins Creek.
- Including new riparian planting alongside the southern side of the northern drain.
- Planting along the northern boundary adjacent to the private property at 3323 Coast Road.
- Planting along the south-western coastal edge.
- Augmenting the Canoe Creek Lagoon with additional wetland planting.
- Retaining the CWF ponds once the Project is complete as planted wetland areas.
- Remediating the remainder of the landcover back to pasture once the Project is complete.

The mitigation measures above will assist to reduce the effects of the Project on landcover to a net positive effect overall.⁵⁰ New planting will use native species which are propagated from seed sourced within the Barrytown area. All plant choices will be carefully considered to fit within the Barrytown environment. The addition of new planted areas will strengthen the buffer between the extraction activity and the existing landscape features (on and off the site), help to visually soften and screen views, and provide numerous ecological benefits.

While the plain's pastoral landcover will be temporarily disrupted by the Project, it is recognised that the site will be progressively rehabilitated. The Project will not affect the Paparoa Ranges to the east or the Pakiroa Beach coastline to the west. For these reasons, there is anticipated to be a *positive low effect on landcover*. This is primarily due to the

⁵⁰ These mitigation measures are covered in further detail under Section 11: Recommendations and also illustrated by the Landscape Mitigation Plan contained within the Graphic Supplement.

rehabilitation proposed, and the long-term benefits of additional planting outweighing the short-term disturbance to the landcover caused by the Project.

Landuse

The site for this Project was selected for its availability of suitable materials for extraction (refer to Section 4.3: The Project Site). In essence, the existing farming operation which has occurred on the site for many years, will temporarily change from a rural activity to a mining extraction activity. This change in landuse will result in short term effects arising from site establishment, the taking of water from Canoe Creek, and the addition of new buildings, structures, fences, drains, roads, machinery, stockpiles, ponds, bunds, and planting. The mining extraction itself also has an effect on landuse. Although the proposed landuse is different to anything currently being carried out on the Barrytown Flats, it is not an unfamiliar activity on the West Coast, nor historically at Barrytown.⁵¹

The appropriateness of the short term landuse is determined by the following factors:

- The consent application is for 12 years, with the mining activity itself anticipated to last between 5-7 years of this period.
- The majority of buildings and facilities being only on site for the life of the Project.
- The layout of the mining activity limiting the extraction activity to the central part of the site.
- The activity being offset from the landscape features such as Collins Creek, the lagoon, the coastal edge, and neighbouring properties.
- The mining activity being completed in 300 by 100 metre panels.
- The Project staging allowing for progressive rehabilitation to occur.
- The short-term nature of the activity proposed not affecting the long-term viability of the site for farming once mining is complete.
- Mining activity being aligned with the proposed *Te Tai o Poutini Plan*, which identifies the site for mineral extraction.⁵²

For these reasons listed above, it is concluded the Project will overall have a *low (less than minor) short term effect on land use*. Upon completion of the Project and once rehabilitation has occurred, this will further reduce.

⁵¹ Barrytown has been forever changed by the gold rush of the 1860's to 1870's. Refer to Section 4.2: Intermediate Context – Barrytown and Surrounds.

⁵² Bearing in mind this plan currently has no statutory weight as it is not yet adopted.

9.3 Landscape Effects Summary

Overall, when comparing the landscape effects of the mining activity compared to the existing farming operation, it is determined that the proposed changes are appropriate for the location and that the Project is considered to have a *low level of effect (minor) on landscape character*, during the Project and a *very low level of effect (minor) on landscape character* in the longer term. This is primarily due to the short timeframe, the graduation of effects across the Project (largely dependent on when and where the mining activity is occurring), and the ability for rehabilitation to occur, which has positive long-term benefits.

10 VISUAL ASSESSMENT

10.1 Preface

The effect of the Project on visual amenity relates to the visibility of the proposed mining activity from different viewpoints, and the effect that the short-term change of the landuse from pastoral farming to mining might have on the locality's amenity value. Much depends upon where the Project is visible from and how successful the recommendations are to mitigate any effects.

The degree to which visual effects are generated by the Project depends on:

- The proportion of the Project that is visible, determined by the observer's position relative to the objects viewed.
- The distance and foreground context within which the Project is viewed and the backdrop and context within which the Project is viewed.
- The number of viewers, their location and situation (static or moving) in relation to the view.
- The time of day and weather conditions within which the Project is viewed.

The visual catchment of the Project has been assessed to include public and private viewpoints.⁵³ These are discussed below and are also illustrated within the Graphic Supplement.

10.2 Public Viewpoints from within the Barrytown Area

Public viewpoints from within the Barrytown area include views obtained from users of SH6, the Paparoa Ranges, the Pakiroa Beach foreshore and the Tasman Sea, and the wider Barrytown area. The main issue identified for these public viewpoints is the change in visual amenity as a result of the Project.

Viewers from State Highway 6

For users of SH6 (the main coastal road between Greymouth and Westport), the site is viewed at an angle when travelling in either a northern or southern direction (refer to the Graphic Supplement). Views are for a short duration and seen at speed (in a 100 km/hr zone), as part of the wider landscape. Longer views of the site are afforded from slower road users such as cyclists.

⁵³ It should be noted that at the time of writing this assessment, the author has not visited the private properties assessed. Instead, conclusions have been drawn from visiting outside property boundaries and from analysing desktop research. Site visits onto private properties (with landowner permission) may be required in due course.

The Project will result in a noticeable visual change for users of SH6 as the site is viewed from a higher elevation. The road is located at approximately 23 metres above sea level, and the base of the stockpile bund is located at approximately 11 metres above sea level. Without mitigation measures, road users would clearly view the mining activity, vehicle movement, access road, and buildings in the distance. Three representative viewpoints along SH6 have been assessed and mitigation measures put in place. They include:

a) *From SH6, adjacent to the north-eastern end of the site*

At present, when approaching from the north on SH6, the site is largely obscured by vegetation until near the site boundary. Once the site is visible, the view is open, with sweeping panoramic views across the undulating pasture towards the sea. Also visible, are the existing farmhouse at 3261 Coast Road, access road, farm shed, and fencing.

Because of this openness, the Project would be clearly visible from this viewpoint. To mitigate this, a new 1.8-metre-high visual bund is proposed on the north-eastern boundary of the site. The bund will use excavated material and be constructed during the site establishment phase. It will run 300 metres south, parallel to SH6.^{54,55} From SH6, a driver's eye level will be equal to the top of the new visual bund, or slightly above or below it (-0.3 to +0.3 metres) with variation along its length due to topography. What a viewer sees will be dependent on where the viewer is positioned on the road and the type of vehicle they are in (refer to the long section in the Graphic Supplement).⁵⁶

Mitigation planting will be included on the top and in front of the bund to assist with screening the mining activity behind it. The bund itself will not provide significant screening of views due to its height in relation to SH6. However, it will accelerate the rate of screening by planting on top by providing greater height quickly. As planting increases in height, the screening effect will also increase. This will result in the 4.5-metre-high stockpile bund (approximately 360 metres away), machinery on site, and the majority of

⁵⁴ The bund follows the contour of the land so that the final height is a consistent level. The Project has intentionally avoided bunding the full length of the eastern boundary, as it would enclose SH6 vehicles between the hills and bund, creating a tunnelling effect. Refer to the Landscape Mitigation Plan in the Graphic Supplement for more information.

⁵⁵ There will be a brief break in the bund to allow for the northern drain to pass through it, with ends of the bund sloping 1:3 to meet the existing landform.

⁵⁶ An average person's eye level when seated in a car is between 125cm (small car) to 150cm (SUV), whilst views from trucks and buses are higher.

the Processing Plant and facilities, becoming screened from view (although the upper half of the 15-metre-high Processing Plant will be visible regardless).⁵⁷

b) From SH6, adjacent to the middle of the site

From the southern end of the proposed bund, road users will be able to view the existing farmhouse, shed and access located at 3261 Coast Road. In this location, open views of the site and the sea beyond will be visible in between the existing buildings adjacent to SH6 for approximately 200 metres. This provides a window into the site for SH6 users who regard mining activity as interesting, as well as meets the wishes of the adjacent landowner (B O'Neil and J Costello) for unobstructed views from their property.

c) From SH6, adjacent to the south-eastern end of the site

When approaching the site from the south, the site becomes visible from the Canoe Creek bridge onwards amongst existing vegetation. The elevated position of the road accentuates the site's visibility. Collins Creek is onsite, weaving its way towards the southern boundary before heading towards Canoe Creek Lagoon.⁵⁸ The Project will include new onsite riparian planting either side of the creek as well as maintaining sufficient sightlines to support the vehicle access to the site. As the riparian planting establishes, it too, will assist to screen views into the site.

Overall, the Project will result in a noticeable change for users of SH6. These changes will be seen at speed and as part of the wider landscape. Once established, new planting on the visual bund and alongside Collins Creek will screen the Project from view for two thirds of the SH6 boundary. For these reasons, it is considered the Project will have a *low (less than minor) visual effect on the users of SH6*.

Viewers from the Pakiroa Beach foreshore and the Tasman Sea

Views of the site from the Pakiroa Beach foreshore have been considered from multiple locations (refer to the Graphic Supplement). Although the private land parcels which make up the site stretch beyond the coastal foreshore (beach area) into the sea, this does not preclude the public from using the foreshore. Access to the coastline is possible from both Burke and Cargill Roads as well as Canoe Creek. Consequently, the effects of the Project on recreational

⁵⁷ It is not possible to screen a 15-metre-high structure with planting during the Project, however, other mitigation measures such as use of recessive colours and planting to soften of the base of the buildings will help.

⁵⁸ Collins Creek enters the site through the neighbouring property at 3261 Coast Road.

users have been considered. The availability of views towards the site from the beach varies greatly, depending on the position of the viewer. Topography, water bodies, and vegetation all dictate what can be seen. As such, three representative viewpoints have been assessed. They include:

a) *From the dry stream bed, adjacent to the southern coastal edge of the site*

From this location, there is stark contrast of approximately 1.7 metres between the height of the foreshore and the site. There is evidence of coastal erosion with a recent slip on the edge of the farmland. Due to the change in height between the beach and the farmland, it is not possible to view much of the site, other than the immediate coastal edge. Mitigation planting including flax, will further restrict views of the site, even from elevated beach users such as horse riders.

b) *From the high tide mark on the boulder bank at the south-western coastal edge of the site*

From this location, views of the site are much flatter and more open, albeit viewed at a distance. The site is a smaller scale when compared to the large Paparoa Ranges in the background. This aside, mining activity and the Processing Plant will be visible from this location. However, as the extraction activity progresses into the ground, the machinery, movement, and buildings will have the greatest visual effect. As mitigation planting along the coast becomes established, this visual effect will reduce.

c) *From the northern coastal edge of the site*

From this location, views of the site are (in places) obscured by driftwood, mature flax, overgrown pastoral grass, and marsh habitat. All of this meshes together to create a physical and visual barrier, limiting the viewshafts to the site. The foreground is largely vegetated, with the sites pasture being visible (on occasion) behind, flanked by the Paparoa Ranges. Once mitigation planting around Canoe Creek Lagoon and the north-western side of the CWF becomes established, it will screen the majority of the site from this viewpoint, apart from the taller part of the Processing Plant.

Overall, any adverse visual effects arising from the Project on users of the Pakiroa Beach foreshore will be *low (less than minor)* in nature.

Viewers from the Paparoa Ranges

As mentioned previously the site is flanked by the Paparoa Ranges and Paparoa National Park, which are listed as an Outstanding Natural Landscape (ONL). This area is also home to the Paparoa Track (a nationally recognised multi-day 'Great Walk'), which is accessible from Barrytown (refer to the Graphic Supplement). In selected locations where the topography and vegetation permit, it may be possible to view the Project site as part of a broader view.⁵⁹

From selected locations, the site may be visible on clear days, at a much lower elevation (than the track on the ranges), at a minimum distance of approximately 8.4 kilometres. Any views will typically be focused outwards towards the ocean, with the coastal plain being a small part of the overall view. The site and mining activity (other than bare earth) will be difficult to discern. Due to the distance between the site and the viewer, it is considered the Project would have a *negligible effect on walkers of the Paparoa Track*.

Viewers from Further Afield – The Wider Barrytown Area

From the wider Barrytown area, the Project site is hard to discern as it largely recedes into the surrounding landscape due to the existing topography, vegetation, and occasional built form. A representative viewpoint has been taken from the beach end of Burke Road (refer to the Graphic Supplement). This view is predominantly pastoral with coastal dunes in the foreground, vegetation in the midground and the Paparoa Ranges dominating in the background. Existing built forms such as houses are visible within this the landscape, generally located close to the foothills. A long-distance view of approximately 1.25 kilometres (at the closest point) is afforded towards the northern boundary of the site. Due to the existing vegetation and bund between Burke Road and the site, it is difficult to discern the site without great familiarity of the area.

Once the Project commences, it is likely the taller parts of the Processing Plant and associated facilities will be visible from this location, against a vegetated backdrop. The two sides of the 'L' shaped building will be 10 metres in height, and the corner of the building, 15 metres. Although this building will be a new element in the landscape, at this distance and from this particular location, it will be a very small component when compared to the surrounding

⁵⁹ The author has made this assumption based on desktop research of the Paparoa National Park and through looking at topography and track maps. At the time of writing this assessment, the author has not personally viewed the site from the Paparoa Track.

landscape, particularly the ranges. For these reasons, there is considered to be a *negligible effect (less than minor) effect on a viewer from this end of Burke Road.*

10.3 Private Viewpoints from Neighbouring Residential Properties

Private viewpoints from within the Barrytown area include views from private properties both on the coastal plain and on the hillside behind the site. The main issues identified for these private viewpoints are:

- The change in visual amenity experienced from private properties neighbouring the Project site and located across SH6.
- The ability for private residences to maintain their existing views towards the coast.

From a combination of desktop analysis and observations from roadside public viewpoints and the site, the effect on these properties has been summarised by answering the following questions:

- What do these residences currently view?
- What are the changes as a result of the Project?
- Do these changes create any adverse effects? If so, how could these adverse effects be mitigated?

There are seven neighbouring dwellings⁶⁰ in close proximity to the site. (Refer to the Graphic Supplement for the location of each dwelling). Four are located on the coastal plain neighbouring the Project site and three are located behind the site, across SH6 on the western flank of the hill. Views of part of the mining activity may be gained from several of the neighbouring properties. However, mitigation measures such as the addition of bunds, planting, site layout and the use of recessive colours will assist to reduce the visual effects of the Project.

For residents of private properties, the distance between them and the Project will be an influencing factor of whether the visual effect would be adverse, and whether they can accommodate the presence of a short-term mining operation in this location. It should be noted that shelterbelts and/or woodlots could be lawfully established on the application site as of right. These would also have the potential to screen views from neighbouring properties.

⁶⁰ Many property owners own more than one parcel of land. The parcel numbers given in the description above relate to the dwelling associated with each address.

Viewers from the Seaward Side of the State Highway

On the seaward side of the SH6 neighbouring properties include:

3261 Coast Road (SH6) – B O’Neil and J Costello.

This is the site of the existing farmhouse bordering the application area. Approval for the Project has been shown to be forthcoming from these property owners, and as such, the effects of the Project have not been considered in greater depth.

3323 Coast Road (SH6), Lot 2 DP 3375 – S Langridge and R Wildbore

This is one of two dwellings at this address, to the west of SH6, 200 metres north of the site. This dwelling consists of several built structures, with the primary residence facing west towards the sea. The other existing view encompasses the neighbouring Langridge property, SH6, the Project site, and the large kahikatea stand to the west. This kahikatea stand and supplementary vegetation obscures many direct views towards the coast. As a result, most of the current coastal outlook utilises views across the neighbouring Langridge property and the Project site.

In terms of the Project, residents at this dwelling have views towards the 200-metre SH6 offset zone, which remains untouched by mineral extraction. The 4.5-metre-high stockpile bund to the southwest will be 300 metres from this residence, at approximately 11 metres above sea level, with ore stockpiles and mining activity occurring behind it. At the end of the first panel of mining, the mining activity will be 730 metres away from this residence. Comparatively, at the end of panel 7, (the closest point to the residence) it will be 400 metres away.

The majority of views towards mining activity will be screened by mitigation planting along the northern boundary (further detailed below), the northern drain, and the grassed 4.5-metre-high stockpile bund. Periodically, taller ore stockpiles may be visible. Likewise, to the south, the taller portion of the Processing Plant and the rooflines of the associated facilities will be visible behind the stockpile bund. These buildings will use recessive colours to recede into the landscape as much as possible and be softened by the northern arm of the planted stockpile bund. Nevertheless, the Processing Plant will be viewed at a distance of 870 metres.

Mitigation planting is proposed on the northern boundary of the Project site to assist to screen the mining activity from this dwelling, however it will take time to establish. The final design and permanence of mitigation planting will be determined in consultation with both sets of landowners to the north of the Project site; S Langridge, R Wildbore, R Langridge and D Van den berg. As part of writing this assessment, the author spoke with Sharon Langridge on the 16th of February 2023. Sharon owns a local plant nursery (West Coast Native Plants). The discussion centred on the proposed native species list for the Project, anticipated growth rates, seed collection, propagation timeframes, and what mitigation planting may be retained at Project completion. Sharon is likely to be engaged to propagate some of the plants required for the Project.

Upon final rehabilitation and Project completion, pastoral grazing activity will recommence. The view from this property will be akin to its current state, save a lower landform (due to extraction having taken place) and the augmentation of the northern boundary with further planting. Given the distance of this property from the mining activity and Processing Plant, and the limitation of mining activity to one panel at a time,⁶¹ it has been determined that the Project will have a *low (less than minor) short term visual effect* on this property. Once the Project is completed this will reduce to a *very low (less than minor) visual effect*.

3323 Coast Road (SH6), Lot 3 DP 3375 – R Langridge and D Van den berg

This is the second dwelling at this address, located closer to the northern site boundary and at a comparable height to the eastern end of the Project. The residents of this property currently reside in a bus, parked adjacent to a shed and orientated perpendicular to the road. Views from this property encompass SH6, the Project site, the sea, and the large kahikatea stand to the west. This kahikatea stand and surrounding vegetation obscure many direct views towards the coast. As a result, most of the current coastal outlook utilises views across the Project site, seen over top of a foreground of shrubby grassland. As borrowed views, the coastal outlook is under permanent risk of change regardless of the application in question.

⁶¹ Mining will be limited to a single 3.0-hectare mining panel at any one time. Within this, there will be 0.5 hectares of stripping occurring ahead of the 2.0 hectare mine pit and 0.5 hectares of progressive rehabilitation occurring behind (refer to the Mining Staging Plan in the Graphic Supplement for more details). There is also a 2.0-hectare contingency in addition to the 3.0 hectare mine panel for progressive rehabilitation, to allow for weather and seasonal impacts. In winter grass may be slower to establish. At a rate of advance of 35 metres per week on average, 2.0 hectares will provide approximately 6 weeks contingency.

In terms of the Project, residents at this dwelling have views towards the 200-metre SH6 offset zone, untouched by mining activity. The 4.5-metre-high stockpile bund will be at the fore of mining activity, 325 metres south-west of this residence and approximately 11 metres above sea level, with ore stockpile and mining activity occurring behind it.

The visual effect on this dwelling will depend on the progression of the mining activity (panels) in relation to the property, and the establishment of mitigation. The greatest visual effect for this property will occur later in the Project when the active disturbance area is closest to the property. At the end of the first panel of mining, activity will be 660 metres away from this residence. Comparably, at the end of panel 7, (the closest point to the residence) it will be 430 metres away.

The majority of views towards mining activity will be screened by mitigation planting along the northern boundary, the northern drain, and the grassed 4.5-metre-high stockpile bund. Periodically, taller ore stockpiles and traffic entering and exiting the site—may be visible. Additionally, the taller portion of the Processing Plant and the rooflines of the other facilities will be visible behind the stockpile bund. Utilisation of recessive colours will enable buildings to recede into the landscape as much as possible and be softened by the northern arm of the planted stockpile bund. Nevertheless, the Processing Plant will be viewed at a distance of 790 metres.

As stated for the previous dwelling at 3323 Coast Road, mitigation planting is proposed on the northern boundary, although it will take time to establish. The final design and permanence of mitigation planting will be determined in consultation with both sets of landowners to the north of the Project site; S Langridge, R Wildbore, R Langridge and D Van den berg.

At the Project conclusion, once final rehabilitation has occurred, and pastoral grazing has recommenced, the view from this property will be similar apart from a lower landform (due to extraction having taken place) and the northern boundary being augmented with further planting. Given the distance of this property from the mining activity and the Processing Plant, and the limitation of mining activity to one panel at a time,⁶² it has been determined

⁶² Mining will be limited to a single 3.0-hectare mining panel at any one time. Within this, there will be 0.5 hectares of stripping occurring ahead of the 2.0 hectare mine pit and 0.5 hectares of progressive rehabilitation occurring behind (refer to the Mining Staging Plan in the Graphic Supplement for more details). There is also a 2.0-hectare contingency in addition to the 3.0 hectare mine panel for progressive rehabilitation, to allow for weather and seasonal impacts. In winter grass

that the Project will have a *low to moderate (minor) short term visual effect* on this property. Once the Project is completed this will reduce to a *very low (less than minor) visual effect*.

3195 Coast Road (SH6), Lot 1 DP 3574 – G and G Langridge

This residence is located between Collins and Canoe Creeks, approximately 280 metres to the south of the Project site. The main outlook from this property is a north facing view that includes portions of the site and wider coast. It encompasses a viewing arc from the Paparoa foothills and SH6, across the site and towards the sea. It is an open view with the O’Neil and Costello farmhouse in the midground and scattered vegetation along Collins Creek and the edge of the site. There are several stands of large kahikatea trees, as well as additional clusters of vegetation which restrict some views of the site. As a result, some of the facilities on the site will be partially screened by existing vegetation.

The most noticeable visual change for these residents will be vehicles using the new access road on the southern boundary (330 metres away), the Processing Plant and associated facilities (590-620 metres away), and the stockpile bund.⁶³ As part of mitigating this change, Collins Creek will have additional riparian planting with a continuous band of 3.0-metre-wide planting on both sides. As planting establishes, the site and subsequent vehicle activity will progressively become screened from view. The exception to this is the vehicle access point on SH6 (where open sightlines are maintained for safety), and also the taller portion of the Processing Plant which will be visible above any planting. This building will use recessive colours to recede into the landscape as much as possible.

Taking the above into account, it is anticipated that the Project will have a *low to moderate (minor) short term visual effect* on this property due to the proximity to the site, the visibility of the new Processing Plant and the time required to establish visual screening through mitigation planting. Once the Project is completed this will reduce to a *very low (less than minor) visual effect*, with planting remaining upon Project completion.

may be slower to establish. At a rate of advance of 35 metres per week on average, 2.0 hectares will provide approximately 6 weeks contingency.

⁶³ The Processing Plant as seen from this property will be taller at its eastern end (15 metres high) before it steps down to a lower roof level (10 metres high).

Viewers on the Inland Side of the State Highway

On the inland side of SH6, neighbouring properties are located at a higher elevation than the site itself, being on the hillside and nestled into the surrounding vegetation. All houses are orientated towards the coast, with long-distance views, sometimes limited by the surrounding vegetation. Neighbouring properties include:

3316 Coast Road (SH6), Lot 2 DP 3403 – R Mirza and S Hillerby

This property is located to the north-east of the Project site, on the eastern side of SH6. The elevated house and hillside deck provides residents with long views across the Project site and the Tasman Sea. The dwelling is located approximately 100 metres above sea level, far higher than the onsite stockpile bund, (approximately 11 metres above sea level and 250 metres away). Due to this elevated viewing position and the screening provided by the large trees beside the deck, only the northern portion of the site is visible. The view comprises of the west of SH6, Canoe Creek Lagoon, the sea, and the horizon beyond. Vegetation, pasture, and sea outside of the northern site boundary are also visible. Consequently, the hillside property provides broad views on and off site. The Processing Plant, access road and SH6 are unable to be viewed from this location. As such, the mitigation measures proposed along SH6 and around the Processing Plant are not designed to reduce the landscape and visual effects on this residence.

For the duration of mining activity, the residents will be able to view the northern extent of the central stockpile bund, and the new planting around Canoe Creek Lagoon, the CWF and the northern drain. The visual effect will occur in the second half of the Project, when mining activity progressively reaches panels 5, 6, 7, 8, and 10 in the north-western part of the site. Mining will be limited to a single 3.0-hectare mining panel at any one time. Within this, there will be 0.5 hectares of stripping occurring ahead of the 2.0 hectare mine pit and 0.5 hectares of progressive rehabilitation occurring behind (refer to the Mining Staging Plan in the Graphic Supplement for more details).⁶⁴ Coastal views from the property will be sustained at all times, but the midground will gradually change as the Project progresses through the different mining panels, albeit at a minimum distance of 650 metres away.

⁶⁴ There is also a 2.0-hectare contingency in addition to the 3.0 hectare mine panel for progressive rehabilitation, to allow for weather and seasonal impacts. In winter grass may be slower to establish. At a rate of advance of 35 metres per week on average, 2.0 hectares will provide approximately 6 weeks contingency.

Upon the cessation of the Project and after final rehabilitation, the view from this property will be akin to what currently exists, apart from with a lower landform (due to extraction having taken place). The site will then return to pastoral grazing, with the lagoon, CWF and northern drain augmented with further planting. Given the distance, elevation and viewing angle of this property, and the fact that mining disturbance is limited to 3.0 hectares at any one time, it has been determined that there will be a *low (minor) short term visual effect* on this property during the Project. Once the Project is completed this will reduce to a *very low (less than minor) visual effect*.

Rural Section 6674 - C Cowan

This rural section is located approximately 30 metres from the boundary of the site and 380 metres from the eastern edge of the stockpile bund.⁶⁵ It is orientated at a higher elevation than the site (at approximately 26-28 metres above sea level at the SH6 entrance), allowing for long distance views towards the coast. Currently no residents permanently occupy the site, however there is potential for a dwelling to be established in the future. Approval for the Project has been shown to be forthcoming from this property owner, and as such, the effects of the Project have not been considered in greater depth.

3172 Coast Road (SH6), RS 5327 – M Morgan and M Radford

This property is located just north of Canoe Creek and is the furthest away of the seven properties discussed within this assessment. The residence is surrounded by dense vegetation that forms part of the gently sloping foothills of the Paparoa Ranges. It is located approximately 510 metres from the south-eastern boundary of the site and is approximately 26-30 metres above sea level. This property is orientated towards the Tasman Sea and has viewshafts towards the coastline, SH6, and the Canoe Creek riparian margin.

In terms of the Project, vegetation clearance on the road reserve adjacent to the neighbouring property at 3195 Coast Road, may open up views for this particular residence towards the Project site.⁶⁶ Any change would be most visible from the resident's driveway and front of their property. Vehicle movement along the new access road, the stockpile bund and the Processing Plant and associated facilities, may be visible (the latter at a distance of 845 metres).

⁶⁵ The distance is measured from the edge of the private land parcel (as there is no dwelling) to the boundary of the site.

⁶⁶ Vegetation removal on the boundary of 3195 Coast Road/SH6 is required to allow for safe sightlines for vehicles entering and exiting the site.

The visual effect on this property will be greatest at the beginning of the Project whilst mitigation planting is establishing a visual screen along Collins Creek. Over time, only the taller part of the Processing Plant, vehicles higher than the mitigation planting, and vehicles exiting/entering the site will be visible. Additionally, the use of recessive colours for buildings help to minimise visual effects further. For these reasons, the Project is anticipated to have a *very low (less than minor) short term visual effect* on this property.

10.4 Other Potential Visual Effects

It is also pertinent to provide expanded detail than previously supplied in Section 5.4 for three of the potential visual effects arising on the receptors identified above:

Lighting

Lighting on site has been specifically designed to reduce the effect of the Project on the Taiko. All lighting will not exceed 2.0 lux light spill (horizontal and vertical) onto any adjoining property. It will also have blue light filtered or reduced to operate primarily within the yellow-orange spectrum of the light pollution guidelines, be pointed downwards, and shielded to avoid light spill. It will only illuminate the object or area intended and be mounted as close to the ground as possible. External lighting will be minimised on the seaward side of the buildings to minimise light spill towards the coast. The proposed lighting will not significantly impact the existing environment due to light generated by the farm properties in the area and the villages of Barrytown and Punakaiki.

Vehicle Movement

SH6 provides regionally significant infrastructure, connecting the site with Westport to the north and Greymouth to the south. The effects generated by vehicle movement on-site and on SH6 have been previously identified above. This movement will have the greatest effect on those who live nearby as opposed to those who briefly pass the site. There will not be a significant change of vehicle intensity brought about by the addition of mining vehicles using SH6. In terms of the visual effect of internal trucks and machinery operating on site, there will be a recognisable shift in intensity versus the current farming operation where only an occasional farm or stock vehicle moves about the site.

Visual 'Bulk' of the Processing Plant

The Processing Plant will be the largest structure on the site and a new element in the landscape. It will be accompanied by other built facilities clustered together (refer to Section 5.4: Further Details on the Proposal). The Processing Plant will generate a noticeable visual effect, especially because it is a new element in the landscape and part of it is taller than the 10-metre permitted height limit imposed by the *Grey District Plan*.

In order to mitigate some of the visual effects associated with this change in scale, the southern end of the 4.5-metre-high stockpile bund, (plus a small extension to it wrapping around the northern side of the buildings), will be utilised to soften the base of the buildings into the landscape. Planting will be established on top of the bund using relocated flax, supplemented by further planting (refer to the Landscape Mitigation Plan in the Graphic Supplement). Additionally, the building will be painted a recessive colour such as 'Colorcote Mudstone', which is sensitive to the rural and coastal character, assisting the structure to recede into the surrounding environment. At the end of the mine life, all buildings will be removed, apart from part of the Processing Plant which will be adopted for farming purposes.

10.5 Visual Effects Summary

In summary, the visual effects of the Project will primarily arise from:

- The short-term change in landuse from pastoral to mining extraction.
- The minimal vegetation removal.
- Changes in landform, particularly the visual effect of the stockpiles, mining pit and bare earth.
- The addition of the Processing Plant (particularly the 15-metre component), associated facilities, and lighting.
- The addition of a new site access and internal roading.
- The movement of vehicles and machinery on SH6 and within the site.
- The visibility of the active mining disturbance area as it moves across the site.
- The addition of new mitigation bunding, planting, and fencing.
- The change in character from open to more enclosed along the site boundaries.

As the mining is completed in stages, it will progress in west-east panels from the south-western corner to the north-eastern corner of the site. The site will change over time as mining progresses,

with approximately 8.0 hectares disturbed at any one time (this figure includes the processing plant and access road also).⁶⁷

In general, it can be anticipated that as the mining moves through the different stages, the short-term effect on public and private viewers will vary. Likewise, as mitigation planting establishes, the activity will progressively be screened from view, reducing the visual effect further. Out of all the components which make up this Project, the Processing Plant has the greatest adverse visual effect due to its height and its uniqueness in the surrounding landscape. However, it is considered that once the recommendations are implemented, the greatest adverse visual effects will be sufficiently mitigated.

Upon completion of the mining activity and final site rehabilitation, farming activity will recommence, and the site will appear similar its current state, albeit with a lower landform. For these reasons, it is considered the completed Project will have a *very low visual effect (less than minor)* in the long term.

⁶⁷ Refer to Section 5.3: Project Staging which illustrates how the 8.0-hectare amount has been calculated.

11 RECOMMENDATIONS

11.1 The Long-Term Goal – Compatibility with the Surrounding Landscape

The main objective of these recommendations is to return the site (after mining activity is complete), to a condition which is compatible with the surrounding landscape. To achieve this, the land will need to be capable of sustaining a variety of end uses including pastoral farming. The end result will need to be productive, support and enhance conservation values and align with the relevant statutory provisions. For production to occur after mining activity is complete, the landform and landcover must be suitable. This means that site conditions such as contouring, drainage, and plant growing medium are able to provide for full and free root development to support pasture growth and production.

The following sections outline the proposed recommendations to mitigate any potential adverse landscape and visual effects of the Project. They also assist with integrating the Project into its rural surroundings. The recommendations section should be read alongside the Landscape Mitigation Plan contained within the Graphic Supplement.

11.2 The Landscape Mitigation Plan

The Landscape Mitigation Plan reflects the mitigation measures that will be implemented to reduce potential landscape and visual effects of the Project and to enhance the biodiversity of the site. These specific measures are implemented across the site and in several stages: Before Mining Commences (Pre-Mining), During the Mining Operation (Mining and Processing), and Once Mining is Complete (Final Rehabilitation). Key components are outlined as follows:

11.3 Before Mining Commences (Pre-Mining)

Landscape and visual mitigation measures to be undertaken as part of site establishment and prior to the commencement of mining include:

	Activity	Location	Details	Desired Outcome	Timeframe
LAND RETENTION					
1.	Establish a boundary for the mining disturbance area.	20 metres offset from: <ul style="list-style-type: none"> ▪ Collins Creek ▪ The northern and southern boundaries ▪ Canoe Creek Lagoon ▪ The coast. 200 metres offset from: <ul style="list-style-type: none"> ▪ SH6. 	Provide a buffer zone between mining activity and the natural features of the site, neighbouring properties, and SH6.	Mitigate adverse effects generated by mining activity from identified landscape features, neighbouring properties and SH6.	For the life of the Project (Short Term).
BUNDING					
2.	Constructing a 1.8-metre-high visual bund.	Along the eastern boundary of the site, running parallel to SH6. Specifically, from the north-eastern corner of the site, culminating north of the residence at 3261 Coast Road.	The bund will be 1.8 metres high, with 1:3 sloping sides. The sides will slope gently to meet the existing landform.	The bund will accelerate the height of the planting. It will assist to soften and screen onsite structures, movement, and activities for users of SH6.	Permanent.
3.	Utilising the 4.5-metre-high short term stockpile bund.	The southern end of the stockpile bund plus a small extension, wrapping around the north-eastern side of the Processing Plant.	The stockpile bund will be utilised for landscape and visual mitigation.	The bund will provide visual screening and softening of built form for users of SH6 and neighbouring properties.	For the life of the Project (Short Term).
PLANTING					
4.	Ensuring all new plant species are appropriate.	Sitewide.	Plant species chosen will be: <ul style="list-style-type: none"> ▪ Native ▪ Found within the Barrytown area. ▪ Suitable for the coastal environment. 	This will ensure planting thrives.	During site establishment.
5.	Ensuring new plants are a suitable size and	Sitewide.	New plants are to be at least 500mm tall at the time of	This will promote fast-growing shrubs which will be able	For the life of the Project (Short Term).

	health.		planting and spaced at approximately 1.5 metre intervals.	to provide visual screening quickly.	
6.	Planting the visual bund adjacent to SH6.	Along the eastern boundary of the site, running parallel to SH6.	Planting the top and eastern side of the bund with a densely forming shrub and tree mix.	Planting the bund will assist to soften and screen on-site structures, movement, and activities.	Permanent.
7.	Planting the southern end of the stockpile bund.	The southern end of the stockpile bund plus a small extension wrapping around the north-eastern side of the Processing Plant will be planted.	Planting will consist of new plants and relocated flax.	Planting the bund will assist to soften and screen the appearance of on-site structures, movement, and activities for users of SH6. Note: the tallest part of the Processing Plant will remain visible.	For the life of the Project (Short Term).
8.	Planting and fencing the edges of Collins Creek.	Planting will occur alongside Collins Creek	Ensuring a minimum of 3 metres planting on both side of Collins Creek with fencing on the outer edge.	Provision of visual screening for neighbouring properties and users of SH6, to support stream health, and to meet statutory obligations.	Permanent.
9.	Planting and fencing the northern drain.	Running parallel with the northern boundary until it feeds into Rusty's Lagoon.	3 metre width riparian planting and fencing along the southern side of the northern drain.	Planting will support stream health and assist to meet statutory obligations.	Permanent.
10.	Planting along the south-west coastline.	The south-west coastal edge where pasture gives way to foreshore.	10-metre-wide planting in dense rows using flax (or similar species).	Planting will provide visual screening of the site for beach users and assist with erosion control.	Permanent.
11.	Planting along the edge of coastal lagoon.	The perimeter of the Canoe Creek Lagoon.	6-metre-wide wetland planting.	Planting will provide visual screening of the site for beach users.	Permanent.
12.	Planting the north-western edge of the Clean Water Facility (Pond 4).	The north-western edge of the Clean Water Facility, between the coastal lagoon and the ponds.	The ponds will assist with water management during the Project. Upon completion, they will be utilised as a wetland extension.	The ponds provide the opportunity for the Clean Water Facility to merge in with the existing landscape.	Permanent

13.	A planted strip along the north-eastern boundary.	Adjacent to 3323 Coast Road.	Scattered trees and planting in negotiation with the landowners.	Provides landscape mitigation (visual screening).	Short term or Permanent (to be negotiated).
DESIGN OF THE PROCESSING PLANT					
14.	Ensuring buildings use recessive colours, including single colours for building cladding, roofs, and trims.	The Processing Plant and associated facilities.	Preferrable colours are those in the neutral, earthy, and natural colour ranges. Chosen colours should comply with the acceptable Light Reflectance Values (LRV) of <20%.	This ensures buildings will use suitable colours and will recede within the rural and coastal environment. It also removes issues with reflectivity and glare.	Permanent.

11.4 During the Mining Operation (Mining and Processing)

Landscape and visual mitigation measures to be undertaken during the mining operation include:

	Activity	Location	Details	Desired Outcome	Timeframe
BACKFILLING					
1.	Progressive rehabilitation.	Location dependant on the mining sequence.	The excavated land will be backfilled, levelled, and recontoured,	Levelled out and recontoured landform to maintain a small, disturbed area/footprint.	For the life of the Project (Short Term).
2.	Using an intermediate grassed cover.	Locations: <ul style="list-style-type: none"> ▪ To rehabilitate each panel. ▪ On the non-planted portion of the stockpile bund. 	Immediate grassed cover to be provided from either seed or hydro-seeded grass.	Limits the amount of time bare earth is visible and also limits erosion.	Short Term.
PLANTING MAINTENANCE					
3.	Maintaining all new and existing planting areas on site	Sitewide.	Plant maintenance includes: <ul style="list-style-type: none"> ▪ Weeding ▪ Spraying ▪ Staking ▪ Watering ▪ Fertilising ▪ Trimming ▪ Releasing of plants ▪ Pest removal ▪ Replacement of plants (where necessary). 	Plants which are vigorous and thriving, thereby providing more effective screening and typical landform cover.	For the life of the Project (Short Term).

11.5 Once Mining is Complete (Final Rehabilitation)

Landscape and visual rehabilitation measures to be undertaken once mining is complete include:

	Activity	Location	Details	Desired Outcome	Timeframe
REHABILITATION					
1.	Remediation of the site to achieve the desired landform, slope, and drainage.	Sitewide.	Recontouring the land with gentle mounds and hollows and to promote good drainage.	Allows the site to return to pastoral grazing once again. Limits the long-term landscape and visual effects on landform.	Once the mining activity is complete (Permanent).
2.	Providing sufficient growing medium and resowing grass.	Sitewide.	Spreading 100-150mm topsoil to provide sufficient growing medium. Sowing pastoral grass.	Allows the site to be returned to pastoral grazing once again.	Once the mining activity is complete (Permanent).
3.	Planting the remainder of the Clean Water Facility with wetland planting	Clean Water Facility.	Including additional wetland plants around the Clean Water Facility to enhance the wetland habitat.	Allows the Clean Water Facility to evolve into a wetland area and merge in with the existing landscape.	Once the mining activity is complete (Permanent).
4.	Retaining the majority of new planting.	Sitewide.	Retaining the majority of new plants that have been established.	Progressive rehabilitation of the site is a positive effect.	Permanent.
5.	Retaining the bund along SH6.	Along the eastern boundary of the site, running parallel to SH6.	Maintaining the new planting along the top and in front of the bund.	Provides continual screening of the built form onsite. No need to remove bund long term.	Once the mining activity is complete.
6.	Realigning and/or adding new fencing	Where required.	For stock control and policy requirements, especially around waterways.	Compliance with relevant waterway standards.	Once the mining activity is complete.
7.	Creating usable land for pastoral farming.	Sitewide.	The final site layout will be considered alongside the owner.	Allows the site to be returned to pastoral grazing.	Once the mining activity is complete.
8.	Retaining the new access road.	Runs along the southern site boundary.	For new farm access to shed and hardstand areas.	The access road is adopted and used as part of future farm works.	Permanent.

12 CONCLUSION

TiGa Minerals and Metals Limited seeks to obtain consent to extract ilmenite, garnet, and the possible extractions of lesser concentrations of zircon and gold. These minerals are present within a 115-hectare site of privately owned farmland at 3261 Coast Road (SH6), Barrytown, in the Grey District on the West Coast of New Zealand.

This Landscape and Visual Assessment has determined the potential landscape and visual effects arising from the proposed mining extraction and processing activity. As part of this, the existing landscape character and amenity value of the location has been evaluated. The landscape and visual effects during and at the end of the mining operation have been assessed against this, as well as the relevant statutory provisions. Design principles are also incorporated by way of mitigation and rehabilitation to assist where values may be potentially affected.

Overall, when comparing the landscape effects of the mining activity compared to the existing farming operation, it is determined that the proposed changes are appropriate for the location. The Project is considered to have a *low level of effect (minor) on landscape character*, during the Project and a *very low level of effect (minor) on landscape character* in the longer term. This is primarily due to the short timeframe, the graduation of effects across the Project (largely dependent on when and where the mining activity is occurring), the mitigation proposed and the ability for rehabilitation to occur.

In terms of the visual effects generated by the Project on public and private receptors, these will primarily arise from the visibility of the mining pit, the movement of vehicles, and the addition of new structures and planting. In general, as the mining progresses through the different stages, the effect on visual receptors will vary, due to the distance between them and the activity. The Project will have a *low (less than minor) short term effect for the users of SH6 and the Pakiroa Beach foreshore*. On private receptors, the visual effect varies, *from very low (less than minor) through to low to moderate (minor)*.

The establishment of mitigation planting will assist to screen mining activity from view, reducing the visual effect for all parties. The final rehabilitated site will appear similar to the current situation, (albeit with a lower landform) and with the positive benefit of additional new planting.

APPENDICES

Appendix 1 – Landscape and Visual Assessment Criteria

Appendix 2 – Landscape and Visual Graphic Supplement

Appendix 3 – Background Documents Reviewed

APPENDIX 1: LANDSCAPE AND VISUAL ASSESSMENT CRITERIA

An Introduction to Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines

This assessment has been prepared in accordance with the concepts and principles outlined within *Te Tangi a te Manu: Aotearoa Landscape Assessment Guidelines*. These guidelines were published by Tuia Pito Ora, the New Zealand Institute of Landscape Architects (NZILA) in July 2022. For further information on the guidelines, please refer to <https://nzila.co.nz/about/te-tangi-a-te-manu>.

Origins of Te Tangi a te Manu

These national guidelines are the result of more than four years' mahi, collaboration and consultation. They encapsulate the best collective wisdom of landscape architects working in landscape assessment under New Zealand's legislative framework. They also include insight from researching case law, reviewing findings of Landscape Assessment workshops,⁶⁸ and understanding best practice landscape guidelines from both New Zealand and overseas.⁶⁹ The guidelines are at the forefront of emerging practice internationally and will continue to evolve over time.

Whilst previous assessment approaches⁷⁰ have been built on the physical, associative, and perceptual realms of landscape, the guidelines underpinning this assessment go further. They promote a Te Ao Māori and Te Ao Pākehā partnership approach to landscape, binding together the layers of people and land across time and place. In doing so, the guidelines ensure that both tāngata whenua and tāngata tiriti values and perspectives are captured and equally shared and understood.

Purpose of Te Tangi a te Manu

Ultimately these guidelines (and subsequently this assessment) seek to assist decision-makers⁷¹ and others⁷² to manage and improve landscape values within a statutory planning context. Consequently, they also provide a much stronger platform for Landscape Architects and allied professionals to assess and manage landscapes. As part of undertaking this assessment, the assessor has identified the landscape's character and values (and the attributes on which those values depend), assessed the effects of the Project on these values, and designed mitigation measures to

⁶⁸ Landscape Assessment Methodology workshops were held across New Zealand in November 2017 by the NZILA.

⁶⁹ This includes the *New Zealand Quality Planning Landscape Guidance Note*, as well as the well-known United Kingdom *Landscape Institute and Institute of Environmental Management and Assessment, Guidelines for Landscape and Visual Impact Assessment (GLVIA3)*, 3rd Edition, published in 2013.

⁷⁰ The guidelines replace *NZILA Best Practice Note 10.1: Landscape Assessment and Sustainable Management*, 2010.

⁷¹ 'Decision-makers' means the Environment Court, boards of inquiry, council commissioners, and some council officers with certain delegated authority.

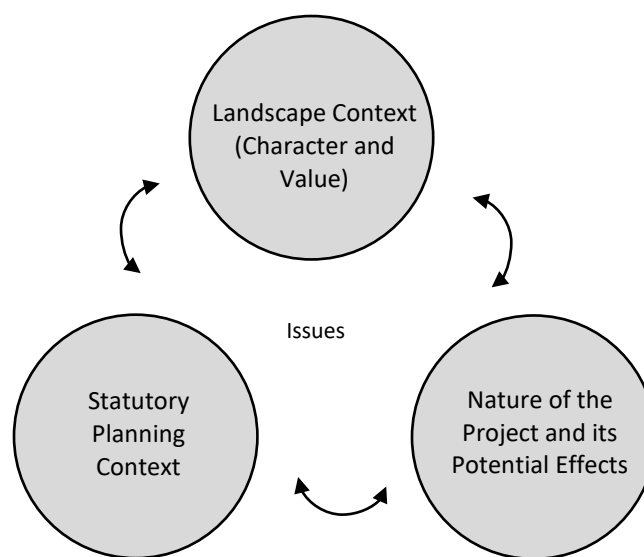
⁷² 'Others' means everyone else involved in statutory planning processes.

maintain and improve values. Whilst undertaking this work, a structured approach has been used to ensure that findings are clear and objective. Judgement is based on skills and experience, supported by explicit evidence and reasoned argument. This approach is consistent with the Environment Court’s ‘Code of Conduct for Expert Witnesses.’⁷³

Methodology underpinning Te Tangi a te Manu

This assessment has adopted a principles-based approach that has allowed the methodology to be tailored to the Project. This approach emphasises transparency and reason, rather than adherence to prescriptive methods. Following a prescriptive method is not possible, because all landscape assessments vary (in type and scale) and require the need to interpret the different types of information and values (objective and subjective) inherent in landscapes.

This assessment focuses on the relevant issues for the decision maker. These issues arise from the drivers behind the assessment, the landscape context it is situated within, and the potential effects arising from the relevant statutory planning provisions. In addition, a concurrent iterative design process seeks to avoid, remedy, or mitigate adverse effects which may arise as a result of a Project.



⁷³ *Environment Court of New Zealand, Expert Witnesses, Code of Conduct, Environment Court Practice Note, 2014, Section 7.2.* Available from: <http://environmentcourt.govt.nz/assets/Documents/Publications/2014-ENVC-practicenotes.pdf>

Definition of the Term ‘Landscape’

This assessment defines the term ‘landscape’ as consistent with that contained within the guidelines: *“Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meanings associated with it.”*⁷⁴

Approach to Landscape and Visual Assessment

While landscape effects and visual effects are closely related, they form separate parts of this assessment. Understanding landscape effects includes assessing the potential effects of a Project on landscape character and values. Whereas for visual effects it includes assessing how a Project might change the physical landscape and in turn affect the viewing audience.

Change in a landscape does not, of itself, necessarily constitute an adverse landscape or visual effect. Landscape is dynamic and is constantly changing over time in both subtle and more dramatic transformational ways. These changes are both natural and human induced. What is important in managing landscape change, is that adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change. The aim is to provide a high amenity environment through appropriate design outcomes.

Landscape Effects

Landscape effects are measured against the existing landscape context (character and value) and the landscape and visual outcomes as anticipated by the statutory planning framework. Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character. This may in turn affect the perceived value ascribed to the landscape.

The degree to which landscape effects are generated by the Project depends on:

- The degree to which the Project contrasts, or is consistent, with the qualities of surrounding landscape.
- The predictable and likely known future of the locality.
- The quality of the resultant landscape, its aesthetic values and contribution to the wider landscape character of the area.

⁷⁴ Refer to page 76 of *Te Tangi a te Manu*. This definition is also consistent with that which evolved from the NZILA Landscape Assessment Methodology workshops held in November 2017.

When determining the overall level of landscape effect, it is important to be clear about what factors have been considered when making professional judgements. The following table helps to guide this process:

Contributing Factors		Higher	Lower
Landscape (sensitivity)	<i>Ability to absorb change</i>	The landscape context has limited existing landscape detractors which make it highly vulnerable to the type of change resulting from the proposed development.	The landscape context has many detractors and can easily accommodate the Project without undue consequences to landscape character.
	<i>The value of the landscape</i>	The landscape includes important biophysical, sensory, and shared and recognised attributes. The landscape requires protection as a matter of national importance (ONF/L).	The landscape lacks any important biophysical, sensory, or shared and recognised attributes. The landscape is of low or local importance.
Magnitude of Change	<i>Size or scale</i>	Total loss or addition of key features or elements. Major changes in the key characteristics of the landscape, including significant aesthetic or perceptual elements.	The majority of key features or elements are retained. Key characteristics of the landscape remain intact with limited aesthetic or perceptual change apparent.
	<i>Geographical extent</i>	Wider landscape scale.	Site scale, immediate setting.
	<i>Duration and reversibility</i>	Permanent. Long term (over 10 years).	Reversible. Short Term (less than 10 years)

Visual Effects

Visual effects are a subset of landscape effects. They are effects on landscape values as experienced in views. Visual effects relate to the changes that may occur to the view and visual amenity experienced by people because of changes to the landscape. Much depends on where the Project is visible from and how successful any mitigation is to mitigate any effects.

The degree to which visual effects are generated by a Project depends on:

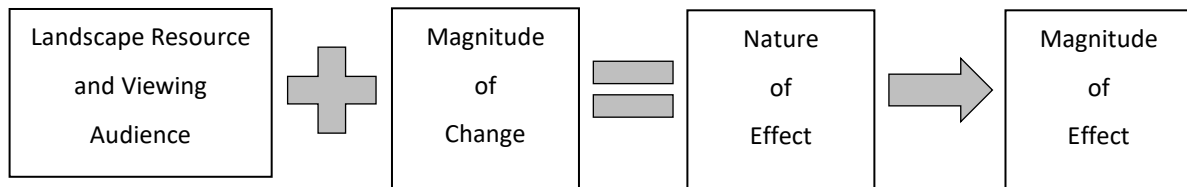
- The proportion of the Project that is visible, determined by the observer’s position relative to the objects viewed.
- The distance and foreground context within which the Project is viewed and the backdrop and context within which the Project is viewed.
- The number of viewers, their location and situation (static or moving) in relation to the view.

When determining the overall level of visual effect, the nature of the viewing audience is considered together with the magnitude of change resulting from the Project. The following table helps to guide this process:

Contributing Factors		Higher	Lower	Examples
The viewing audience (sensitivity)	<i>Ability to absorb change</i>	Views from dwellings and recreation areas where attention is typically focussed on the landscape.	Views from places of employment and other places where the focus is typically incidental to its landscape context. Views from transport corridors.	Dwellings, places of work, transport corridors, public tracks
	<i>Value attached to views</i>	Viewpoint is recognised by the community such as an important view shaft, identification on tourist maps or in art and literature. High visitor numbers.	Viewpoint is not typically recognised or valued by the community. Infrequent visitor numbers.	Acknowledged viewshafts, Lookouts
Magnitude of Change	<i>Size or scale</i>	Loss or addition of key features in the view. High degree of contrast with existing landscape elements (e.g., in terms of form scale, mass, line, height, colour and texture). Full view of the Project.	Most key features of views retained. Low degree of contrast with existing landscape elements (e.g., in terms of form scale, mass, line, height, colour and texture). Glimpse/no view of the Project.	Higher contrast/lower contrast. Open views, partial views, glimpse views (or filtered), no views (or obscured)
	<i>Geographical extent</i>	Front on views. Near distance views. Change visible across a wide area.	Oblique views. Long distance views. Small portion of change visible.	Front or oblique views. Near distant, middle distant and long distant views.
	<i>Duration and reversibility</i>	Permanent. Long term	Transient/temporary. Short Term	Permanent (fixed), transitory (moving)

Landscape and Visual Assessment – Determining the Overall Level of Effects

This assessment identifies the magnitude of landscape and visual effects that are likely to be generated by the Project. It assesses both the nature (adverse, neutral, beneficial) and magnitude of effect (low, moderate, high) and the effectiveness of any proposed mitigation.



Landscape and Visual Assessment - Nature of Effects

This assessment also considers the nature of effects in terms of whether this will be positive (beneficial), neutral (benign) or negative (adverse), in the context within which it occurs. Neutral effects can also occur where landscape or visual change is benign. Effects can also be short term or permanent and/or cumulative.^{75,76}

Landscape and Visual Assessment - Magnitude of Effects

Each effect within the assessment has been assigned a rating (magnitude of effect) to distinguish effects from one another and to assist with determining the need for landscape mitigation. Within the assessment, the specific nature of the effect is described, its magnitude is rated, and then the evaluation is justified. The seven-point scale of effects from *Te Tangi a te Manu* is as follows:⁷⁷

						Significant ⁷⁸
Less than Minor ⁷⁹		Minor		More than Minor		
Very low	Low	Low – Moderate	Moderate	Moderate – High	High	Very High

⁷⁵ Refer to footnote 140. on page 135 of *Te Tangi a te Manu* which describes the meaning of ‘effect’ in more detail and includes short term or permanent effects.

⁷⁶ For more information on cumulative effects, refer to pages 153-154 of *Te Tangi a te Manu*.

⁷⁷ Refer to pages 140 and 151 of *Te Tangi a te Manu* which covers this in more detail.

⁷⁸ The term ‘significant’ is only to be used when evaluating Policy 13(1)(b) and Policy 15(b) of the *New Zealand Coastal Policy Statement (NZCPS)*, where the test is ‘to avoid significant adverse effects’.

⁷⁹ For more information on the terms ‘minor,’ ‘less than minor,’ and ‘no more than minor,’ refer to pages 150-151 of *Te Tangi a te Manu*. An assessment of whether the effect generated by a Project are “less than minor” will generally involve a broader consideration of the effects of the activity, beyond landscape and visual effects. In addition, more than minor effects on individual elements or viewpoints, does not necessarily equate to more than minor landscape effects.

Widely used definitions across the landscape profession and included within *Te Tangi a te Manu* include (but are not limited to):

Low: “A slight loss to the existing character, features or landscape quality.”

Moderate: “Partial change to the existing character or distinctive features of the landscape and a small reduction in perceived amenity.”⁸⁰

In addition:

‘More than Minor’ is characterised as “moderate effects or above” on the 7-point scale.

‘Minor’ is characterised as “low” and “low to moderate” effects.

‘Less than Minor’ means insignificant. It can be characterised as “very low” and “low” effects.⁸¹

⁸⁰ Refer to page 141 and footnote 149 within *Te Tangi a te Manu*.

⁸¹ Refer to page 150 and footnote 158 within *Te Tangi a te Manu*.

APPENDIX 2: GRAPHIC SUPPLEMENT

Refer to the Graphic Supplement which is appended to this report as a separate document.

APPENDIX 3: BACKGROUND DOCUMENTS REVIEWED

As part of preparing for this assessment, previous landscape work completed for the site was reviewed. This included the:

- *Barrytown JV Limited, Barrytown Mineral Sands Mining Project: Assessment of Landscape and Visual Effects*, by Christopher Glasson of Glasson Huxtable, 28th April 2021
- *Barrytown Mineral Sands Mining Project: Landscape Appendix 2, Graphic Supplement (Revision D)*, by Christopher Glasson of Glasson Huxtable, April 2021.
- Resource Consent Applications by Barrytown JV Limited, *Statement of Landscape Evidence by Christopher Glasson*, 3rd August 2021.
- Resource Consent Applications by Barrytown JV Limited, *Statement of Supplementary Landscape Evidence by Christopher Glasson*, 14th October 2021.
- *Barrytown Mineral Sands Mining Project: Landscape Appendix 1, Graphic Supplement*, by Glasson Huxtable, Revised October 2021 (The revision included further Project detail as well as Project visualisations prepared by Virtual View).
- Resource Consent Applications by Barrytown JV Limited, *Statement of Supplementary Landscape Evidence by Bronwyn Faulkner*, 15th October 2021 (This was peer reviewed landscape evidence).
- *Barrytown Mineral Sands Mining: Proposed Conditions of Consent*, by Tai Poutini Resources, October 2021.
- *Wetland and Riparian Planting Plan – Barrytown JV Limited Mineral Sands Mine, Barrytown*, by The Ecology Company, 13th October 2021.
- Various statements of evidence prepared by submitters in relation to landscape and visual matters.



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