Westland Mineral Sands Limited

APPLICATION FOR RESOURCE CONSENT TO WEST COAST REGIONAL COUNCIL AND WESTLAND DISTRICT COUNCIL

MANANUI MINERAL SAND PROJECT

WESTLAND MINERAL SANDS CO. LTD

APPLICATION FOR RESOURCE CONSENT TO WEST COAST REGIONAL COUNCIL AND WESTLAND DISTRICT COUNCIL - MINERAL SAND MINING ACTIVITIES AT MANANUI

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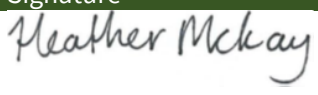
	Name	**Signature**	**Date**
Prepared by:	Jorja Hunt		24/10/2023
Reviewed by:	Kate McKenzie		24/10/2023
Approved for release:	Kate McKenzie		24/10/2023
	Name & Title	Signature	Date
Updated by Westland Mineral Sands Co.	**Heather McKay** **General Manager Environment and Sustainability**		06/12/2024
	Tim Chase **General Manager WMSC**		06/12/2024

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Contents

1. Executive Summary

1.1 Westland Mineral Sands Co. Limited (WMSC) currently holds a Mining Permit MP60508 at Mananui over approximately 140.178ha of land. Resource consent is sought to undertake mineral sands mining and processing to obtain ilmenite, garnet, gold and other minerals over an area of approximately 112ha (covered by Mining Permit MP 60508) at WMS Land Co. Ltd owned land, and to construct necessary infrastructure.

1.2 The mining activity is seeking to produce a Heavy Mineral Concentrate (HMC) for export, with the activity involving processing of the mineral sand deposit previously identified within the application area.

1.3 The site is currently used for dry stock grazing/dairy support and is modified farmland located adjacent to State Highway 6, with wetlands and forest bordering the site to the east and a Department of Conservation ecological reserve to the south.

1.4 The application area is located within the Rural Zone as defined by the Westland District Plan and the activity is classified as a mining activity.

1.5 The application area is proposed to be zoned General Rural Zone under the proposed Te Tai o Poutini Plan.

1.6 The mining operation involves extracting mineral sand ore from a mining strip area, pumping the ore to a processing plant located on the western side of the site, extracting Heavy Mineral Concentrate and returning the un-mineralised sand to the mining void. Mining will progress in strips across the site, generally in a north-south orientation, starting in the south west and progressing northward. Heavy Mineral Concentrate will be transported off the site to the Port of Greymouth, for direct export.

1.7 The applicant estimates that approximately 65-70 positions will be created as a result of this proposed mining operation and the associated logistics chain, and a $37.9 million increase to Regional GDP, which represents significant positive effects for the West Coast region.

1.8 This application is informed by specialised technical reports completed by experts including the following:

- Hydrological assessment and Water Management Plan
- Landscape assessment
- Acoustic assessment
- Traffic assessment
- Ecological impact assessment

- Radiation Assessment
- Various draft management plans

1.9 The recommendations set out within these reports have been adopted and volunteered as resource consent conditions.

1.10 This Assessment of Environmental Effects (**AEE**) report considers the effects of the proposal and determines that the proposal will have no more than minor adverse effects on the environment while having positive effects in terms of economic growth and local employment opportunities, as well as long term gains for biodiversity. The proposal involves substantial measures to mitigate the effects on the environment, such as effects on landscape and visual amenity, noise effects, traffic effects, indigenous flora and fauna and water bodies. The effects management hierarchy has been applied (as appropriate) in relation to potential effects which have been identified, particularly in relation to effects on waterbodies and wetlands surrounding the site. An assessment against the objectives and policies of relevant documents, including the Westland District Plan, the West Coast Regional Land and Water Plan, the proposed Te Tai o Poutini Plan, the Regional Policy Statement 2019, the National Policy Statement for Freshwater Management and the National Policy Statement for Indigenous Biodiversity concludes that the proposal is consistent with the relevant provisions of each document.

1.11 WMSC has engaged with iwi, local residents and landowners, and agencies with an interest in the application and this consultation is ongoing.

1.12 Pursuant to section 95A of the Resource Management Act 1991, WMS requests that the application be publicly notified to ensure interested parties can have a say.

1.13 The proposal accords with the purpose and principles of the Resource Management Act 1991 (RMA) and accords with the definition of sustainable management.

2. Details of Applicant

Applicant

Westland Mineral Sands Co. Ltd
PO Box 1060
Christchurch Central 8140
Attn: Heather McKay
E:Heather@wmsnz.com

Consultant

Tai Poutini Professional Services Ltd
100 Mackay Street
Greymouth 7805
Attn: Kate McKenzie
M: 027 600 3586
E: kate.mckenzie@tprl.co.nz

All correspondence should be sent to the applicant..

3. Application Site and Surrounding Environment

Site Details

3.1 The site for the proposed activity is located at Mananui on the South Island's West Coast. Mananui is approximately 7.5km south of the Hokitika Township and approximately 4km north of Ruatapu and is to the East of State Highway 6 which is the main stretch of highway between Ross and Hokitika.

3.2 The proposed site is located at 713 Ruatapu Road (State Highway One, SH1), Mananui legal description of Lot 3 DP 366769 BLK VII Māhinapua Survey District and is contained within Record of Title WS8C/973 (see **Attachment A**). The site is known as the York Block and has an area of 139.99 hectares (ha). The north-western boundary is defined by SH6, south-eastern boundary is bounded by the Tūwharewhare (Māhinapua Creek) riparian zone. An aerial image is shown in **Figure 1** below, and a site plan of the proposed mine site can be found in **Attachment B**.

Figure 1: Aerial view of the proposed mining area shaded yellow – Source: Westland Mineral Sands Co Ltd.

3.3 The applicant holds Mining Permit - MP60508 which expires in 2039 and covers the 140ha property. The property title includes privately held mineral rights. Garnet and Ilmenite are not crown owned therefore the Mining Permit is only required for the small amount of gold that will be recovered as a by-product.

3.4 The application area is approximately 112 ha of land within the application site currently used for dairy/dairy support and is modified farmland located adjacent to State Highway 6, with wetlands bordering the application area to the east. The site has a series of parallel low dune ridges running from north to south, which resemble humped and hollowed farmland.

3.5 The site contains 4.2ha of fragmented remnant indigenous vegetation within the proposed application area, which is of low quality due to pest and stock pressure. At-risk indigenous species have not been identified as being present within these fragments, and further surveys were completed in spring 2023 following the consent application and confirmed no species were present. In the southeast of the application area, the topography is raised above the adjacent wetland, and midway up the site a drainage channel has been cut through the dune ridges to allow drainage of the farmland to Tūwharewhare.

3.6 The site is elevated between 5 and 14m above mean sea level (AMSL). In the east, the Māhinapua Wetland sits at ~3m AMSL, rising steeply to ~12m then gently dips towards to the West. The pastured area of the site consists of a series of North/North East trending shore dune ridges which gives the site an undulating topography. SH6 sits at between 6-7m AMSL.

3.7 The property is leased by a local farmer from WMS Land Co. Ltd and is currently utilised as a dairy support farming block. Most of the site is covered in established pasture. A number of drains also run through the application area which are directed to various discharge points along Tūwharewhare. Currently the pasture is unfenced along the eastern forest/wetland edge, and stock have full access to the Māhinapua wetland and Tūwharewhare.

3.8 The site is accessed off State Highway 6 via a formed entrance at the farmhouse, and also at the southern end of the property.

3.9 The southeastern corner of the site is mapped as a Schedule 2 Wetland in the West Coast Regional Land and Water Plan. This is outside of the application area. The extent of this mapped wetland is shown in **Figure 2** below. A Schedule 1 Wetland adjoins the site.

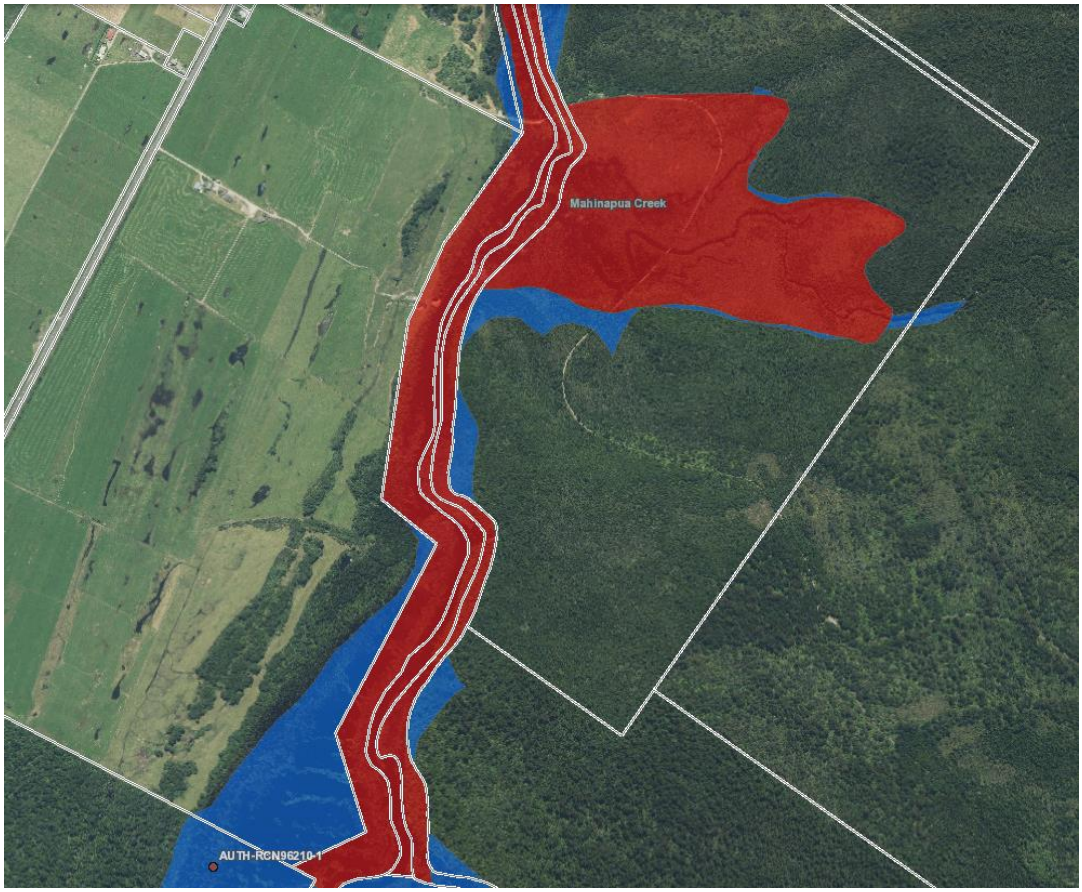

Figure 2: Aerial Image showing extent of Schedule 2 Wetland on application site (in blue) – Source: Westmaps

3.10 Mineral exploration for gold and ilmenite since the 1900s has taken place within the application areas. Previous explorers include, Alluvial Gold Oceania (1930s), Carpentaria Exploration (1967-1972), Consolidated traders Mining Limited (1987-1988), Frewen and Hyndman (1989), Placer Gold Resources (2007-2012), Westland Minerals Limited (2010-2015), Frosty Creek Limited (2012-2015), NZ Garnet Limited (2015-2019) and Tenrag Limited (2020-2022). Exploration activities generally consisted of drilling, augering and test pitting.

3.11 The Mananui and Māhinapua area has significant Maori history. Lake Māhinapua and Tūwharewhare were both valued as mahinga kai, and is now wahi tapu because of a significant battle on the shores of the lake. There are no known archaeological features on the project site associated with Maori occupation, however the significance of Lake Māhinapua and Tūwharewhare is recognised. In 1887, the application site was established as a reserve for aged and infirm miners, with buildings being established at the northern end of the property adjacent to the Mananui Tramline. In addition, a number of prospecting licences were in place prior to1900. There were no previously recorded archaeological sites within the application area.

3.12 A site survey was undertaken in July 2023, which resulted in the identification of two new archaeological site records. These are now known as J33/214 and J33/215. J33/214 relates to the buildings located along the northern boundary of the application area, and J33/215 relate to

historic mining activities to the east of the application area. A copy of these site records are enclosed in **Attachment C**.

Geology, hydrology and climate

3.13 The application area sits between Tūwharewhare and State Highway 6. The site is underlain by a sequence of shore-parallel to subparallel shoreline sediments deposited over the last 12,000 years (Holocene) during the Aranui interglacial period (Nathan et al., 2002). The target Sands are medium to fine grained, free flowing, laminated and the package varies in thickness from 4 to 16 m. Individual sand laminations vary from 1–50 cm and are typically horizontal to sub horizontal. The surface of the area is characterised by a series of long dune features that are continuous for 0.5–2 km and strike north-northeast.

3.14 The laminated sands are underlain by a gravelly sand unit of unconstrained thickness. Glacial terrace deposits sit to the east and south of the project and swamp deposits of poorly consolidated sand, mud and peat are found to the east (Nathan et al., 2002). The eastern limit of the beach sands is marked by a sea-cut cliff, marking the location of the shoreline during the last interglacial high-stand.

3.15 The target Heavy minerals, Ilmenite, Garnet, Zircon and Gold are predominantly sourced from the Southern Alps. High level uplift, rainfall and erosion and periods of glaciation and are concentrated through fluvial glacial and marine/ near shore processes. The heavy minerals are deposited on to the active beach face as strandline accumulations that have been preserved as the shoreline prograde westward. **Figure 3** shows photos from a site test pit showing the target sand with heavy mineral accumulations.

Figure 3: Photos of test pits showing the target sand with heavy mineral accumulations – Source: Westland Mineral Sands Co. Ltd

3.16 The resource was drilled between 2016-2020 with a total 255 holes drilled from the surface to the base of the resource. The drilling data was used to undertake geological modelling and a mineral

resource estimate for the site. The average sand thickness across the application area is approximately 7m thick with average garnet and ilmenite grades 16.3% and 4.7% respectively. Fine beach gold is present in some black sand strandlines with its concentration highly variable and difficult to estimate. The topsoil is between 0.1-0.6m thick with an average of 0.2m (**Figure 3**). The sandy top soil grades into clean grey sand. Typically, the top soil is thinner on the ridge crests and thicker within the hollows between. The base of the mineable resource, the contact between the Holocene shoreline sands and underlying glacial outwash gravels, sits between -2m and 1m AMSL.

3.17 The basement geology of the Mananui Area is thought to be granitic intrusions of the Hohonu Batholith, although the basement is obscured by Cenozoic sediments and Late Pleistocene glacial outwash deposits in the immediate area of the project area. Outcrops of muddy sandstone of the Blue Bottom Group are found on the north bank of the lower Hokitika River. Similar outcrops are mapped in the south bank of the Totara River to the south of Mananui. It is a reasonable inference that the Late Cenozoic Blue Bottom Group is the probable geo-hydrological basement at Mananui, however the surface geology is dominated by Late and Middle Pleistocene outwash deposits related to the advance and retreat valley glaciers.

3.18 The Mananui area lies within the Māhinapua catchment comprising the tributaries of Oglivie Creek, Frosty Creek (into Lake Māhinapua), Sandstone Creek, Cowan Creek and Fishermans Creek (into Tūwharewhare, Māhinapua Creek) which have an aggregate catchment area of 71.4 square kilometres (km^2). The Mananui area also lies on the edge of up to five very small (34 to 70 ha) sea-draining catchments, two of which lie abreast the York Block. The very weakly developed creek drainage network is also suggestive of the site and seaward land being largely drained via the groundwater system.

3.19 The part of the application site which falls within the Māhinapua catchment is shown in **Figure 4**, including the small tributary which drains through an artificial cut in the dune ridge that separates Tūwharewhare and wetland from the majority of the farm area.

3.20 The Māhinapua catchment has its highest point at Overlook Hill with an elevation of 169 m AMSL. The middle and lower catchment drains glacial till and outwash terraces west of Rimu Township. Most of the catchment is of low relief and most of the creek gradient fall is expended by Lake Māhinapua, which has a lake elevation of only 4 m AMSL. Tūwharewhare (Māhinapua Creek) begins at the outlet of Lake Māhinapua and flows north-north-east to enter the Tasman Sea at the Hokitika River Bar.

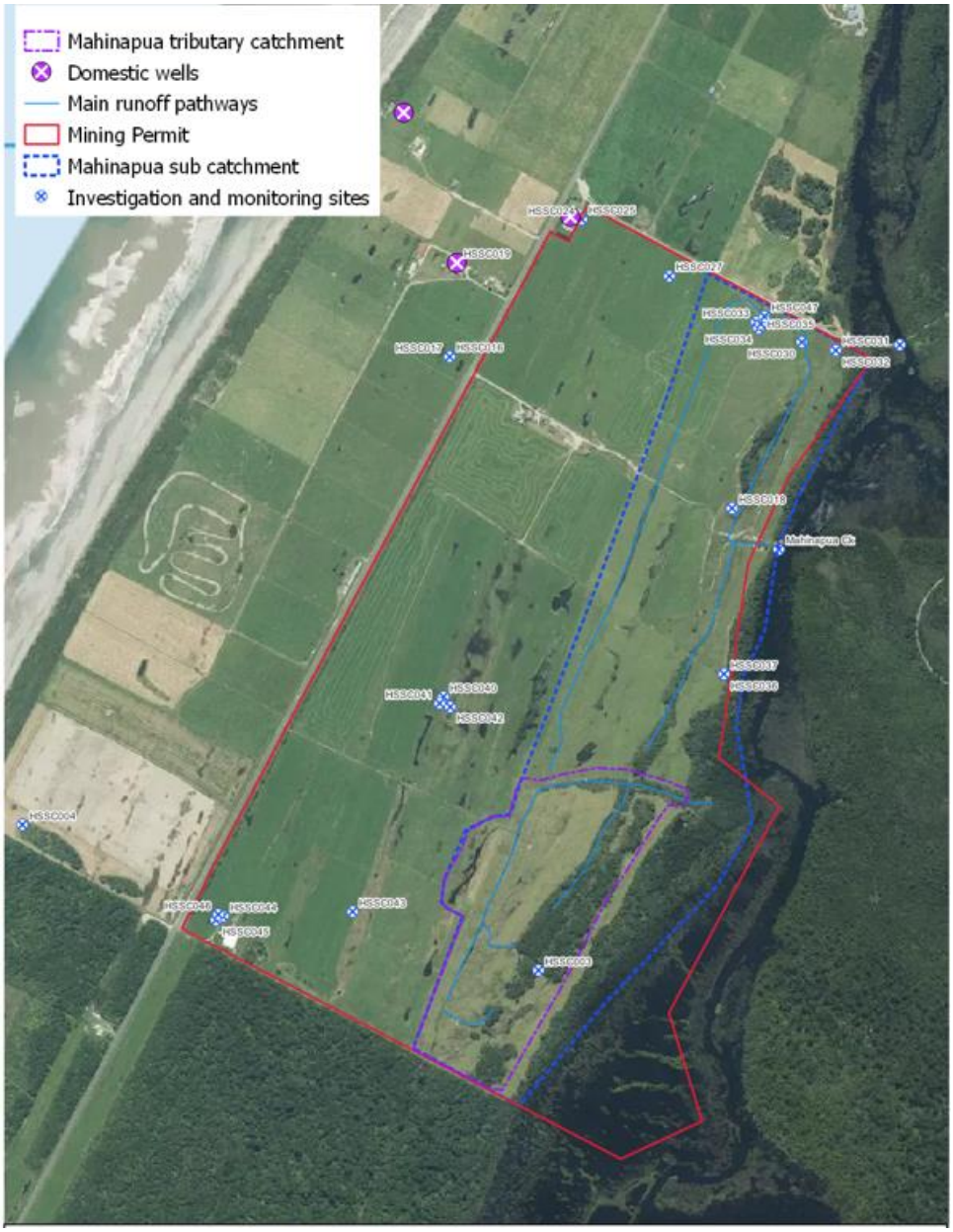

Figure 4: Catchments within the application area (Source: Kōmanawa Solutions Ltd)

3.21 The closest electronic weather stations (EWS) to the application area is at Hokitika and is considered representative of rainfall at the site. The mean annual rainfall is 2,732mm at this EWS. **Figure 6** below shows the spread of rainfall across the year.

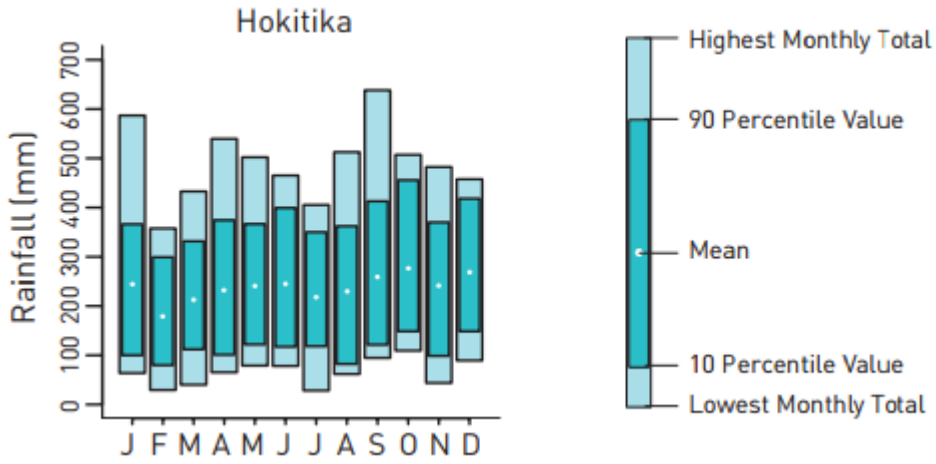

Figure 6: Monthly variation of rainfall at Hokitika EWS (Source: Kōmanawa Solutions Ltd)

Surrounding environment

3.22 The application area is bordered by State Highway 6 to the west. To the east the application area is bounded by Tūwharewhare. To the south is Department of Conservation administered land and to the north is the Mananui Tramline which provides a public walkway for use between the hours of sunrise and sunset. Much of the other surrounding land is lowland pastoral farmland cleared and modified as a result of large scale native timber milling mostly in the early 20th century.

3.23 State Highway 6 is the national route that provides access to the Westland region and forms the road link between Ross and Hokitika to the north and Franz Josef to the south. It is a Limited Access Road. The road has a carriageway width of approximately 7.2m plus 0.7m sealed shoulders and wide grass berms. Existing annual average traffic volume is approximately 2,625 vehicles per day, of which 14% is heavy traffic.

3.24 The site is separated from the coastline by State Highway 6 and the adjacent farmland which physically and visually separates the application area from the coastal environment.

3.25 The majority of farmland in the vicinity of the site are large rural landholdings, however there are a number of houses on small rural residential style blocks. There are three known domestic water supply wells at properties near the northwest corner of the site, which are shown on **Figure 5**.

4. The Proposal

Overview

4.1 WMSC seeks all resource consents necessary to construct, operate and maintain a mineral sand mine, including associated infrastructure, over an area of approximately 112 ha (covered by Mining Permit 60508) on WMS Land Co. Ltd owned land at Mananui. A site plan showing the application area and notable features is contained in **Attachment B**.

4.2 The proposed setbacks are shown on **Figure 7** and as follows:

- 10m setback from the northern and southern property boundaries;
- 20m setback from the western boundary which is 30m from the edge of SH6 tarseal;
- 85m setback from the NW corner near adjacent residents;
- Edge of the vegetation and to property boundary along the eastern boundary.

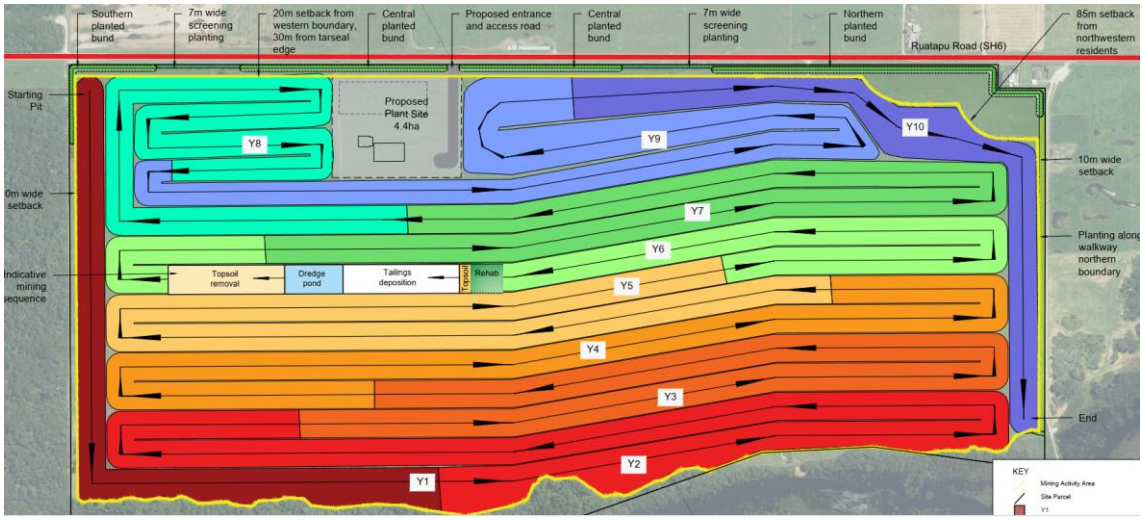

Figure 7: Site Plan (Source: Glasson Huxtable)

4.3 The mining will target the layered heavy mineral bearing shoreline sands within the proposed mining footprint above RL0m. The only overburden is the 0.1-0.6 metres of sandy topsoil that will be set aside and used for rehabilitation and for boundary bunds.

4.4 The proposed mining methodology utilises a sand dredge that sits within a mine pond initially excavated to the ground water level. Topsoil is removed ahead of the mine path and set aside for rehabilitation. As the dredge mining face advances the void created behind is progressively backfilled with tailings sand, re contoured and top soiled. The proposed dredge path is an average of 70m wide and will operate in a predominantly North - South direction (see **Figure 8** below which shows the proposed mine path).

4.5 Dredged ore is screened at the mining void to remove oversize particles (2mm) then the sand fraction is slurry pumped to a processing plant site that is situated adjacent to SH6. Once processed the tailings sand is slurry pumped back to the mining void for back filling.

4.6 Mining and processing will occur on a 24 hour 7 day a week basis. The consent is sought for a total of 16 years with an anticipated 10-year mining at maximum production. This time allows for site development, mining and closure decommissioning and final rehabilitation.

4.7 Due to the nature of the mining methodology, continuously moving mine void/pond and progressive rehabilitation and revegetation maximum disturbed area flexibility is required in the disturbed area limits.

4.8 A 27.7Ha maximum disturbance area is sought which equates to approximately 25% of the total mining area or 20% of the property. The average disturbed area is expected to be less than this.The 4.4ha plant area is additional, because this will be constructed first, and stabilised prior to mining. The approximate distribution of disturbed area across the sites is:

Activity	Area (ha)
Top soil stripping (ahead of mine path)	2
Dredge Pond	0.7
Tails area & topsoil replacement	4
Temporary soil stockpiling	2
Temporary out of pit dump	3
Drainage swales	6.4
Service corridors and roads	3
Vegetation re-establishment	3
Total disturbed area	**24.1**
15% contingency	3.6
Maximum disturbed area	**27.72**
Plant area	4.4

Table 1: Disturbed Area Calculation

4.9 The garnet and ilmenite HMC will be trucked offsite (via heavy vehicles containing 30 tonnes per truck[1]) to the Greymouth port for export. The material will be loaded to barges and then transferred to ships in the coastal marine area off Greymouth for export overseas. No additional resource consents are necessary for the Mananui related activities at the Greymouth Port.

4.10 The land will be progressively rehabilitated to pasture, and an ecological restoration area will be created along the Māhinapua Wetland and Creek. The ecological area will consist of approximately 2.37 ha of wetland and 4.75 ha of new vegetation. WMSC proposes to vest most of this area (excluding the final void wetland of 0.85 ha) with tangata whenua or the Crown,

[1] Trucks capable of accommodating heavier loads may be used if the appropriate licences can be obtained, and this would reduce vehicle movements to and from the site and lessen the transport effects of the proposal.

along with an additional grassed area, and the intact Māhinapua Wetland and forest vegetation that form part of the site to be managed in perpetuity for cultural and conservation purposes, totalling approximately 28.45ha. The exact composition and future ownership will be subject to agreement with various stakeholders.

4.11 The mine path starts in the southwestern corner, and then progresses to the east. Following this first strip, mining is oriented in a north/south direction, as shown in **Figure 8** below.

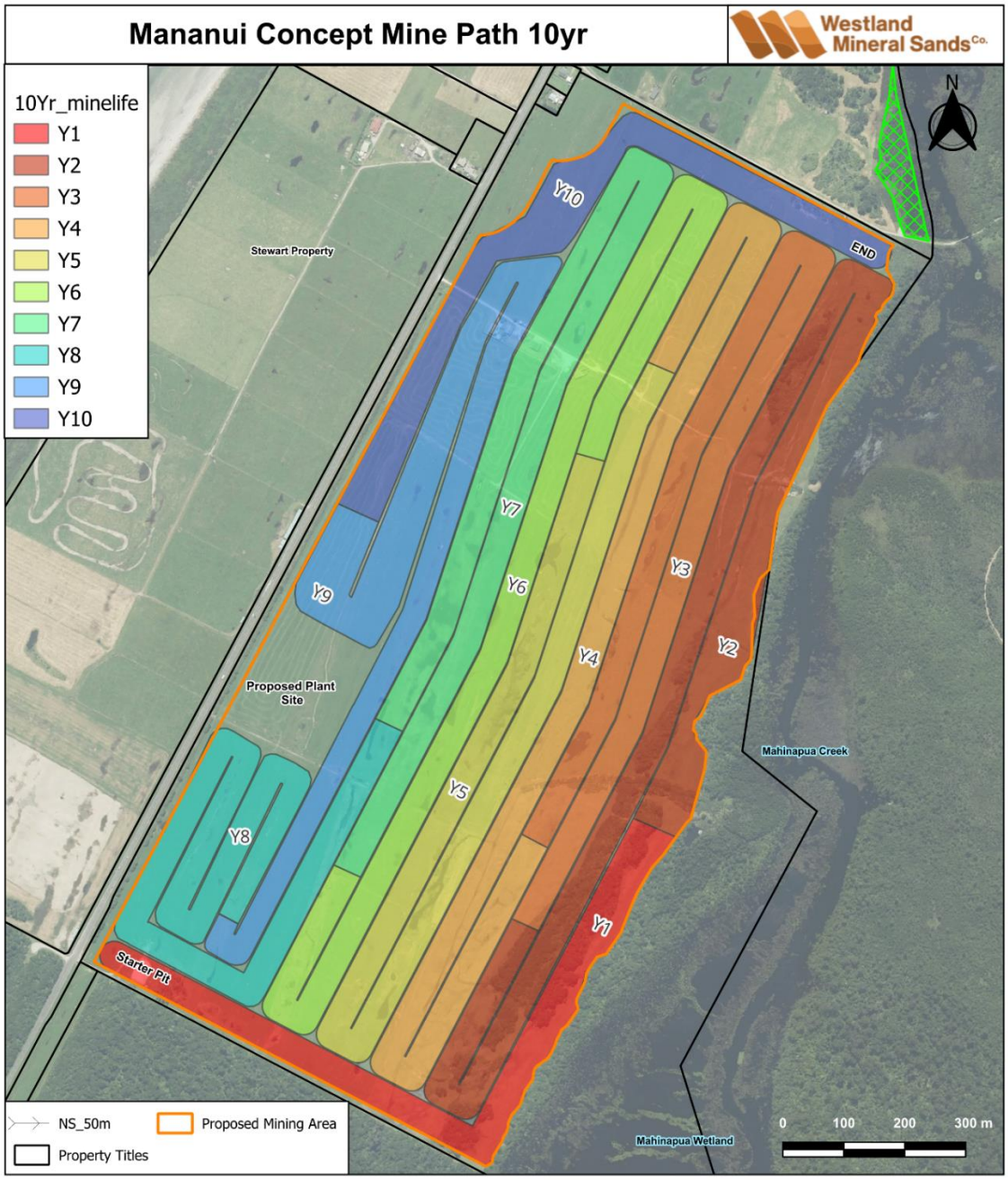

Figure 8: Mananui mine path concept (Source: Westland Mineral Sands Co. Ltd)

Pre -Mining Sequence

4.12 The pre mining sequence will commence with the removal of topsoil at the plant site. This soil will be used to construct the central 3m high 12m wide screening bund on the western boundary adjacent to the state highway.

4.13 The site entrance way onto SH6 will be constructed to give access to the plant site. The water treatment ponds will be constructed using an excavator and trucks and the excavated material will be used as additional bunding or stockpiled to the south for plant commissioning purposes. Initial site works prior to plant construction is expected to take around 3 months.

4.14 The Wet Concentrator Plant (WCP)construction and associated infrastructure will take approximately 12 months to complete.

4.15 Mining will commence in the southwestern corner with topsoil being removed from an area of approximately 70m x 286m and used for bunding and an initial topsoil stockpile. A 50m x 150-200m starter pit containing approximately 60,000m^3 of material, will be excavated using excavator and dump trucks to expose the water table. Sand from within the starter pit will be stockpiled between the starter pit and the plant for subsequent mining. A floating process will allow the dredge to be commissioned ahead of cutting down into the water table. This will commence opening of the dredge pond to the designed depth and width for full production.

4.16 A schematic showing the first 6 months of mining along the southern boundary is shown in **Figure 9** below. "OPD" in the figure relates to the out of pit stockpile.

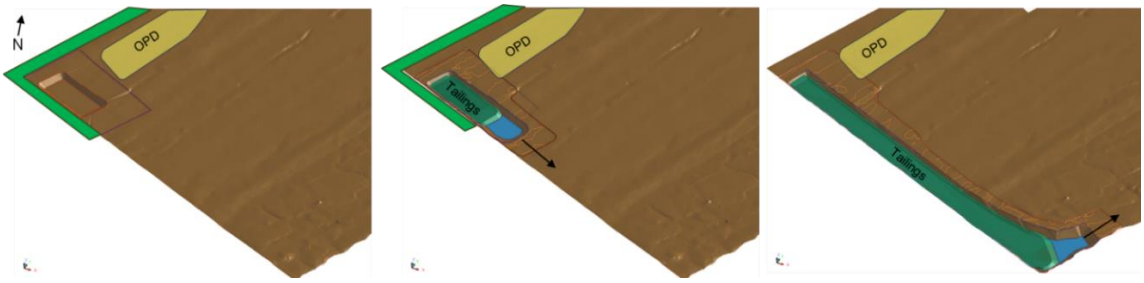

Figure 9: Initial mining strip sequence (Source: Westland Mineral Sands Co. Ltd)

4.17 The dredge will be constructed within the starter pit prior to commencement of mining, and commence operating once the WCP is completed. Farm infrastructure will be removed from the dredge path. The starter pit excavation and dredge construction will take place concurrently with the plant construction and is expected to take 3-4 months.

4.18 Once the plant and dredge are in place a period of commissioning and slow ramp up will take place before continuous steady state mining is achieved.

4.19 The northern bund will be built from initial tailings or material imported to the site and will occur in the first 3 months of operation.

4.20 Commencing in the southwest corner and then mining along the southern boundary first allows for the rehabilitation of the ecological reserve forest and riparian areas to be completed early, and maintained and managed for the duration of the mine activity. This will ensure that the plantings establish and pest pressure is reduced for about 10 years following the rehabilitation work occurring.

Mining Methodology and Sequence

4.21 The proposed mining methodology is to use a floating self-propelled suction dredge to mine the in-situ sand (ROM). This method is well suited to the site as the bottom portion of the valuable resource sits below the water table. A dredging operation will allow for good control on mining depth and recovery of valuable heavy minerals at the base of the pond which is difficult with a conventional excavator below the water table in sand deposit. An example of what the dredge would look like is shown in **Figure 10** below.

Figure 10: Example of a floating dredge (Source: Westland Mineral Sands Co. Ltd)

4.22 ROM and Tailings will be slurry pumped between plant and the mining void. This avoids the use of dump trucks further reducing noise and emissions.

4.23 Once steady state mining is achieved the mining sequence is as follows (and shown in **Figure 11**);

A. Topsoil (0.1-0.6m) is removed from ahead of the mine path using a bulldozer, excavator and dump trucks. Areas of historically buried vegetation will also be removed. Topsoil will be stripped in stages, with an average area of ~70m x 286m (2Ha) of sand (ROM) exposed ahead of the dredge path. This results in around 2-3 weeks of pre-stripped mine path. Depending on the location of the mining, the top soil material will either be moved to the tailings area for application for rehabilitation, stockpiled to the side of the mine path for rehabilitation or used to build temporary bunds.

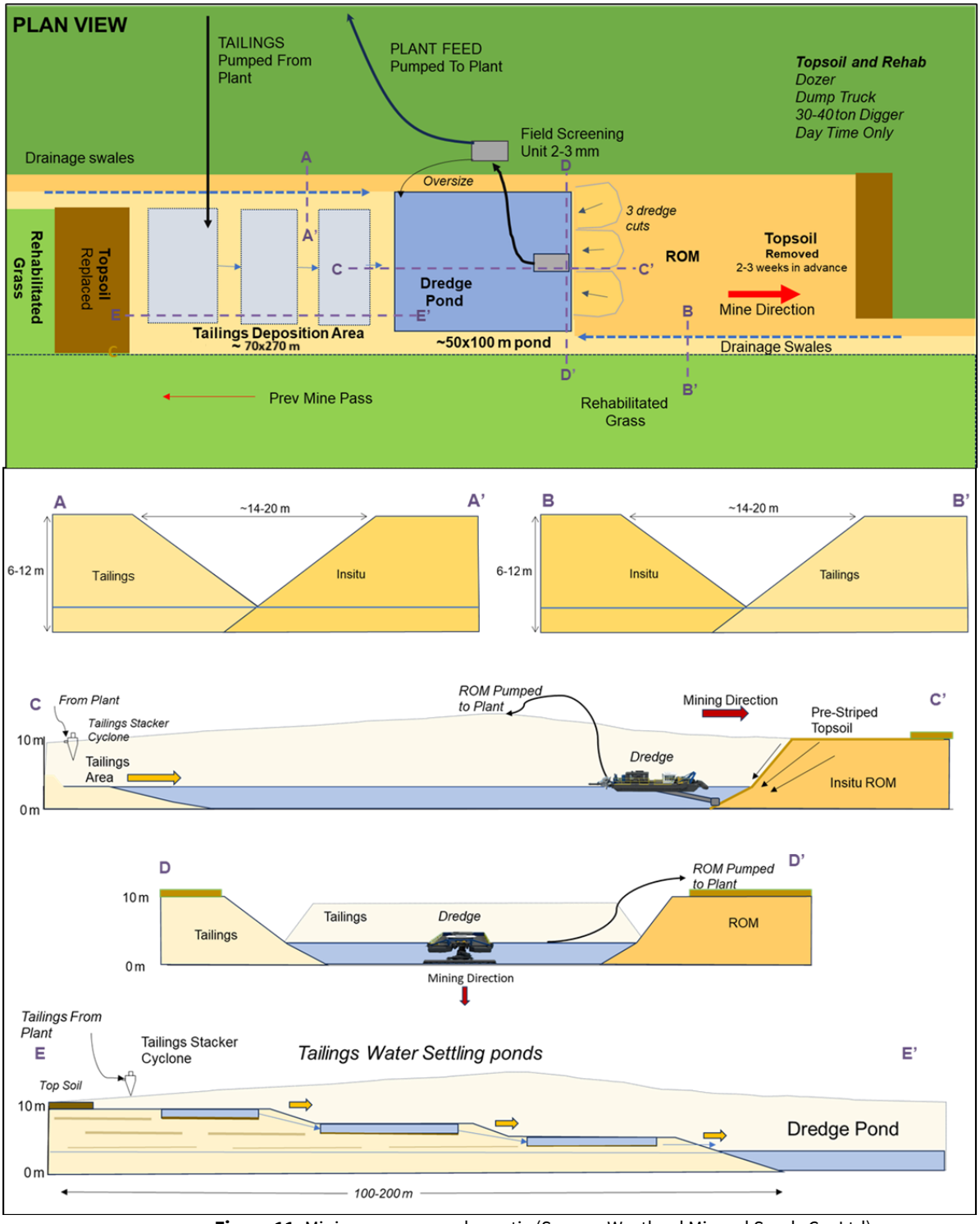

Figure 11: Mining sequence schematic (Source: Westland Mineral Sands Co. Ltd)

B. In areas where indigenous vegetation is present, vegetation ahead of the mine path will be removed, and stored for use in rehabilitation using Vegetation Direct Transfer (VDT) methods in the proposed ecological reserve area. This topsoil stripping and rehabilitation will occur only during the hours of 0700-1900.

C. The self-propelled dredge will sit in the mine pond at approximately RL3m, the level of the sites water table. The 4 x 15m dredge has an extendable boom with a suction cutter head. The head will work the base ore between 1-5m below the water with the depth and be positioned via GPS. The dredge will remove 200-300 tonnes per hour of sand and gravel from the base of the advancing face. The mining rate will depend on plant feed requirement and the proportion of oversize material. As the ROM is removed from the base of the mining face the overlying ore collapses down the slope into the path of the dredge. Three cuts will be made at the approximately 70m wide mining face. The mine pond will be on average 50m X 100m (0.5Ha), with an approximate 10m batter on either side of the pond . Dredge face sluicing will be profiled to establish a controlled rill / angle of repose. A water jet (supplied with dredge pond water) will be controlled by the dredge operator, no water balance impacts will occur due to there being a closed water loop between dredge pond and water table.

D. A drainage swale, also known as an infiltration trench when established along the southern boundary, will be created behind the dredge pond as it moves in a north-south direction. This will help maintain a hydraulic gradient that directs water away from sensitive receptors. Starting from year 3, the drainage swale on the eastern side will be rehabilitated during the dredge's return pass, as a new swale is cut on the western side. This approach ensures proper infiltration across the site while minimising disturbance by reusing the same swale on the return pass. For years 1 & 2 a drainage swale will only be established to the west of the dredge pond as it progresses north along the eastern boundary.

E. Sand and gravel will be pumped from the dredge to a mobile field screening unit. The screen will remove rocks, gravel and very coarse sand with a series of screens. Sand under 2mm will be slurry pumped to the plant at a maximum rate of 200 tonnes per hour. The oversize material will be returned to the tailings area and occasionally used as mine roading material.

F. Tailings sand, predominantly comprised of quartz, will be pumped with any separated slimes to the tailings area on the opposite side of the dredge pond for co disposal. The tailings area is expected to be 70m X 570m (4Ha). Mobile dewatering cyclone (s) will stack the sand in a formation to build internal cell walls to capture process water. The process water and cyclone overflows will be settled and returned to the process to support a closed circuit global water balance. Two tailing methods (cyclone stacking and open pipe pouring) will ensure consolidated sand tailings for stability and low swell or slump factors. Excavators and bulldozers will construct temporary settling ponds using the tailings sand. As the tailings build up to the final landform height, they are contoured ready for topsoil. The tailings area will progress at similar rates to the advancing mine face supporting global water balance between the dredge pond, tailings and process water circuits. The aligned dredge face and tailing process will support progressive rehabilitation programs.

G. Top soil is placed onto the sand tailings and contoured. Pasture grass will be sown as soon as practicably possible on top soiled areas.

H. In areas within the ecological reserve area VDT will be placed and wetlands and riparian zones established.

4.24 A conservative 27.7Ha maximum disturbance area is sought which equates to 25% of the total mining area or 20% of the property. The average disturbed area is expected to be less than this. The 4.4ha plant area is additional, because this will be constructed first, and stabilised prior to mining. The approximate distribution of disturbed area across the sites is:

Activity	Area (ha)
Top soil stripping (ahead of mine path)	2
Dredge Pond	0.7
Tails area and topsoil replacement	4
Temporary soil stockpiling	2
Temporary out of pit dump	3
Drainage Swales	6.4
Service corridors and roads	3
Vegetation re-establishment	3
Total disturbed area	**24.1**
15% contingency	3.6
Maximum disturbed area	**27.7**
Plant area	4.4

Table 2: Disturbed Area Calculation

4.25 The mining will advance at an average rate of approximately 2000m per year or 170m per month or 6m per day. Advancement rate is a function of ore thickness and grade. The greater the thickness and grade the slower the advancement rate. Year 1 and 2 advancement rates are consequently slower due to thicker ore and the start up period.

Wet Concentrator Plant (WCP) Process

4.26 A diagram showing the WCP process is shown in **Figure 12** below. Sand will be received at the WCP feed bin via slurry lines from the dredge with a plant feed of up to 200tons per hour.

4.27 Firstly, fine gold will be recovered from the ROM using a series of Knelson Concentrators. This circuit will be bypassed when mining in areas with no gold. The slurry is then pumped to the gravity circuit where it passes through three stages of spiral separators which progressively reject light mineral to a tailings stream concentrating the valuable heavy minerals.

4.28 The gravity circuit heavy mineral concentrate is slurry pumped to the magnetic circuit with provision to segregate the connection to maximise operational utilisation during major maintenance programs. If segregation of the two plants is required, a small stockpile of WCP concentrate will be wet stacked to allow manual feeding of the Wet High Intensity Magnetic (WHIMs) circuit during planned and unplanned WCP or WHIMs outages. The reverse capability is also required to stockpile HMC during independent WHIMs plant outages.

4.29 Highly magnetic particles are removed using a Low Intensity Magnetic Separator (LIMS) prior to a two stage wet magnetic separation of final magnetic (Ilmenites and Garnets and nonmagnetic concentrates both valuable and non valuable silicates. Non valuable silicate fractions will be rejected to a wet tailings stream and returned to the dredge pond tailings process.

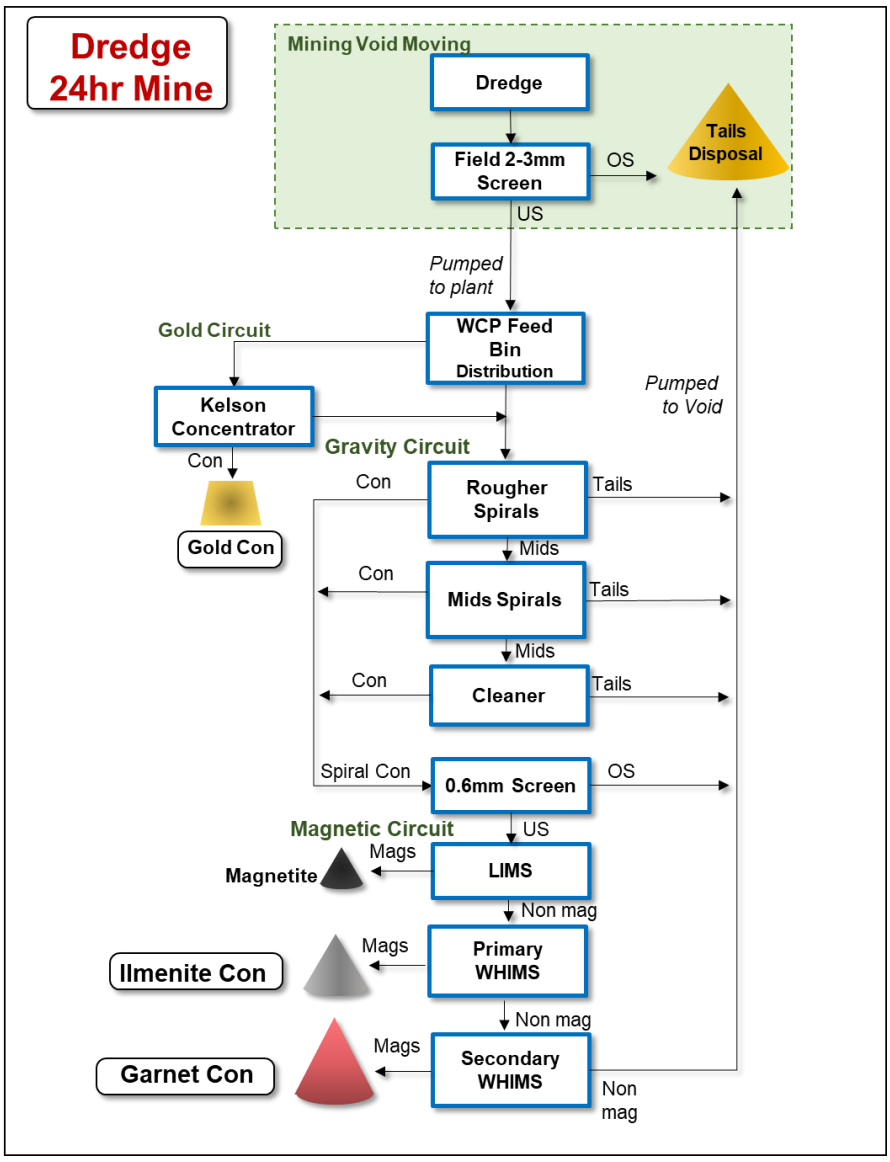

Figure 12: Wet Concentrator Plant Process (Source: Westland Mineral Sands Co. Ltd)

4.30 The garnet and ilmenite product concentrates are pumped to the stockpiling area and are stacked using a dewatering cyclone. The cyclone separates the majority of the excess water from the product and returns it to the mining system. Product will continue to dewater over the proceeding days with water draining to sumps to be recovered to settling ponds.

4.31 All plant tailings, consisting of sand with heavy mineral removed are combined with slimes and pumped back to the mining void for co-disposal.

4.32 No chemicals are used to separate the minerals and the sand remains wet for the entire process.

Plant and Machinery

4.33 In order to carry out the mining and processing operation, the following machinery itemised in **Table 3** will likely be required:

Type	Model	Number
Dredge	7012 HP Versi-Dredge	1
Dozer	Cat D6 LGP	1
40t Excavator	Volvo EC380	1
20t Excavator	Volvo EC220	1
Mini Excavator		1
Articulated trucks (Two operating at one time.)	Volvo A40D	2
Grader or similar	Cat 120	1
Product loader –or similar.	Volvo L150	2
Product loader	IT62	1
Field vibrating screen		1
Integrated Tool Carrier loader for site servicing of pipelines and service corridors	IT960 IT	1
Field booster pumps on rom feed slurry and tailings return.	Electric 6/4 warman pumps	Varies depending on distance

Table 3: Mining machinery list

4.34 Additional mining equipment and vehicles will be used on site, including a variety of pumps (including land based, floating and submersible) and light 4-wheel drive vehicles for the transport of mining personnel.

4.35 It should be noted that the exact supplier/model may differ when mining operations commence, but this machinery list is indicative of what is required.

On-site processing, buildings and facilities

4.36 The proposed Wet Concentrator Plant area is located within a 4.4ha envelope along the western boundary of the site adjacent to State Highway 6. The plant site is to have 12m wide and 3m high planted screening bunds along the state highway. The concept site layout is shown in **Figure 13** which is subject to detailed design and safety optimisation.

4.37 The following buildings are to be located within the plant area and have a total footprint of around approximately 3860m^2:

- Wet Concentrator plant (WCP) – This will be located 150m east of sh6. Up to 17m high - 2000m^2
- Main Site office - 500m^2
- Plant maintenance workshop - 350m^2
- Mine machinery maintenance workshop - 350m^2
- Plant laboratory – 100m^2
- Water tanks - 300m^2
- Control room MCC - 60m^2
- Visitor and staff Carpark (45 parks)
- Power transformer 200m^2
- 10-15kl Diesel Fuel self bunded double skinned Fuel bowser

4.38 A plan of the Processing Plant area is shown in **Figure 13** below and enclosed in **Attachment D**:

Figure 13: Processing Plant layout (Source: Westland Mineral Sands Co. Ltd)

4.39 The product stock piles are located at the northern end of the plant site accessed by a separate parallel heavy vehicle road to a load out area.

4.40 A recommended planting palette has been provided in **Attachment L3**, which illustrates the colour changing for the buildings as their height increases. Parts of buildings less than 5m in height should be coloured Resene Woodland and parts taller than 5m should be coloured in United Paints Papyrus White. This will assist the buildings to blend in with the surrounding environment, as lower parts of structures are likely to be viewed against vegetation, whilst taller parts will be viewed against the skyline. Building plans are enclosed in **Attachment E.**

4.41 A series of pipes will be laid along a service corridor between the plant and the mining void. The network of slurry and water lines will be continuously moving as the mining pit advances and are responsible for most of the material transfer within the site. Booster pumps staged between the plant and the mine will be required once the mine void is at greater distances from the plant.

4.42 Electrical supply to the site will be 6mva from the main transmission line along SH6.

4.43 All buildings and plant will be decommissioned and removed from the site at the completion of mining operations.

Lighting

4.44 Lighting will not exceed 2.0 lux spill (horizontal and vertical) of light onto any adjoining property, measured at any point more than 2m inside the boundary of the adjoining property or the closest window on the adjoining property (whichever is the closest). All lighting on site will adhere to the Australian Government's National Light Pollution Guidelines for Wildlife January 2020 (or subsequent revision), including but not limited to:

(a) All fixed lighting on the site shall be pointed downward, shielded to avoid light spill and operate primarily in the yellow-orange spectrum and be filtered to reduce light in the blue wavelength;

(b) Lights shall only illuminate the object or area intended;

(c) Lights shall be mounted as close to the ground as possible;

(d) External lighting shall be minimised on the seaward side of buildings to minimise light spill toward the coast;

(e) External lighting shall be minimised and use the lowest intensity lighting possible, while ensuring compliance with workplace health and safety requirements.

4.45 The dredge lighting will be low level lighting and seaward visibility is restricted as the dredge is inside the dredge pit 2-5m below ground level and generally operating in a north-south orientation. Dredge lighting is required to visually traverse the dredge in and out of the dredge face / high wall.

Hours of Operation

4.46 The proposed mining, processing and trucking operation will occur 24 hours a day, 7 days a week. This is required to provide a continuous plant feed and optimise trucking efficiency.

4.47 Topsoil stripping activities will only occur during the hours of 0700-1900.

Traffic and Site Access

4.48 There will be a maximum output of 300,000 tonnes of material per year for transportation of HMC from site to the Port of Greymouth along SH6. Each truck will carry 30 tonnes of material, generating approximately 10,000 truck movements per annum.

4.49 The site will be accessed by light vehicles for 55 staff daily plus occasional visitors and service vehicles. Heavy vehicles will be used during the construction and establishment of the site. Once the plant has been commissioned, the site will generate approximately 70 heavy vehicle movements a day, and up to 165 light vehicle movements. This equates to 515 equivalent car movements per day. Peak hour traffic generation is predicted to be 48 vehicle movements per hour (including light vehicles).

4.50 A condition of consent is proposed to limit the heavy vehicle movements based on a one week average, to allow for additional trucking movements in circumstances where there has been a road closure, or other event which has prevented trucking to allow operational contingency and ensure a consistent volume of HMC is able to be supplied to the market as proposed.

4.51 In order to support this application, the applicant has commissioned an integrated transport assessment. This was completed by Novo Group Ltd and is attached to this document as **Attachment F**.

4.52 Site access will be via a newly constructed entranceway off State Highway 6. This is located 660m north of the southern property boundary. The entrance way will be constructed in accordance with the access diagram contained in the Integrated Transport Assessment, which is an intersection arrangement with a right turn bay. This has been developed in consultation with Waka Kotahi. This will provide access to the plant site and mine via a controlled security gate system.

4.53 Access roads will be required to be formed between the mine void and processing plant and along service corridors. Existing farm tracks will be utilised where possible. Some of these roads will be temporalty in nature and move as the mine progresses.

4.54 The existing farmhouse access will be retained for residential and farming activities for the duration of the mining activity, to separate any ongoing farming activity traffic from the mine traffic. The southern farm access will be closed.

Noise

4.55 Noise will be generated from the processing plant area, trucking movements, and the mining area, as well as during the pre-mining and post-mining construction activities.

4.56 In order to support this application, the applicant has commissioned an acoustic assessment of the proposed mining and processing activities. This was completed by Marshall Day Acoustics Ltd and is attached to this document as **Attachment G**.

4.57 The acoustic assessment recommends the following noise limits at or within the notional boundary of any dwelling existing at the date consent is granted:

- Daytime: 55 dB $L_{Aeq(15\ min)}$
- Night-time: 45 dB $L_{Aeq(15\ min)}$ and 75 dB L_{AFmax}

4.58 The applicant has considered the potential for noise generation in the design of the project to meet these noise limits, including locating the processing plant away from sensitive receptors which includes the southern and eastern ecological areas, minimising earthworks near dwellings, the installation of bunds for noise attenuation, limiting the topsoil stripping to daytime hours and having a setback from the closest sensitive receivers. The site will operate in accordance with a Noise Management Plan which is enclosed with the acoustic assessment. The Noise Management Plan sets out the management techniques which will be applied to ensure that the site operates in accordance with best practice and unnecessary noise generation is minimised. Conditions of consent are proposed to ensure that appropriate noise limits are adhered to, and that noise monitoring occurs to demonstrate that compliance is being achieved.

Mine water management

4.59 A Hydrological Assessment and associated Water Management Plan have been completed by Kōmanawa Solutions Ltd for the proposal, which sets out in detail the hydrology of the site, and proposed water management in order to avoid adverse effects on water quality and quantity in the area. The hydrological assessment and Water Management Plan are enclosed in **Attachment H**. The Hydrological Assessment and Water Management Plan are informed by extensive baseline monitoring of surface and groundwater within and surrounding the site. The primary objective of the Water Management Plan is to avoid hydrological effects on surrounding surface water bodies and wetlands. This has informed the location of mining and design development of the water management infrastructure for the site.

4.60 Water for the Processing Plant will be abstracted from a well located at the Processing Plant. This water take is discussed in further detail later in this assessment. A diagram showing the water balance/process for the site is contained in **Figure 14** below.

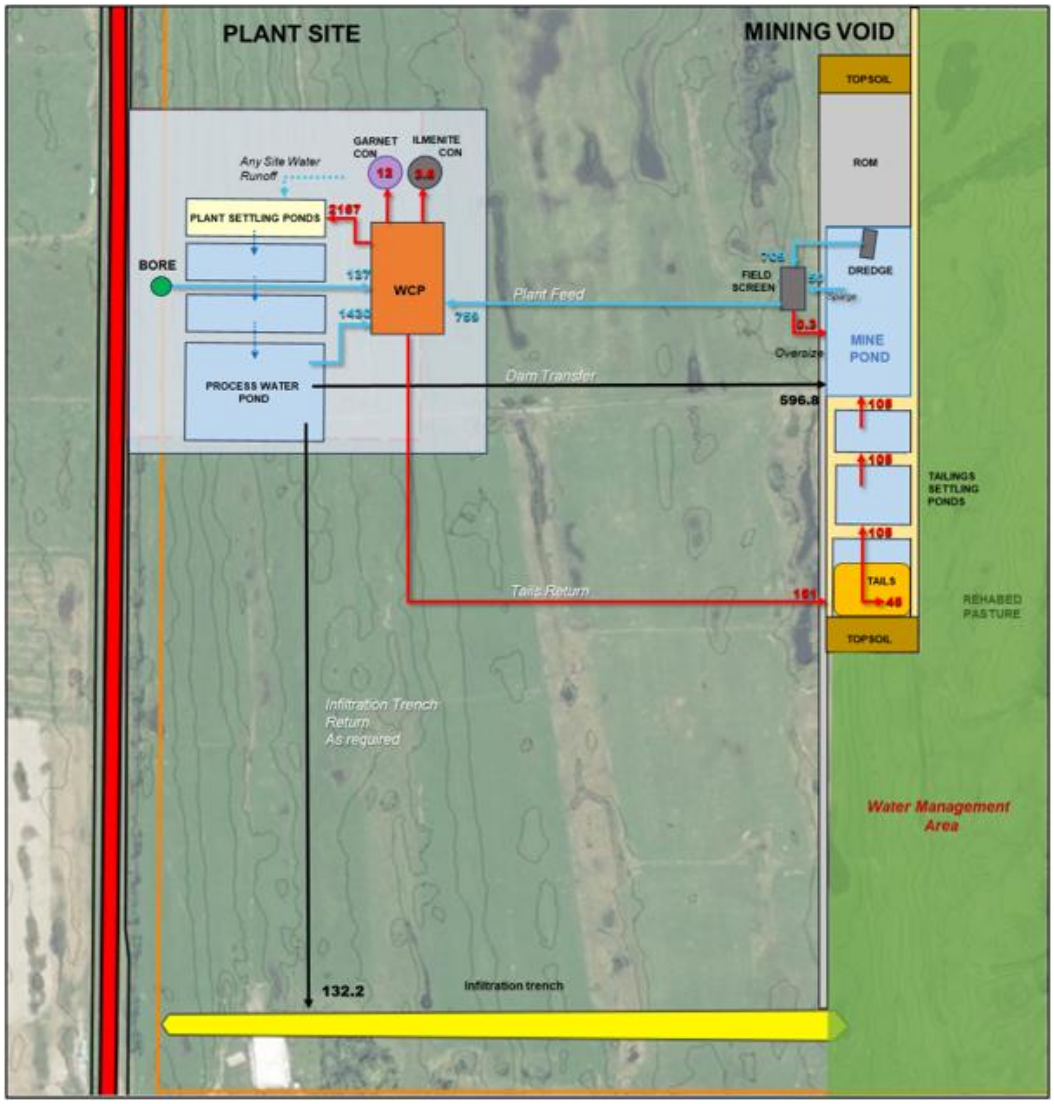

Figure 14: Water Management Schematic. All numbers in m^3 per hour. Not to scale. (Source: Kōmanawa Solutions)

4.61 Water will be continuously pumped around the mining and processing circuit, and in consultation with iwi, no discharges to surface water are proposed. As part of water quality management, an infiltration trench will be installed on the southwestern part of the site (once mined). When the mining area enters the water management area located on the western and northern edges of the site, a net of 3 litres a second of water will be taken from the dredge pond and discharged into the infiltration trench. This will maintain a hydraulic gradient away from sensitive receptors (Tūwharewhare and domestic supply wells), ensuring that there will be no change to water quality in these locations.

Groundwater Take

4.62 Water is proposed to be abstracted from a groundwater well located within the processing plant area. The well will be 17m deep, with a screen installed between 13m and 16m and a casing from 13m to the ground surface. The bore is expected to be approximately 380mm diameter.

4.63 The maximum daily abstraction rate is 3,288 cubic metres per day or 38 Litres per second. This maximum rate of take will peak when the processing plant water circuit is being topped up, and it is expected that following this start up period, abstraction will be intermittent.

Dust Management

4.64 The application site is within a high rainfall area, however there are periods of dry weather, which necessitate careful site management to avoid dust discharges beyond the boundary. WMSC has installed both dust and radiation monitors on the perimeter of the mine site in May 2023, and these monitoring stations will remain in place for the duration of mining activities on site. The location of the dust deposition gauges are shown in **Figure 15** below:

4.65 The West Coast Regional Air Quality Plan provides for mining and stockpiling activities as permitted activities, however the thresholds for dust management are different. The rules for stockpiling require that there is no dust beyond the property boundary, whereas the mining rules require no offensive or objectionable dust emissions beyond the property boundary. WMSC will comply with these permitted activity provisions.

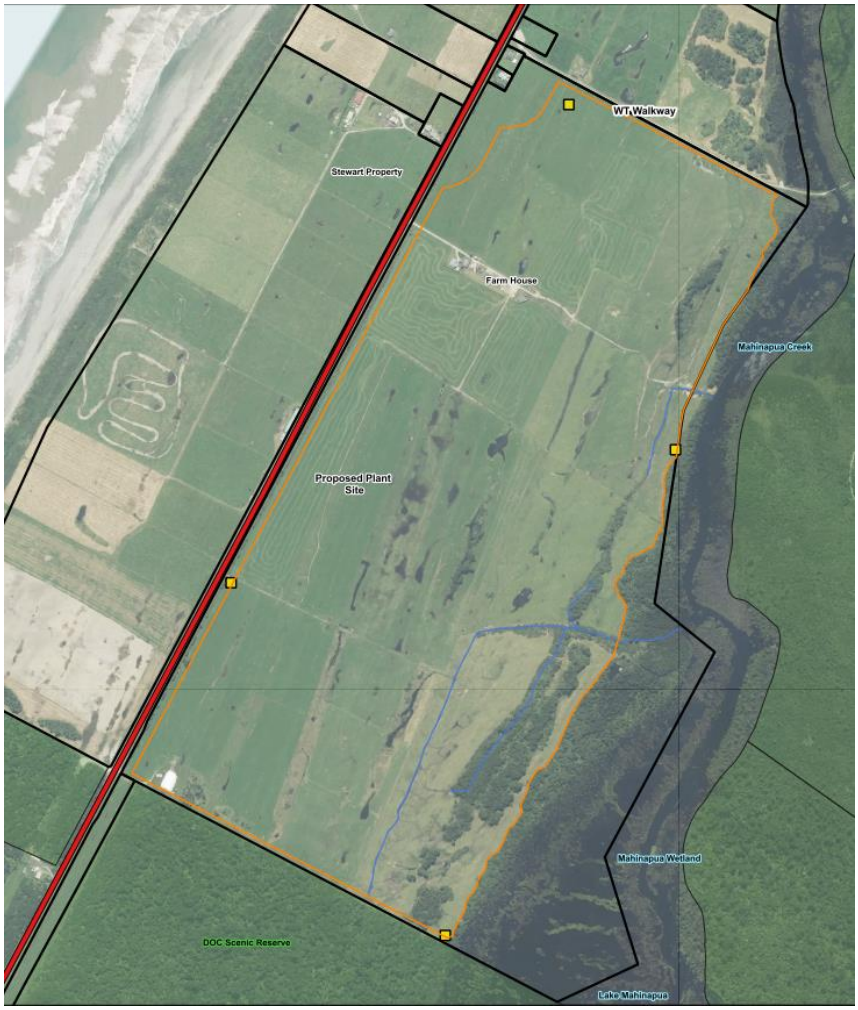

Figure 15: Dust deposition gauge locations shown as yellow squares (Source: Westland Mineral Sands Co. Ltd)

4.66 A Dust Management Plan has been prepared, outlining the proposed dust management measures which will be employed at the site to avoid dust emissions beyond the property boundary. The Dust Management Plan is enclosed in **Attachment I**.

Hazardous substances use, storage and management

4.67 Hazardous substances which will be located on site consist of hydrocarbons (oils, grease and diesel fuels). The hazardous substance management plan which will be required for the site under other regulations will stipulate storage volumes, containment, spill management and removal.

4.68 The proposal will adopt all legally required and best practice management systems for the management of the storage of hazardous substances. It will comply with the required HSNO and WorkSafe Acts.

4.69 Spill kits will be appropriately sized and maintained for mobile fleet and fuel areas. All surface mobile fleet refuelling tasks are situated away from natural waterways.

4.70 All waste oil and fuel containers will be removed from the site promptly.

4.71 The proposed tanker will be approximately 2320mm x 3925mm x 2550mm with a safe fill capacity of 14,329L. The empty weight of the container will be 3405kg. A copy of the full specifications can be found in **Attachment J**. The fuel is required for emergency generation and machinery refuelling purposes, and will be located within the processing plant area likely near the northeastern corner.

4.72 The proposed tank will be self-bunded, double skinned and will be installed within the workshop compound where topsoil will be removed, and the tank will be placed on a gravel surface. The self-bunded system is a safety measure designed for use on wharves and in public areas and is considered much more environmentally secure than the average farm diesel storage.

4.73 The capacity of the compound or internally self-bunded arrangement will be at least 110% of the capacity of the fuel storage, whilst also meeting any overall capacity requirements deemed necessary by Health and Safety at Work Hazardous Substance Regulations.

4.74 The local area around the tank location will be bunded. The site has spill kits that are designed to address spills with booms and pad systems.

4.75 Run off from the tank location is expected and controlled through the bund areas given the average annual rainfall. The runoff is not likely to contain fuel oils due to the design of the tank system. There are no water courses or streams within 150m of the tank location.

Ecological Values

4.76 The application area is located adjacent to a scheduled wetland and contains remnants of indigenous vegetation.

4.77 In addition, the site is bordered to the south by a Department of Conservation administered reserve which contains a small, perched wetland near the southeastern corner of the property.

4.78 The applicant has engaged BlueGreen Ecology Ltd to carry out an assessment of the proposal. The Ecological Assessment sets out the ecological context of the site, the potential effects of the proposal, avoidance, mitigation and remediation measures proposed to respond to these effects. The assessment is enclosed as **Attachment K**.

4.79 As noted above, the remnant forest fragments will be removed in order to access the high grade minerals contained in the sand underneath. The areas where the forest remnants remain coincides with the highest grade of minerals on the site, and this high grade material assists with the viability of the mineral sands proposal. The vegetation to be removed within the application area comprises approximately 4ha of various smaller remnants which may provide some habitat value for resident avifauna and herpetofauna. These have been assessed as being of low ecological value. The current ecological information and site surveys indicates that the forest fragments do not host any threatened or at risk species. The vegetation loss is proposed to be replaced/offset using VDT and supplementary planting with approximately 4.75ha adjacent to the eastern vegetation boundary to augment the more intact wetland edge vegetation along this edge of the site.

4.80 The mine area contains a farm drainage system which contains native fish species. Fish salvage will occur prior to these drains being mined through.

4.81 The Ecological Assessment outlines how ecological effects on waterbodies, wetlands and resident avifauna and herpetofauna will firstly be avoided, and where this is not possible, demonstrates that the Effects Management Hierarchy has been applied to the ecological effects of the proposal.

Visual and Ecological Planting

4.82 The applicant has engaged Glasson Huxtable Landscape Architects to assess the potential landscape and visual amenity effects of the proposal. The Landscape Assessment and accompanying Graphic Supplement are enclosed as **Attachment L**. The Landscape Assessment identifies areas where additional planting and bunding would be beneficial to ameliorate potential visual effects from surrounding properties and public viewpoints. The planting has been designed both for visual and ecological mitigation for the project, and will have long term ecological benefits in terms of stream health and habitat for wetland species.

4.83 As part of preliminary and early site works, a number of planted and bunded areas will be developed, as both visual and ecological mitigation for the proposal. These areas include:

(a) Constructing a permanent 650m long, 12m wide and 3m high central bund along the SH6 boundary – this will be constructed first and take approximately 3 months utilising excavated material from the processing plant area;
(b) Constructing a permanent 640m long, 12m wide, 3m high northern bund on the SH6 boundary which wraps around the north-western corner adjacent to residences – this will be constructed second and take approximately 3 months utilising excavated material from the settling ponds area;
(c) Constructing a permanent 270m long, 12m wide and 3m high southern bund along the SH6 boundary which wraps around the southwestern corner of the site – this will be constructed third and take approximately 3 months utilising excavated material from the starter pit;

(d) Constructing temporary bunds of 10-18m long and 2m high between the mine path and the northern boundary when the mine path comes within 150m of the northern boundary;
(e) Planting between each of the new SH6 bunds outlined above;
(f) Planting along the Mananui Tramline within the 10m northern boundary setback;
(g) Moving the existing stock fence on the northern boundary to the 10m setback line to protect planting from stock damage, and replace the boundary fence with a post and wire or timber fence;
(h) Planting along the eastern boundary to 'plug' viewshafts from Tūwharewhare;

4.84 A diagram showing the planting mitigation locations is shown in **Figure 16** below and within the Landscape and Visual Mitigation supplement to the Landscape Assessment.

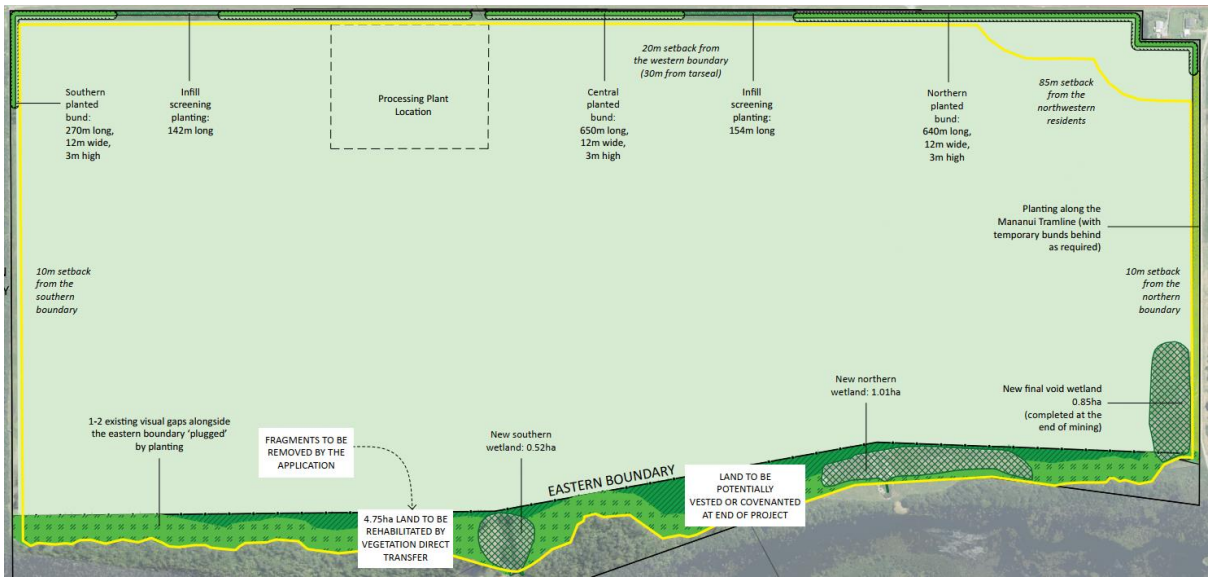

Figure 16: Planting Mitigation Plan (Source: Glasson Huxtable)

4.85 As part of progressive mine rehabilitation, the following will occur:

(i) Creating a 4.75ha ecological rehabilitation area which will be established with Vegetation Direct Transfer and supplementary planting as part of progressive rehabilitation in the 1st and 2nd north-south mining strips which will occur within the first 3 years of mining;
(j) Stock fencing along the new eastern vegetation boundary;
(k) Establishing two wetland areas of 0.52ha and 1.01ha at existing low drainage points on the eastern boundary of the site as part of progressive rehabilitation;
(l) Establishment of an additional wetland area of 0.85ha in the north-eastern corner of the site in the final mine void area at the end of mining.

4.86 Full details of the planting can be found in the Landscape Assessment, Graphic Supplement and Landscape Mitigation Plan contained in **Attachment L**.

4.87 Rehabilitation works will occur on a progressive basis to minimise the area disturbed at any one time as operations move through the mining area. Rehabilitation of mined areas will occur as soon as practicably possible once tailings have been placed to the final landform level. The entire site will be finally rehabilitated shortly after the end of the mine life. The rehabilitation plan includes the creation of an ~28 ha ecological reserve area along the eastern boundary with the remainder of the site returned to flat to gently sloping pasture for grazing.

4.88 The Rehabilitation Management Plan is enclosed in **Attachment M**. Key components of rehabilitation along the eastern boundary, creating the ecological reserve are outlined below:

A. Establishment of a 30m wide strip of vegetation adjacent to the intact wetland margin vegetation at the eastern edge of the application area. This will be established using Vegetation Direct Transfer (VDT) practices, utilising vegetation from the areas of indigenous vegetation to be removed from within the mine footprint. Enrichment planting will take place where necessary to augment the VDT area. The proposed area is 4.75Ha and enrichment planting will consist of wineberry, karamu, kahikatea, rimu, hinau, broadleaf, mahoe, muehlenbeckia, totara and lancewood.

B. Establishment of three wetland areas round 3mRL totalling approximately 2.37Ha. These are located at existing low points of the sites that currently discharge directly to Tūwharewhare (Māhinapua creek/wetland), carrying farm runoff. The first two wetlands will be constructed as part of progressive rehabilitation during mining, and the third will be constructed from the final mine void in the northeast corner. New drains will be directed to these wetland areas with designed discharge to Tūwharewhare to reinstate pre-mining drainage catchments. The wetland species will consist predominantly of rautahi, purei, pukio, karamu, cabbage tree, white pine, edgar's rush, manuka, harakeke, raupō.

C. The rehabilitated areas outside this zone will be returned to pasture for grazing purposes which will total approximately 112.9Ha which includes unmined areas within the setbacks and bunds.

D. A new stock fence will be established along the western margin of the vegetation along the eastern boundary.

4.89 The area of rehabilitation is summarised in **Table 4** below.

4.90 The rehabilitation within the ecological reserve will occur predominantly in the first and second mining strips and is proposed to be completed in the first 3 years. The northern most wetland will be established at the end of the mine life within final dredge pond.

Approximate Rehabilitation Area	Area (ha)
Revegetation/Vegetation Direct Transfer Area	4.75
New Wetlands x 3	2.37
Total ecological rehabilitation area	**7.12**
Additional Reserve Area (grassed)	2.24
Existing Māhinapua Wetland (outside of application area)	19.94
Total ecological reserve area	**28.45**
Pasture	108.89
Western Bunds	1.078
Western Infill Planting	0.180
Northern Boundary Planting	0.541
Total Rehabilitation (all areas excluding existing Māhinapua wetland)	**119.94**

Table 4: Rehabilitation Area Calculation

4.91 Pest control will be undertaken within the ecological reserve once established and continued for the duration of the project.

4.92 Site coexistence with mining and farming activities will be managed to ensure weed and pastures are holistically managed and controlled.

Final landform

4.93 The removal of HMC from the site will result in an overall reduction in ground levels, however the site will be rehabilitated to minimise the impacts of this reduction. In addition to the rehabilitation works outlined above, the remainder of the site will be contoured and re-established into pasture.

4.94 The proposed post mining landform is shown in **Figure 17** below. The establishment of the final landform will occur progressively throughout the mining process, with most of the ecological reserve area being established first (the exception being the wetland in the northeast corner of the site).

4.95 The proposed final rehabilitated pasture will be gently sloping towards the west from 9mRL to 6mRL along SH6, with overland drainage channelled along the northern and southern boundaries back towards the new wetland areas to reinstate pre-mining drainage catchments and direct runoff away from the state highway as currently occurs across much of the farm area.

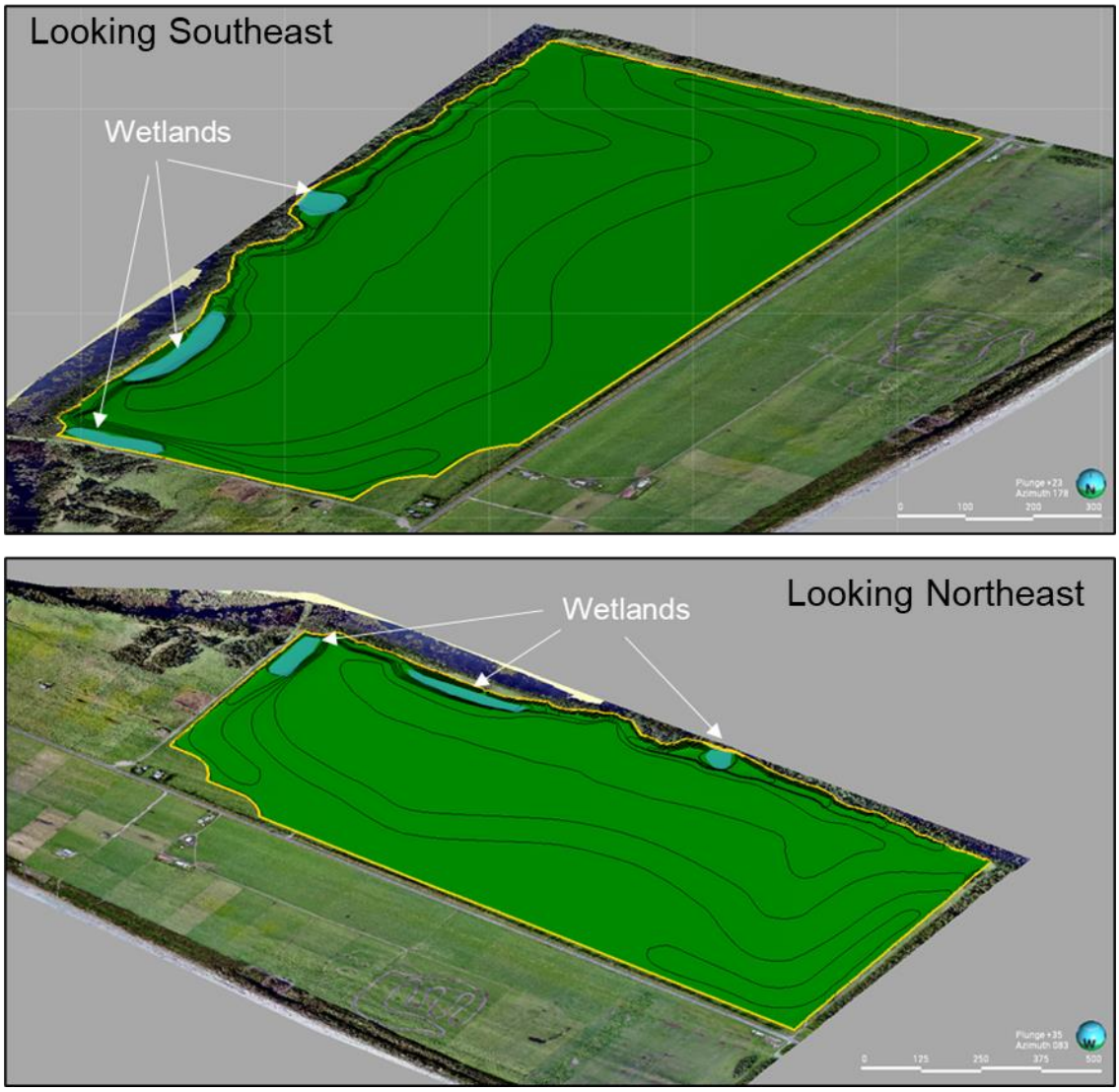

Figure 17: Graphic representation of final landform (Source: Westland Mineral Sands Co. Ltd)

4.96 Following the completion of mining, the plant and associated infrastructure will be removed and the processing plant area converted back to pasture.

4.97 The final dredge pond in the northeastern corner will be planted and established as a wetland.

4.98 New fencing and farm infrastructure will be progressively established along the boundary between the new vegetation and riparian areas and the pasture, and within the farm area, during progressive rehabilitation.

4.99 **Figure 19** shows cross sections of the profiles at three sections of the site as shown on **Figure 18**. This demonstrates that the post mining landform will remain well above the water table, and will continue to be able to support farming activities.

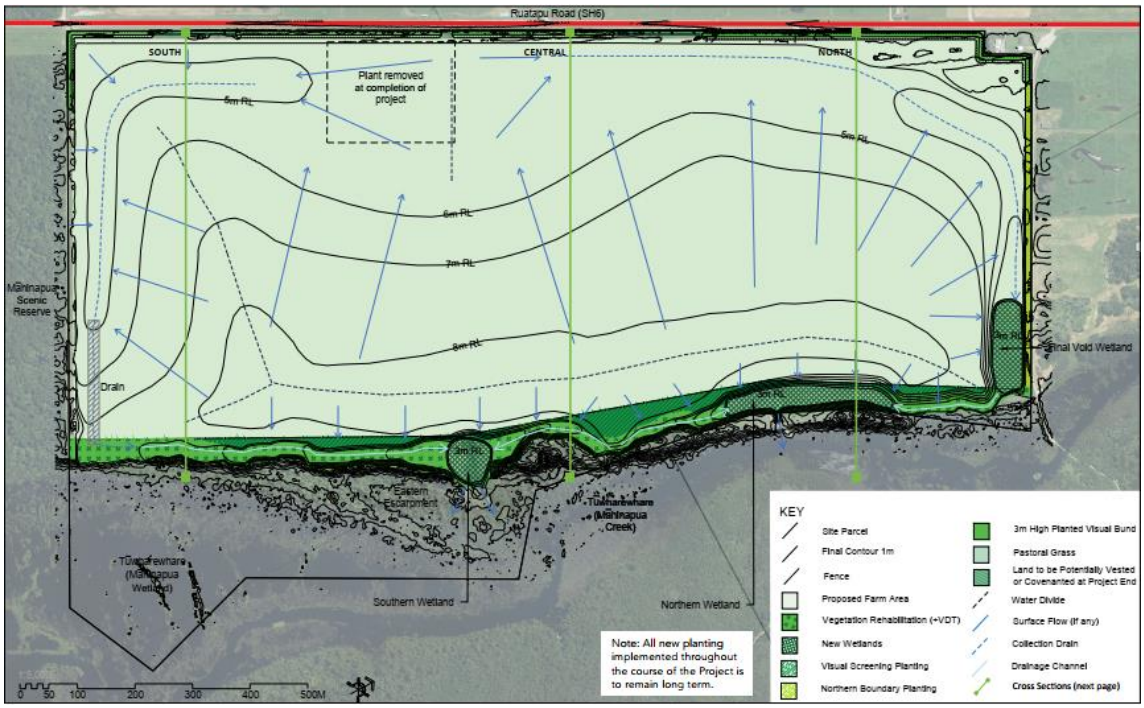

Figure 18: Post-mining contour showing elevation sections (Source: Glasson Huxtable)

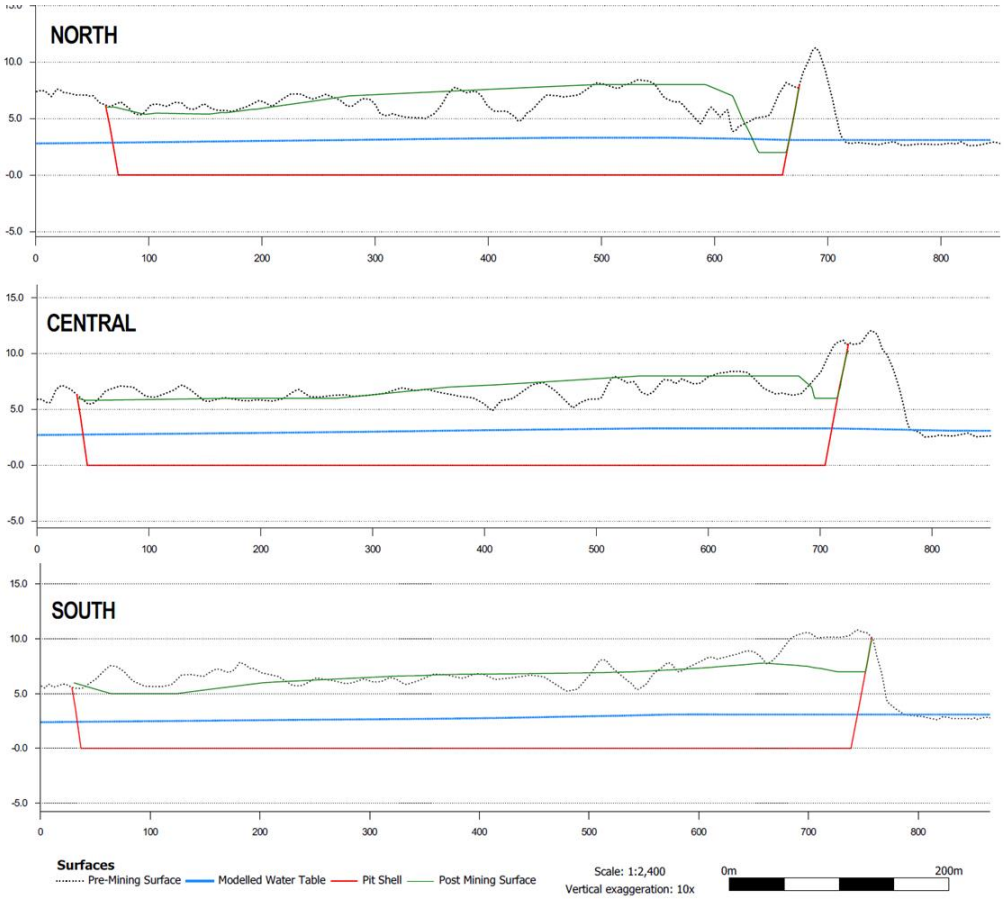

Figure 19: Cross sections showing pre and post mining land elevations

4.100 A key part of the final closure of the site is the creation of the ecological reserve in the eastern application area. WMSC intends to subdivide and gift this reserve, totalling 28.45 ha. The ecological reserve is comprised of the existing Māhinapua Wetland on the application site (19.94 ha), two new wetlands (1.52 ha), reestablished vegetation (4.75ha), and 2.24 ha of grassed area. Once completed and fenced, this will reserve will be vested either to local tangata whenua or a Crown agency. It is noted that this proposal will be subject to a further subdivision consent. It is not practical to apply for the subdivision in conjunction with this application as the exact extent and location of the ecological reserve has not yet been fully designed and the areas may be subject to change, however if vesting is not possible, the area will be covenanted to ensure ongoing legal protection of the existing and newly created vegetation. The rehabilitation concept for the ecological reserve area is shown in **Figure 20** below, and also in the Landscape and Visual Mitigation attachment to the Landscape Assessment.

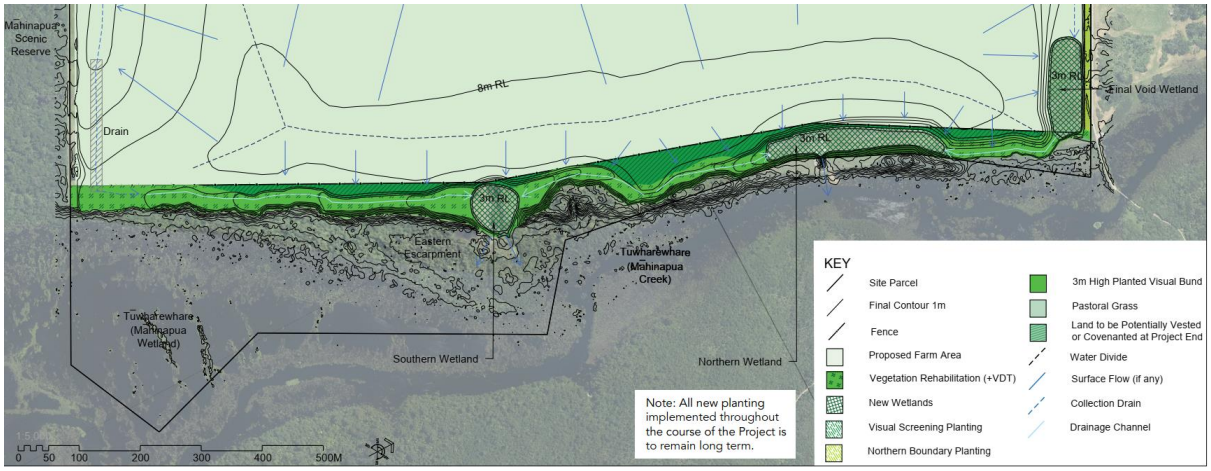

Figure 20: Proposed ecological reserve concept (Source: Glasson Huxtable)

4.101 In addition to the rehabilitation concept above, WMSC are investigating with the relevant stakeholders the feasibility of offering a strip of land (at no cost) at the end of mining to the public that could be used for a public walk or cycleway along the edge of the ecological reserve.

Proposed conditions of consent

4.102 In order to give effect to the various mitigation measures proposed throughout the application, and to provide parameters for the consent, a volunteered set of proposed consent conditions are contained in **Attachment N**.

4.103 It is expected that these conditions of consent may evolve over the course of the processing of the application, and the conditions should be treated as preliminary and subject to change.

Lapse date and term of consent

4.104 Mining is proposed to take approximately 10 years to complete to full site rehabilitation. WMSC seek a 16-year consent term, to allow for commencement, closure, contingencies and to provide operational certainty given the level of investment.

4.105 A standard lapse date of 5 years is sought for the application.

5. Statutory framework

5.1 The following section sets out our assessment of the resource consents required to authorise the activity, however WMSC seeks all consents necessary to authorise the mining activity, associated processing, structures and transportation of the resulting Heavy Minerals Concentrate, including as specifically described in this application. This includes any consequential consents required as a result of changes to National Policy Statements, National Environmental Standards and other planning documents that come into effect (or are repealed) during the course of processing of this application.

Westland District Plan

5.2 The site is located within the Rural Zone under the Westland District Plan. Consent is required under rule 5.6.2.2.D – mining is a restricted discretionary activity and rule 8.9.2a – access to a State Highway where performance standards are not met (high vehicle generation) is a restricted discretionary activity.

5.3 In the Westland District Plan mining is a restricted discretionary activity, and none of the standards in Table 5.7 apply to the activity, because the matters of discretion under Rule 5.6.2.2D cover all matters listed in the standards. Overall, the activity status is deemed to be **restricted discretionary activity** under the Westland District Plan.

Proposed Te Tai o Poutini Plan

5.4 The proposed Te Tai o Poutini Plan (Proposed Plan) was notified in July 2022, and at the time of writing this application, hearings had not commenced.

5.5 The site is located within the General Rual Zone under the Proposed Plan, and a small corner of the site is within the Outstanding Natural Landscape overlay, while the entire site is within the Pounamu Management overlays. A Site of Significance to Maori overlay exists to the east of the site over Tūwharewhare. A compliance assessment of the relevant rules in the TTPP which have immediate legal effect is enclosed as **Attachment O**. Consent is required under the following rule with immediate legal effect:

- ECO R5 – Indigenous Vegetation Clearance because ECO R1 relating to the clearance of indigenous vegetation is not complied with because vegetation clearance exceeds 5,000m^2 per three year period. The activity is a restricted discretionary activity under ECO-R5.

5.6 The proposal is a **restricted discretionary activity** under the Proposed TTPP.

West Coast Regional Land and Water Plan

A full compliance assessment against potentially relevant rules is attached as **Attachment O**. Consents are required under the following rules:

- Earthworks and vegetation clearance that do not comply with permitted activity rules are discretionary under Rule 16. Specifically, the earthworks volume limits are exceeded;
- The take and use of ground water for the purposes of mineral sand mining and processing, and incidental abstraction in the pit is a restricted discretionary activity under Rule 56;
- The discharge of mine water to land is a discretionary activity under Rule 91 (discharge to land).

5.7 Resource consent is required as a **discretionary activity** due to the activity not complying with the permitted activities listed within the West Coast Regional Land and Water Plan.

Regional Air Quality Plan

5.8 Under the West Coast Regional Air Quality Plan, the discharge of dust to air from stockpiling activities is permitted under Rule 3, and from mining activities is permitted under Rule 5.

National Environmental Standard for Freshwater Management

5.9 The National Environmental Standards for Freshwater Management (NESFM) were amended as of January 5 2023, providing a new pathway for mineral extraction activities.

5.10 The mining activity will be within 100 metres of wetlands therefore the new Regulation 45D applies, specifically:

- The activity will involve earthworks within 100m of a wetland;
- The activity will involve the taking of water from the mine pit within 100m of a wetland.
- The activity will involve the discharge of water (within the mine pit) within 100m of a wetland.

5.12 While the applicant's intention is to maintain the hydrological function and not drain any of these wetlands, consent is being sought under Regulation 45D as a discretionary activity as a precaution.

5.13 Further assessment of the restrictions upon grant of consent under Regulation 45D is included in section 7 of this AEE.

Overall activity status

5.14 The proposed mining activity is overall a **restricted discretionary** activity under the Westland District Plan and proposed Te Tai o Poutini Plan, a **discretionary** activity under the West Coast Regional Land and Water Plan, and a **discretionary** activity under the National Environmental Standards for Freshwater Management.

6. Assessment of effects on the environment

6.1 Section 88 of the RMA requires that the Applicant undertake an assessment of any actual or potential effects on the environment that may arise from the proposal, and the ways in which any adverse effects may be avoided, remedied, or mitigated.

6.2 This section discusses the effects of the proposal in the following sequence:

- Permitted baseline and existing environment
- Positive effects
- Landscape and visual amenity
- Noise
- Traffic
- Heritage/Archaeology
- Land stability
- Waterbodies and groundwater
- Ecology
- Cultural effects
- Dust
- Radiation
- Hazardous substance storage
- Matters of discretion for mining activities in the Westland District Plan
- Assessment of Alternatives
- Climate change
- Application of the Effects Management Hierarchy

Permitted Baseline and Existing Environment

6.3 Section 95D(b) of the Resource Management Act 1991 (RMA), allows the consent authority to disregard an adverse effect if a rule or national environmental standard permits an activity with that effect – often referred to as the 'permitted baseline'. The permitted baseline is entirely relevant to determining the acceptability and level of effects generated by this proposal.

6.4 The West Coast Regional Council Land and Water Plan permits earthworks and disturbance activities, such as allowing up to 5 hectares of humping and hollowing and 10 hectares of v-blading per year. It is relevant to factor this permitted baseline into any assessment of effects, however it should be noted that the experts assessing the effects of the proposal have conservatively assessed effects without the permitted baseline.

6.5 Table 5 below sets out a list of rules in the relevant operative plans which permit activities with a similar level of effect. In addition to those activities specifically listed below, it should be noted that the operative Westland District Plan does not control earthworks activities, and shelterbelt planting would not be affected by the rules pertaining to roadside planting. Therefore, activities which may affect viewshafts from neighbouring properties such as boundary planting and bunding can feasibly be carried out as a permitted rural activity under the Westland District Plan, and therefore existing views from the State Highway and surrounding properties onto and across the site are not protected by the rules in the District Plan.

Planning Document	Rule	Activity	Comments
West Coast Regional Air Quality Plan	3 – Stockpiling, conveying and handling	Discharge of contaminant into air arising from stockpiling, conveying or handling	Stockpiling of gravel, sand and soil will occur throughout the proposed activity.
West Coast Regional Air Quality Plan	5 – Earthworks, Quarrying, Mining and Cleanfill Operations	Discharge of any contaminant into air arising from earthworks, quarrying operations, mining or cleanfill operations	Relevant due to mining and earthworks provisions.
West Coast Regional Land and Water Plan	10 – Vegetation disturbance in the Non Erosion Prone Area	Vegetation disturbance in Non Erosion Prone Area.	Any vegetation present in the application area will be removed during the course of the proposed activity.
West Coast Regional Land and Water Plan	51 – Diversion of natural runoff – contaminated and uncontaminated	Diversion of stormwater runoff	Diversion of both contaminated and uncontaminated stormwater runoff will occur during the activity.
Westland District Plan	5.6.2.2.A	Building setbacks and Coverage	Rural buildings are permitted if they comply with setbacks and height rules. There is no maximum floor area for rural buildings. The buildings will comply with setback rules.
Westland District Plan	5.6.2.2.A	Noise	The District Plan permits noise levels of 55 dBA L_{10} during the daytime and 45 dBA L_{10} during

Planning Document	Rule	Activity	Comments
			night time hours and on Sundays.
Proposed Te Tai o Poutini Plan	ECO-R1	Vegetation Clearance	Permits 5,000m^2 of clearance in any continuous three year period. Over the proposed consent duration of 16 years this would equate to 3ha of vegetation clearance. Immediate legal effect.
Proposed Te Tai o Poutini Plan	NC-R1	Vegetation Clearance and Earthworks within Riparian Margins	Because the tributary does not meet the definition of a riparian margin due to the bed width, there are no additional restrictions placed on the vegetation clearance despite the proximity to the tributary.

Table 5: Relevant Permitted Activities

Positive Effects

6.6 The proposed Mananui mining project is the second mining project being undertaken by WMSC on the West Coast. WMSC's Westport operation already brings significant social and economic benefits to the West Coast region, including the crucial revitalisation of the Westport Port.

6.7 The currently proposed activity at Mananui will bring significant economic benefits to the West Coast region. The operation will employ up to 70 staff members, as well as contractors and other services in association with the activity. The proposed Mananui mining project will bring the crucial revitalisation of the Greymouth Port. The flow on economic effects of such a large-scale project will be substantial and make a noticeable difference in the community, particularly Hokitika.

6.8 The proposed activity will also create social and community benefits as a flow on effect of job creation and economic activity. Flow on effects will benefit things like schools, sports and other clubs and activities.

6.9 An economic assessment, confirming the significant regional economic benefits of the proposal is enclosed in **Attachment P**.

6.10 In addition to the significant regional economic benefits associated with this project, the project provides the opportunity for enhancement of riparian and wetland vegetation through planting and stock exclusion, and the construction of additional wetland areas and the protection (through vesting, and/or legal mechanism) of approximately 26.ha of valuable vegetation and habitat. The

riparian planting will in the longer term have a positive impact on stream health and aquatic ecology, and reduce nutrient runoff from the dairy support activities which will re-establish on the site post-mining, as will the recontouring of the land which will improve water quality in the post mining farm runoff. The ecological benefits of this planting are discussed further in the Ecological Impact Assessment (**Attachment K**).

Landscape and visual amenity

6.11 The application area is located adjacent to State Highway 6 at Mananui in a wider area that is characterised by areas of native vegetation, pastoral farming activities and rural residential housing. The site itself is modified and is primarily grass covered farmland, with some with fragmented pockets of native vegetation throughout and more vegetation fringing the inland boundary. A number of artificial drains also run through the application area which lead to Tūwharewhare.

6.12 The Landscape Assessment (**Attachment N**) sets out the context of the site, and confirms that the application area is not part of an Outstanding Natural Landscape, but confirms that the adjacent Lake Māhinapua area is.

6.13 The Landscape Assessment, in conjunction with the Ecological Assessment, sets out a landscape mitigation planting plan. This planting plan is comprised entirely of native species and includes boundary planting and bunding, VDT and planting adjacent to the existing wetland forest areas and riparian planting around the newly established stream channel, which has the dual benefits of providing visual mitigation and valuable ecological benefits in terms of stream health, aquatic ecology and avian habitat.

6.14 The assessment considers the effects on natural character, landscapes and the visual effects on immediate neighbours. The level of effects experienced are identified in Table 6 below.

Viewpoint/Property	Nature of Effect	Level of Effect	Comments
Viewers from SH6	Change from pastoral to mining. Processing plant upper portion visible. Truck movements.	*low to moderate (minor), low (less than minor) as planting establishes*	Bunding and planting proposed to mitigate effects on users of SH 6.
Viewers from the Mahināpua Walkway	Greatest effect when mining is at northern extent.	*low to moderate (minor) prior to planting establishing, low (less than minor) once planting is established*	Planting proposed, along with temporary 2m high bund around end of mining strip when it gets within 150m.
Viewers from Tūwharewhare	Limited views of site beyond wetland, a few	*very low (less than minor)*	Planting is proposed to close off the gaps.

Viewpoint/Property	Nature of Effect	Level of Effect	Comments
	small gaps in vegetation provide views of the site.		
Viewers from the Coastline	Very limited views from the coastline. Distant views from the tops of dunes which are not easily accessible.	*very low (less than minor).*	New bunding and planting along SH 6 boundary will assist with screening.
Viewers from the Air	Views of the site when taking off or landing to the south of Hokitika airport.	*low (less than minor)*	Progressive rehabilitation and sewing grass and quickly as practicable will minimise effects.
Viewers from Residences on the Eastern Side of SH6	Processing plant will be visible. Additional truck movements and long views of processing plant. Periodic effects associated with mine path variation	*low to moderate (minor)*	3m high planted bund is proposed to mitigate effects.
Viewers from Residences on the Western Side of SH6	Residences oriented away from the site. Additional truck movements and long views of processing plant.	*low (less than minor)*	Bunding and planting along highway boundary will mitigate effects.
Viewers from Residences Further Afield	Truck movements along the State Highway, long views of the processing plant and wider site.	*very low (less than minor)*	Use of recessive colours, bush background mitigate effects.
Viewers from Recently Consented Properties	Recently consented/consents underway for dwellings in the surrounding area are on both the eastern and western side of SH6 in similar locations/viewpoints to existing dwellings.	*Similar to other assessed dwellings above*	
Viewers from the Treetops Walkway	Visible from highest tower at 2.6km distance.	*Negligible*	Long distance and surrounding vegetation mitigate effects.
Overall	**Varies**	**Low to moderate (minor) during project, very low (less than minor) at completion**	

Table Six: Summary of Landscape and Visual Effects

6.15 The Landscape Assessment makes a number of recommendations in terms of visual mitigation, which are described in Section 3 above. These include a combination of setbacks, bunding and planting to screen the activities on the site from public and private viewpoints surrounding the site.

6.16 The Landscape Assessment considers the potential effects on landscape and residential amenity for the surrounding environment, and considers that the effects of the proposal are **low to moderate/minor during the project, and very low/less than minor upon completion** subject to successful remediation.

Noise

6.17 Noise will be generated by the processing plant and associated equipment and vehicle and machinery operation. A number of mitigation measures have been considered and will be undertaken to ensure acceptable noise levels can be met. These include the positioning of the plant as far away from dwellings as practicably possible (as well as adjacent ecological areas) and providing for some targeted noise screening bunds around existing dwellings. The plant has also been located centrally to minimise pumping from various locations which will reduce noise levels.

6.18 The Westland District Plan sets out compliance limits for noise for other activities. These noise limits do not strictly apply to mining, but they provide useful context. In addition, national noise standards (NZS 6802:2008 Acoustics – Environmental Noise) are published by Standards New Zealand and the World Health Organisation Guidelines for Community Noise provide guidelines for noise exposure. These standards and guidelines are commonly utilised as a guide for acceptable levels of noise.

6.19 WMSC has commissioned a full acoustic assessment undertaken by Marshall Day Acoustics to assess the effects of noise generated as a result of the proposed activities (see **Attachment G**). Marshall Day Acoustics have also assisted the applicant to prepare a draft Noise Management Plan, setting out the management methods and techniques which will be employed during construction and operation to minimise noise emissions at source.

6.20 The Acoustic Assessment outlines that the Westland District Plan noise limits will not be adhered to, because there is a night-time noise limit applied to daytime Sundays. The Proposed Te Tai o Poutini Plan does not include this reduced noise limit on Sundays, and instead adopts a 55 dB L_{Aeq} daytime noise limit and a 45 dB L_{Aeq} night-time limit. The project proposes to comply with these noise levels, albeit with standardised daytime and night-time hours which is consistent with World

Health Organisation guidelines and the National Planning Standards 2019. The operative Westland District Plan contains outdated noise limits, and should not be relied upon to set standards for operations.

6.21 The applicant also proposes a suite of conditions (**Attachment N**) relating to noise, including requirement to comply with the proposed noise levels, noise monitoring and implementing the Noise Management Plan.

6.22 Ultimately the Acoustic Assessment concludes that the effects of the proposal are reasonable in the context of the Rural receiving environment. On the basis that the proposal complies with published guidance for the protection of residential amenity, we consider the noise effects to be **less than minor** in nature.

Traffic

6.23 Traffic will access the site from a new purpose-built entranceway off State Highway 6. The entranceway will be constructed to a design previously discussed with Waka Kotahi and has been designed to an intersection design standard.

6.24 Consent is sought for an average maximum of 70 truck movements (35 each way) to and from the site per day, 515 total equivalent car movements per day, and an average maximum of 48 vehicle movements and 6 heavy vehicles per hour. Trucks will generally travel towards the Port of Greymouth. The Integrated Transport Assessment (**Attachment F**) sets out an assessment of the transport effects of the proposal.

6.25 The Integrated Transport Assessment has assessed the effects of the proposal on the wider road network, and the immediate transport environment and has concluded that:

- The site will be self-sufficient with regards to car parking and loading, such that there will be no on-street parking / loading occurring;
- The proposed access is anticipated to operate safely and efficiently. The low passing volumes and good visibility mean that vehicles exiting the site will be able to do so safely; and
- The effects on the wider road network are considered to be acceptable.

6.26 Overall, the Integrated Transport Assessment concludes that the effects of the proposal are **less than minor**.

Archaeology

6.27 An archaeological assessment has been commissioned for the site, because a preliminary site appraisal indicated some pre-1900 history associated with the Mananui Tramline at the northern

boundary of the site. The archaeological assessment (**Attachment Q**) has resulted in the registration of two new archaeological sites, one of which will be disturbed by the mining proposal. This site relates to houses established along the Mananui Tramline at the north end of the site.

6.28 WMSC will apply for an archaeological authority in parallel with this resource consent application, as authority to disturb or modify archaeological sites is required under the Heritage New Zealand Pouhere Taonga Act.

6.29 The Archaeological Assessment sets out recommendations, including that archaeologists are present for the top soil and overburden stripping activities within a certain area at the northern extent of the site shown in yellow in **Figure 21** below. The disturbance of this site will be managed through the archaeological authority process and an advice note is included to this effect in the proposed conditions of consent.

Figure 21: Archaeological monitoring area required for J33/214 (Source: NZ Heritage Properties Ltd)

6.30 Works will be in close proximity, but not disturb site J33/215 (shown in **Figure 22** below), and the Archaeological Assessment recommends that this site is cordoned off to clearly demarcate the extent of the archaeological area to avoid disturbing these features. A condition of consent requiring the cordon to be established is volunteered.

Figure 22: J33/215 – outside of mining area (Source: NZ Heritage Properties Ltd)

Land Stability

6.31 Land disturbance activities have the potential to cause land instability effects on adjoining properties, if not appropriately managed. The applicant has obtained geotechnical advice to inform the pit geometry and setbacks.

6.32 The application proposes a 20m setback from the State Highway 6 boundary, and 10m setbacks from the northern and southern boundaries. The geotechnical advice is that the proposed boundary setbacks are acceptable, a 27 degree pit slope batter is suitable for natural ground, and that a 22 degree pit slope batter should be applied to any tailings material (i.e. the tailings deposition area at the back of the mine pit). The geotechnical engineer recommends that the pit slope batter is reviewed prior to the excavation occurring within 100m of the eastern mine boundary.

Water bodies and groundwater

6.33 The proposed activity has the potential to interact with groundwater, surface water and surrounding wetlands in the vicinity of the application area. Effects associated with this interaction can be broadly categorised into water quality and water quantity effects.

Water quality effects

6.34 The mining is proposed to be undertaken using a dredge, and pumping ROM and tailings to and from the processing plant.

6.35 The proposal has the potential to adversely affect water quality in surrounding water bodies and wetlands through the migration of naturally occurring metals and turbidity through the groundwater system. The potential effects on neighbouring domestic well water supplies, and the ecological integrity of Tūwharewhare have been considered.

Figure 23: Dredge pond water level management zone (Source: Kōmanawa)

6.36 The Hydrological Assessment and Water Management Plan (**Attachment H**) sets out that there could possibly be small increases in aluminium and chromium concentrations in Tūwharewhare.

In addition, there could be a breach of the aesthetic drinking water standards within domestic supply wells surrounding the site. There is also a potential for turbidity to occur within the groundwater. The modelled scenarios indicates that such changes would result in minor changes to water quality both within the environment and in water supplied.

6.37 However, in order to avoid both outcomes, the hydrological assessment proposes to ensure there is a net water take of 3 litres per second from the mine pit when operating within the "Dredge pond water level management zone" (shown in **Figure 23** above), which be discharged into an infiltration trench on the southern boundary. This will maintain a hydraulic gradient towards the dredge pond and away from wells and/or Tūwharewhare. This will ensure that any changes to groundwater are contained within the mine site and effects on water quality are therefore avoided.

6.38 Water quality monitoring is offered to monitor groundwater chemistry to confirm the hydraulic gradient is being maintained and water quality is maintained. The effects on water quality are therefore considered to be **less than minor** in nature. This is confirmed in the Ecological Assessment which states that the impacts are negligible and unmeasurable in terms of an adverse effect.

Water quantity effects

6.39 The proposal involves pumping of groundwater from the mine pit in order to pump the ROM to the processing plant area, and up to 38 litres a second from the proposed well at the processing plant. This water is largely returned to the mine pit with tailings, and using the dredging methodology, water levels within the pit are generally maintained and alteration of the groundwater table does not occur. However, the water quality management system does require a net take of 3 litres a second when working within the "Dredge pond water level management zone" to maintain a slight hydraulic gradient away from Tūwharewhare and the domestic water supply wells.

6.40 The water quality management system will result in a potential 10cm of drawdown in the well on the eastern side of State Highway 6 and a maximum mounding of 60cm in the well on the western side of the State Highway. These changes are intermittent and will vary as the mine pit progresses around the site. The hydrological assessment concludes that such changes in water level at the adjacent domestic supply wells are within generally accepted water supply well impacts and therefore effects on the reliability of the wells will be avoided.

6.41 The water quality management system will also result in a >2% Mean Annual Low Flow reduction in Tūwharewhare which is lower than the generally permitted 10% MALF reduction effects threshold and that adverse effects will therefore be avoided.

6.42 The hydrological assessment also notes that there may be a reduction in groundwater level at the edge of the site of up to 30cm, which will reduce seepage to the wetland adjacent to Tūwharewhare with a maximum drawdown of 2cm at the wetland edge. There will be no adverse effect on wetland hydrology as a result. The ecological assessment notes that the modelled changes will have no effect on wetlands – i.e. no drainage will occur.

6.43 The small wetland adjacent to the southern boundary of the site on the Department of Conservation reserve land was confirmed to be perched, and there will be no effects on the water levels within this wetland as a result of mining.

6.44 The Water Management Plan proposes groundwater level monitoring to ensure that water levels are frequently monitored to confirm that the hydraulic gradient is being maintained.

6.45 Overall, the proposed water management system for the site will ensure that a hydraulic gradient is maintained away from sensitive receivers, such that water quality effects on neighbouring water supplies and the environment are avoided, and maintaining this gradient will not compromise wetland or surface water hydrology. Overall, the hydrology effects have been avoided or are **less than minor** in nature.

Ecology

6.46 The applicant has commissioned BlueGreen Ecology Ltd to prepare an ecological assessment which is enclosed as **Attachment M**. The ecological assessment is closely related to both the hydrological assessment (**Attachment I**) and Erosion and Sediment Control Plan (**Attachment R**), particularly in relation to effects on freshwater ecology.

6.47 The ecological effects of the proposal can broadly be categorised into the following effects:

- Effects associated with vegetation clearance
- Potential effects on Avifauna and Herpetofauna
- Effects on wetlands
- Effects on stream ecology, water quality and quantity

Vegetation clearance

6.48 In relation to vegetation clearance, there will be approximately 4ha of vegetation disturbance associated with removal of the forest fragments on the farm resulting from the mineral sand extraction.

6.49 The ecological assessment in **Attachment K** considers the effects of this vegetation loss. At the ecological district scale, this is negligible (<1%) and at a local scale this is approximately 0.17% of the podocarp/broadleaf forest habitat type. Due to the significant stock pressure, fragmented

nature and lack of an understory, the forest fragments have been assessed as being of low ecological value, and unlikely to provide habitat for threatened and at risk fauna such as West Coast Green Gecko, native bats. The ecological assessment concludes that there are **less than minor** effects associated with the disturbance of this vegetation.

Effects on avifauna

6.50 The ecological assessment has been informed by site surveys, and a review of the eBird and OSNZ Bird Atlas databases. 12 species were heard or observed on site. These species are:

Common Name	Latin Name	Threat status	Habitat present within study area	Seen or heard on site
Fernbird South Is. ssp	*Bowdleria punctata ssp*	Declining	√	√(***)
Australasian bittern	*Botaurus poiciloptilus*	Nationally critical	√	√(***)
Bellbird ssp	*Anthornis melanura melanura*	Not threatened	√	√
Brown Creeper	*Mohoua novaeseelandiae*	Not threatened	√	
Grey Warbler	*Gerygone igata*	Not threatened	√	√
New Zealand Tomtit (South Island ssp)	*Petroica macrocephala macrocephala*	Not threatened	√	√(**)
Paradise Shelduck	*Tadorna variegata*	Not threatened	√	√
Weka ssp	*Gallirallus australis ssp*	Not threatened	√	√
New Zealand Kingfisher	*Todiramphus sanctus vagans*	Not threatened	√	
New Zealand Pigeon	*Hemiphaga novaeseelandiae*	Not threatened	√	√
Shining Cuckoo	*Chrysococcyx l. lucidus*	Not threatened	√	
New Zealand Fantail (South Island ssp)	*Rhipidura fuliginosa fuliginosa*	Not threatened	√	√
Pukeko	*Porphyrio m. melanotus*	Not threatened	√	√
Welcome Swallow	*Hirundo n. neoxena*	Not threatened	√	√
Tui	*Prosthemadera n. novaeseelandiae*	Not threatened	√	√(*)
Australasian Harrier	*Circus approximans*	Not threatened	√	√
Silvereye	*Zosterops lateralis lateralis*	Not threatened	√	

Spur-winged Plover	*Vanellus miles novaehollandiae*	Not threatened	√	

(*) seen on the DoC forest adjacent, (**) in escarpment forest, (***) only in the eastern wetland.

6.51 In addition, the Ecological Assessment identifies that Kotuku, 4 shag species, Autralasian Pied Stilt, South Island Pied Oystercatcher, Banded Dotterel, NZ Pipit have been identified as potentially present.

6.52 The species with threatened or at risk species classifications are generally found within the escarpment forest and wetland areas, and not within the application area.

6.53 The ecological assessment considers the effects on avifauna in terms of noise and light, and conclude that in the habitats beyond the mine boundary there will be little perception of noise and light.

6.54 In addition, the vegetation loss due to the fragmented and poor quality nature of the remnant forest is considered to have a **less than minor** effect on avifauna both in terms of habitat loss and displacement and nest, egg and parent loss from clearance activities.

6.55 The Ecological Assessment recommends the adoption of a Fauna Management Plan, which covers potential effects on avifauna and recommended mitigation measures. A draft of this Fauna Management Plan is included in the Ecological Assessment.

Effects on herpetofauna

6.56 The ecological assessment indicates that forest gecko, West Coast Green Geck, speckled skink and common skink could be present within some of the forest habitats on site, however this is unlikely within the forest fragments within the application area due to the poor quality habitat.

6.57 A lizard survey has been undertaken and did not find anyany of these species within the application area and the wider application site (i.e. the escarpment forest area).

6.58 The Fauna Management Plan sets out management protocols for any lizards present, including a pre-clearance check and salvage from the application area and relocation to the escarpment forest or Department of Conservation reserve. The ecological assessment confirms that if these protocols are carried out, the effects on herpetofauna will be avoided.

Effects on wetlands

6.59 The effects on wetland ecology (avifauna effects are covered above) could arise due to changes in the water table associated with the mining activity. The proposed water management strategy includes a small net groundwater take from the pit of 3 litres per second to maintain a hydraulic gradient away from the wetland and Tūwharewhare. Groundwater level monitoring regime will ensure that any changes in water levels are identified and if linked to the mining activity (i.e. not seasonal fluctuations) can be rectified through amendments to the water management within the mine area however this is considered to be extremely unlikely. The ecological assessment confirms that there will be no drainage of wetlands. As water levels and hydrological function will be maintained, so too will the extent and ecological values of these areas. The effects on wetlands are primarily avoided through the maintenance of water levels, therefore considered to be **less than minor** in nature.

Effects on stream ecology, water quality and quantity

6.60 The proposal has the potential to alter water quality (sedimentation and increased metal loads) in Tūwharewhare.

6.61 As noted above, the Hydrological Assessment covers off the proposed water management strategy to avoid these changes in water quality occurring within Tūwharewhare by maintaining a hydraulic gradient away from the water body, and discharging this water to an infiltration trench on the southern boundary. The ecological assessment confirms that this approach would successfully avoid adverse ecological effects.

6.62 Water level and quality monitoring is offered at the south-eastern corner of the site to evaluate trends in metals in the groundwater, and to monitor water levels to ensure the water management system is operating as intended.

6.63 In summary, the robust and tested water management methods proposed ensure that effects on water quality can be avoided, therefore ensuring that effects on stream ecology are also avoided. With the water management strategy in place there should be **negligible/unmeasurable** ecological effects on the surrounding receiving environments.

Cultural effects

6.64 The site is within the joint rohe of Te Runanga o Ngati Waewae and Te Runanga o Makaawhio. In addition to the potential for unknown archaeological sites being encountered (considered low by the archaeological assessment provided), the proposal has the potential to give rise to effects on taonga species and affect the mauri of water in the surrounding environment. It should be noted that none of the known archaeological sites are associated with previous Maori occupation, however it is acknowledged that the surrounding Tūwharewhare (Māhinapua Creek) and Lake Māhinapua area have strong cultural significance to both local runanga.

6.65 The proposal identifies extensive measures to avoid any mining of, and potential adverse effects on the waterbodies surrounding the mine area, and in the longer term the site rehabilitation will reduce nutrient runoff from the existing farming activity and improve water quality in Tūwharewhare.

6.66 Taonga species are identified in the Ngai Tahu Claims Settlement Act 1998, and those potentially affected by the proposal identified in the ecological assessment include: Mātā (Fernbird), Kōparapara (Bellbird), Riroriro (Grey Warbler), Miromiro (South Island Tomtit), Pūtakitaki (Paradise Shelduck), Weka, Kōtare (Kingfisher), Kūkupa (New Zealand Wood Pigeon), Pīpīwharauroa (Shining Cuckoo), Pīwakawaka (South Island Fantail), Pūkeko, Tūī, Kāhu (Australasian Harrier). The ecological assessment confirms that the effects on these taonga species are less than minor in nature, and that these taonga are mostly found outside of the application area in the higher value vegetation to the east of the mining area.

6.67 The site is located within the Pounamu Management Overlay in the Proposed Te Tai o Poutini Plan. The proposal will not involve the extraction of pounamu which will be returned immediately to the mine pit with other oversized material. There are therefore not considered to be any effects on any pounamu resource located within the site.

6.68 WMSC has frequently engaged with Te Runanga o Ngati Waewae and Te Runanga o Makaawhio throughout the development of this application, and continues to do so. WMSC has intentions to create an ecological reserve bordering Tūwharewhare, which has been offered to vest with the Runanga.

Dust

6.69 WMSC has developed a Dust Management Plan (**Attachment I**), setting out how the site will be managed in order to avoid fugitive dust emissions associated with the project. Given the frequent rainfall and wet nature of the mining, dust emissions are not expected to be a problem, however the Dust Management Plan sets out management methods in order to ensure that dust emissions will be avoided, and will not reach noxious, dangerous, offensive or objectionable levels.

6.70 The applicant has installed dust deposition gauges on the boundary of the application site to measure background dust levels. These dust deposition gauges will be in place for some time prior to mining. The location of the gauges and results are recorded in the Dust Management Plan.

6.71 The Ministry for the Environment's Good Practice Guide for Assessing and Managing Dust recommends that dust deposition does not exceed 4g/m^2/30 days above background levels. This is an appropriate approach, and is consistent with the same standard applied to WMSC mining operations in Westport. By the time mining commences, 12 months of baseline data will be obtained which will determine the background levels of dust deposition at the site, and conditions

have been proposed requiring the ongoing monitoring of dust at the boundaries for the duration of mining to ensure that this dust limit is not exceeded. The effects associated with potential dust emissions are therefore expected to be **less than minor** in nature.

Hazardous substance storage

6.72 The proposal potentially involves the storage of up to 15,000 litres of diesel on site to power generators and earthmoving machinery.

6.73 The indicative fuel tank design is enclosed in **Attachment J**. The tank has full secondary containment and will be located within the processing plant hardstand area. Any spills can be contained by removal of any contaminated hardfill and appropriate disposal, and as a worst case scenario would be captured in the mine settling pond system which would allow significant detention and the ability to contain any spills to avoid discharge to the environment.

6.74 The storage of diesel will be at least 150m away from the property boundaries and a significant distance away from any residential activities, which will avoid any human health risk associated with such storage. The fuel storage will likely be managed by the fuel delivery company in terms of ensuring that the fuel storage tank is appropriately certified under the Hazardous Substances and New Organisms Act 2006.

6.75 The potential environmental effects associated with the storage of diesel are considered to be **less than minor** in nature. Conditions of consent associated with this storage, and subsequent use are included in **Attachment N**.

Radiation

6.76 The site has naturally occurring radionuclides, mostly contained within the heavy mineral fraction of the material to be excavated on site.

6.77 A report prepared by Hardie Pacific outlining the various radiation sampling methods conducted on site is included in **Attachment S**. The assessment indicates that the majority of material is captured in the Heavy Mineral Concentrate, which is removed from the site, however also confirms that the HMC produced is well below the concentrations which would classify the material as radioactive, and therefore the Radiation Safety Act 2016 does not apply to the production/transportation of this material.

6.78 In addition, the applicant has installed radiation dosimeters at 4 locations on the boundary of the property to determine background levels of radiation exposure. At least 6 months of baseline data will be obtained prior to mining commencing to establish background levels of radiation at the site. Conditions of consent are proposed to monitor radiation levels at the boundary of the application site for the duration of mining to confirm that public exposure levels within the Radiation Safety Act 2016 are not exceeded as a result of this activity.

6.79 On the basis that the radiation assessment confirms that the HMC is not radioactive in terms of the Radiation Safety Act 2016, and conditions are proposed to ensure public exposure limits in the Act are not exceeded, the effects associated with the disturbance of naturally occurring radionuclides is considered to be **negligible**.

Assessment of Alternatives

6.80 During the minerals sands processing activity there will be discharges of wash water and stormwater to land. Schedule 4 of the RMA (and Section 105 of the RMA) state that if an activity involves the discharge of any contaminant, the AEE is required to include a description of:
"(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(ii) any possible alternative methods of discharge, including discharge into any other receiving environment"

6.81 The nature of the discharge and the sensitivity of the receiving environment are discussed earlier and in extensive detail in the hydrological and ecological assessments.

6.82 Discharges are always directed to land, rather than directly discharging to waterways, which is considered to be best practice and culturally appropriate. The water management strategy includes maintaining a hydraulic gradient away from Tūwharewhare to avoid water quality changes in the creek.

6.83 The applicant has also considered a variety of other alternatives in regard to the wider proposal, including mining methodology, site water management, rehabilitation, plant location, and various logistics options.

6.84 The mineralised sand is a fixed in location natural resource, and consideration was given to avoiding vegetation removal on site, however the vegetation exists in the most heavily mineralised portion of the site, and cannot be avoided. The mining activity therefore has a functional and operational need to occur within these forest fragments. It is considered that the effects overall are no more than minor and that the activity will be managed to minimise and mitigate adverse effects.

Climate change and emissions

6.85 Section 104E of the RMA has recently been repealed, which previously prevented councils from considering the effects of greenhouse gas emissions. This means that councils now have the discretion to consider these effects, including the contribution to climate change.

6.86 There is little guidance on how in practice these effects should be considered when evaluating a resource consent application. The majority of emissions associated with mining activities arise from the use of fuel for machinery, generators etc for extraction and transport activities. In New Zealand, fuel is included in the Emissions Trading Scheme and is taxed at source (i.e. when it is imported by wholesalers into the country). The emissions associated with this fuel use are therefore already factored into the country's overall emissions budget.

6.87 In terms of any vegetation loss contributing to climate change through reduced carbon absorption, the vegetation is of poor quality and with a limited understory and no regeneration occurring. The replacement of 4.2ha of ageing forest with 4.75ha of new planting (as well as the boundary planting) will undoubtedly increase the amount of carbon uptake from the property in the longer term.

6.88 WMSC will investigate the ability to run as much of the on-site machinery as possible using electricity rather than fossil fuels, however this is subject to confirmation from the local lines company that there is sufficient capacity available to serve this activity. WMSC has already electrified their operations in Westport to the extent possible and significantly reduced on-site fuel consumption. As the price of electricity is far better than diesel, these changes generally make financial sense and therefore there is a strong incentive to minimise emissions in this respect.

6.89 In summary, the vast majority of emissions will already be taxed through the ETS at source, and this scheme is specifically designed to reduce greenhouse gas emissions. The applicant is otherwise investigating and taking all feasible measures available to it to mitigate any emissions.

Application of the effects management hierarchy

6.90 The proposed mineral sands project has been informed and shaped by the application of the effects management hierarchy – as defined in the National Policy Statement for Freshwater Management (NPS-FM). The application of the effects management hierarchy is important with respect to adverse effects on freshwater, including natural inland wetlands. The NPSFM requires the effects management hierarchy to be applied to rivers and natural inland wetlands. In addition, the NESFM requires the effects management hierarchy to be applied in order for the activity to be considered a discretionary activity under Regulation 45D which relates specifically to activities within or adjacent to wetlands. The project has been extensively refined to primarily avoid adverse

effects on surrounding waterbodies and wetlands, as well as threatened and at risk species, and the consent authority can have confidence that the effects management hierarchy has been employed in every aspect of the project, not just in relation to freshwater ecosystems.

6.91 The National Policy Statement for Indigenous Biodiversity also requires application of the effects management hierarchy in certain circumstances. The ecological assessment confirms, that the forest fragments would not qualify as significant in terms of the NPSIB. They are also not identified in either the proposed Te Tai o Poutini Plan or any other regional planning documents as a Significant Natural Area.

6.92 In accordance with the NPSIB clause 3.16, the effects management hierarchy must be applied to any significant adverse effects on indigenous biodiversity outside of SNAs, with offsetting required only where residual effects are more than minor. Other effects must be managed to give effect to the objectives and policies of the NPSIB. Effects on indigenous biodiversity have been assessed as less than minor.

6.93 Adverse effects have first been avoided in the following ways:

- Refinement of the project area to provide setbacks from boundaries, waterbodies, wetlands and intact indigenous vegetation, avoiding effects on these features in the first instance;
- Imposing conditions which will guide final plant and building design and operating parameters to avoid light spill and adhering to the Australian wildlife light pollution guidelines where lighting is required on site to avoid effects on resident avifauna;
- Using a settling pond system to treat mine water to a high standard before discharge back to the mine void;
- Avoiding discharges to surface water and therefore sedimentation and increased metal loadings in the receiving environments, including by establishing the hydraulic gradient away from Tūwharewhare;
- Locating the plant away from residents and sensitive ecological areas, avoiding noise effects;
- Construction of bunds and planting along the boundaries of the site for screening;
- Management plans to avoid effects on species, including a Fauna Management Plan, Erosion and Sediment Control Plan and Dust Management Plan.

6.94 Adverse effects that cannot be avoided have been minimised in the following ways:

- An ecological reserve will be developed and permanently protected as part of the mine rehabilitation, which provides for restoration and enhancement of the wetland edge forest, including fencing of stock from the forest and wetlands;
- Vegetation Direct Transfer protocols will be used to speed up rehabilitation and preserve seeds within the top soil within the proposed ecological reserve/rehabilitation area;
- Pest control will be carried out for the duration of the consent;

6.95 The hydrological assessment and ecological assessment both confirm that the adverse effects of the proposal have largely been avoided, and if not avoided, minimised, such that there is no need to employ any further steps in the effects management hierarchy. In addition, significant positive ecological benefits will arise from some of the mitigation measures proposed that will endure beyond the life of the mine.

Conclusion

6.96 On the basis of the above assessment, it is considered that the proposal overall will have no more than minor adverse effects on the environment, while having substantial positive effects in terms of economic growth and prosperity for the West Coast region as well as long term ecological benefits in terms of riparian and wetland planting.

7. Statutory Assessment

Objectives and Policies

7.1 Section 104 of the RMA requires that the relevant provisions of the relevant operative and/or proposed plan(s), or any other matter the consent authority considers relevant and reasonably necessary, to be considered when assessing an application. In this instance, the most relevant planning documents that require consideration are:

- The National Policy Statement for Freshwater Management 2020 (NPSFM)
- The National Policy Statement for Indigenous Biodiversity 2023 (NPSIB)
- The West Coast Regional Policy Statement (RPS)
- The West Coast Land and Water Plan
- The Westland District (District Plan)
- Proposed Te Tai o Poutini Plan (Proposed Plan)

7.2 The relevant specific objectives and policies in the key planning documents have been identified and evaluated and the proposal is considered be entirely consistent with the relevant plans. The full assessment of the planning documents is attached as **Attachment T**.

7.3 The National Policy Statement for Freshwater Management 2020 (NPS-FM) provides a nationwide policy directive to manage freshwater in accordance with the fundamental concept of Te Mana o Te Wai. Considerable thought has been given by the applicant and the technical assessments to the appropriate management of freshwater to avoid adverse effects on, and to preserve the health of, freshwater in the receiving environment of this application site, and operations have been designed to achieve this. The proposal gives effect to the hierarchy of obligations set out in Objective 2.1, including prioritising the health and wellbeing of water and the drinking water in

adjacent wells. The proposal is consistent with policies 6 and 13, which seek to promote restoration of wetlands and reversal of degradation of freshwater ecosystems – this is achieved through the 30m planting strip along the edge of the existing high value forest on the eastern boundary of the mine area, and the creation of an additional wetland areas which will increase habitat and provide filtration for farm runoff for the post-mine land use. The proposal also seeks to protect river extent and values (Policy 7), and habitats of indigenous freshwater species (Policy 9). Overall, the proposal is considered to manage water quantity and quality effects in a way that gives effect to Te Mana o Te Wai for the reasons outlined above.

7.4 The National Policy Statement for Indigenous Biodiversity came into force on 4 August 2023 and overall requires the maintenance of indigenous biological diversity, including a particular focus on indigenous biodiversity within SNAs. The application area has not been identified as an SNA, and the ecological assessment states that the application area currently does not meet significance criteria within the NPSIB. Based on the low level of effects identified by the ecological assessment, and the mitigations offered, we consider the proposal to be consistent with Objective 2.1, as there will be no overall loss indigenous biodiversity and a long term gain associated with the proposal. Of particular relevance to this site are policies 1 and 2 which seek to ensure indigenous biodiversity is managed in a way that takes into account the principles of the Treaty of Waitangi and that tangata whenua may exercise kaitiakitanga. The applicant has offered to gift a 28.45ha ecological reserve to tangata whenua, and is actively engaging with iwi throughout the consent process. The proposal is consistent with Policy 8 (indigenous biodiversity is maintained), and Policy 13 (restoration of the escarpment forest is provided for through the 30m vegetation strip to be planted), Policy 14 (indigenous vegetation cover will be increased at the end of mine life beyond what is currently present on site).

7.5 The RPS was made operative in February 2020, and sets the framework for all of the regional and district plans which follow. Many of the regional and district plans on the West Coast were made operative many years before, and as the RPS is more current, weight should be attributed to the objectives and policies in this plan.

7.6 The RPS seeks to provide for resilient and sustainable communities (Objective 4.1), recognising the contribution of resource use to the local economy (Objective 5.1) enabling economic use and employment opportunities in a sustainable manner (Objective 4.2). The overarching policy intent of the RPS is to enable activities, provided that the adverse effects of the activities are avoided, remedied or mitigated. The proposal is considered to be entirely consistent with the RPS. As outlined above, the focus of the entire project has been to avoid adverse effects on the surrounding environment, and there are a suite of mitigation measures to ensure there are no significant adverse effects on water quality and quantity, residential amenity, natural character, indigenous biodiversity. The economic assessment highlights the regionally significant positive economic effects of the proposal.

7.7 The Regional Land and Water Plan (RLWP) seeks to sustainably manage the West Coast's natural and physical resources. The objectives and policies relating to land management, surface water quality and quantity and groundwater are most relevant to the proposal. In general terms these policies seek to avoid, remedy or mitigate adverse effects on the life supporting capacity of ecosystems, natural character and values of fresh water bodies, protection of existing water uses. The hydrological effects of the proposal and Water Management Plan set out methods to primarily avoid hydrological effects and the associated ecological effects. The ecological assessment confirms that adverse ecological effects are avoided, and are less than minor in nature.

7.8 The Westland District Plan (the District Plan) was made operative in 2002. The District Plan has a particularly enabling policy framework and generally seeks to provide for activities, subject to avoiding, remedying or mitigating the adverse effects of such activities. The Rural Zone covers every part of the Westland District outside of townships, and extractive activities are an anticipated part of the rural environment, as evidenced by the following background *"Westland District Council recognises the utilisation of mineral resources as important for the communities viability and that the use can have adverse effects that need to be avoided, remedied or mitigated. Such effects may include impact on roading, or the need to restore landscapes".* At the same time, the District Plan seeks to maintain the clean, green image of the Westland District. Most relevant to this proposal is the potential for adverse effects on the landscape values of the surrounding area, which have been mitigated through a range of measures. I consider the proposal is consistent with the objectives and policies of the District Plan, including those relating to indigenous biodiversity, landscapes and the efficient utilisation of mineral resources.

7.9 The Te Tai o Poutini Plan was notified in August 2022, and one rule with immediate legal effect applies to this proposal (vegetation removal). Hearings have not yet commenced, and the rules, objectives and policies of relevance to this proposal are generally all subject to challenge. The applicant has made an extensive submission on a number of areas of the plan. It is not clear which provisions will be deemed operative, and as the Proposed Plan has not been subject to independent decision making, limited weighting should be applied to the objectives and policies in this document. However, it is also recognised that as the Westland District Plan was made operative in 2002, and does not give effect to higher order documents, including the NPSFM and NPSIB, and the West Coast Regional Policy Statement 2020. Where provisions are significantly out of date, or where the Proposed Plan more appropriately reflect higher order documents, more weight should be applied.

7.10 The West Coast Regional Policy Statement predates the NPSFM and NPSIB, and needs to be considered in this context. The key policy direction in both NPSFM and RPS is to avoid adverse effects on natural character, wetland and river extent and values, water quality, and threatened and at risk indigenous species in waterbodies. The key policy direction in the NPSIB is to maintain overall indigenous biodiversity. The proposal is considered to be consistent with the higher order

document policy direction, as these adverse effects have been avoided through project design, water management and erosion and sediment control methods, and operational parameters.

Regulation 45D – National Environmental Standards for Freshwater 2020

7.11 Regulation 45D of the freshwater regulations restrict the grant of resource consent unless the consent authority has first;

- satisfied itself that the extraction of the minerals will provide significant national or regional benefits; and
- satisfied itself that there is a functional need for the extraction of minerals and ancillary activities in that location; and
- applied the effects management hierarchy.

7.12 The discussion of positive effects above and the Economic Assessment (**Attachment P**) demonstrates the significant economic and social benefits this mineral extraction activity would have for the Westland District and the wider West Coast region. The consent authority can be satisfied on this basis that this activity will have significant regional benefits.

7.13 The minerals extraction activities have a functional need to occur within the location specified in the application, which includes earthworks within 100m of a wetland and discharge of water which may enter wetlands. The heavy mineral deposits are located underneath and adjacent to the surrounding wetlands, and the applicant has limited operations and imposed setbacks and sterilised mineral resources as a result, but must maximise the extraction area within environmentally appropriate limits. The water management has been designed to avoid the hydrological and ecological impacts on wetlands, and avoid discharges to natural inland wetlands, including by locating ancillary activities at the furthest extent possible from these areas.

7.14 The applicant has carefully designed the activities to have minimal impact on the surrounding wetlands, and has limited operations in extent and designed water management to primarily avoid effects on natural inland wetlands. This involved, and continues to involve, an interative full team approach. The water management infrastructure has been located away from wetlands, enabling all mine water to be captured and treated to a high degree before discharge to the receiving environment.

7.15 The application of the effects management hierarchy has been discussed in Section 5 of this report. The applicant has applied the effects management to every aspect of its operations, not just those which may impact surrounding wetlands and waterbodies.

7.16 The technical assessments demonstrate that the consent authority can be satisfied that the three tests set out in Regulation 45D have been met (significant regional benefit, functional need, and

application of the effects management hierarchy), and the proposal is a discretionary activity under this regulation.

Section 107, RMA

7.17 Section 107 of the RMA restricts a consent authority from granting a discharge permit for discharge to water or land in circumstances where the contaminant will enter water if it would result in the following outcomes (after reasonable mixing):

- the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
- any conspicuous change in the colour or visual clarity:
- any emission of objectionable odour:
- the rendering of fresh water unsuitable for consumption by farm animals:
- any significant adverse effects on aquatic life.

7.18 The hydrological assessment and ecological impact assessment both confirm that the proposed activity will not result in these outcomes, and therefore there are no restrictions on the grant of consent under this section of the Act. A condition of consent has been volunteered to this effect.

Section 95, RMA

7.19 Section 95A of the RMA states that a consent authority must publicly notify an application if:

- The council decides under section 95D that the activity will have or is likely to have adverse effects on the environment that are more than minor; or
- If the applicant requests it; or
- If a rule or national environmental standard requires it; or
- If special circumstances exist in relation to the application.

7.20 The applicant has recognised the significant community interest in the proposal, and despite the application not meeting the tests for public notification, formally requests that the proposal be **publicly notified**.

Consultation

7.21 Consultation has been undertaken with neighbouring landowners and tourism operators, Westpower, Te Runanga o Ngati Waewae and Te Runanga o Makaawhio and their advisors, Department of Conservation, the New Zealand Fish and Game Council. Neighbours had been previously consulted extensively as a result of a previous proposal to mine the site. Recent

consultation has involved outlining the key differences between the previous proposal and the current application, and a number of adverse effects have been addressed as a result.

7.22 While some of this consultation has only occurred recently. WMSC wanted to make sure that it had the most up to date information to present to the neighbours so as not to create confusion.

7.23 Consultation with Iwi, the Department of Conservation and Fish and Game has focused on the eastern portion of the application area and efforts to have a positive ecological benefit through the rehabilitation initiatives that are proposed as part of the application.

7.24 The neighbours have been offered a site visit to the company's other operation near Westport so they can see first hand how the processing plant operates and to get a feel for what the processing plant and mineral extraction activities will sound and look like.

7.25 Consultation is continuing with neighbours to ensure that WMS can address any concerns as much as practical or a the very least work with neighbours to find solutions. It is WMS intention to again approach neighbours once the consent application is lodged to engage further and discuss any concerns that they may have.

Purpose and Principles of the Resource Management Act

7.26 The purpose of the RMA, as set out under section 5 (2) is to promote the sustainable management of natural and physical resources. The relevant matters in Sections 6, 7 and 8 of the RMA also require consideration.

7.27 Section 5 provides the purpose of the Act, which is sustainable management of natural and physical resources. Sustainable management is then defined as the following:

"sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

- *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- *safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- *avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

7.28 Minerals are not required to be sustainably managed, however the natural and physical resources associated with the mining of minerals are.

7.29 This application demonstrates, through the assessment of environmental effects, that it is consistent with the purpose of the RMA (1991) as outlined in Section 5 above. This application

proposes measures to avoid, remedy or mitigate any actual or potential adverse effects that may arise as a result of the proposed activity.

7.30 The proposed mineral sands activity will have positive effects in the Westland District and wider West Coast region, including employment and associated flow on benefits.

7.31 Section 6 of the RMA (1991) outlines matters of national importance that all persons shall recognise and provide for when exercising functions and powers under the Act in relation to managing the use, development and protection of natural and physical resources.

7.32 The following matters are considered relevant to this application:

(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 areas of significant indigenous vegetation and significant habitats of indigenous fauna,

(c) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga,

(d) The protection of historic heritage from inappropriate subdivision, use and development

7.33 The proposed mineral sands activity has been assessed as having no more than minor effects on the natural character of the adjacent wetlands, lake and river and imposes adequate setbacks. As such the natural character of the area is considered to be protected from inappropriate use and development.

7.34 The Ecological Assessment confirms that the adjacent wetlands and Tūwharewhare are significant, and contain significant indigenous fauna. The proposal seeks to avoid effects on this area, and therefore protects these areas.

7.35 The cultural significance of Lake Māhinapua and Tūwharewhare are recognised by the applicant, and care has been taken when designing the project to avoid effects on these waterbodies and the adjacent riparian margins. The applicant has offered to gift the easternmost parts of the application site to tangata whenua in recognition of this significance.

7.36 The proposal involves the modification/destruction of one archaeological site, which is assessed in the Archaeological Assessment. The other archaeological site will be protected. It is not possible to avoid this archaeological area, however the modification of this site will be managed through the Archaeological Authority process such that the historic heritage remaining will be recorded for future generations.

7.37 Section 7 outlines other matters that all persons exercising powers and functions under the RMA (1991) shall have particular regard to. The following matters have been identified as relevant to this application:

(a) kaitiakitanga

(b) the efficient use and development of natural and physical resources:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic value of ecosystems

(f) maintenance and enhancement of the quality of the environment

(i) the effects of climate change

7.38 Kaitiakitanga is provided for through ongoing engagement with iwi, and also through the offering of an ecological reserve to tangata whenua to manage should they wish for this to occur. On the whole, the proposal is considered to efficiently use the natural (land) resource of the site. The site is already largely developed to a modified state through farming activity, the mining activity will be of limited duration and the site will be returned to improved pasture allowing for ongoing productive farming. The extraction of mineral sands will provide significant economic benefits derived from the use of the land for this purpose. The assessment of effects outlines how the operation will avoid, remedy and mitigate adverse effects on the surrounding receiving environments, protecting the intrinsic value of ecosystems. The proposal will have minor or less than minor effects on amenity values, and minor effects on the landscape. The quality of the environment will be maintained during the activity, and will be enhanced by revegetation and land recontouring which will improve farm runoff going forward. The proposal is therefore considered to be consistent with section 7 of the RMA (1991).

7.39 Section 8 outlines the requirements for the principles of the Treaty of Waitangi to be taken into account when exercising functions under the act. Broadly the principles of the Treaty of Waitangi can be defined as:

- Partnership
- Protection
- Participation

7.40 The relevant statutory planning documents that govern this proposed activity have been compiled through a robust public notification process with input from relevant iwi in each of the plans, and both Te Runanga o Ngati Waewae and Te Runanga o Makaawhio have been extensively engaged with throughout this process which has informed the current proposal. Therefore, it is considered that the application is consistent with section 8 of the RMA (1991).

7.41 In summary, this application demonstrates that Part 2 of the RMA (1991) has been given effect to when considering the proposed application. Specific reference is provided throughout the application to the relevant sections and subsections where necessary. The proposal is therefore

consistent with the purpose and principles of the Act and accords with the definition of sustainable management.

Other relevant matters

Minerals and Petroleum Resource Strategy in November 2019

7.42 The New Zealand Government published a Minerals and Petroleum Resource Strategy in November 2019 (the Strategy). The Strategy seeks to support New Zealand's transition to a carbon neutral economy by 2050, and recognises the importance of titanium in relation to clean-tech uses such as electric vehicles.

7.43 The activity involves the extraction of minerals which will be used for clean/green technologies which could support New Zealand's transition to a carbon neutral economy, includes a significant number of mitigation measures and has provided substantial information to ensure that the potential effects on the environment, ecosystems and biodiversity will be minor in nature, which is consistent with this Strategy.

Te Whanaketanga

7.44 Development West Coast has recently published "Te Whanaketanga Te Tai Poutini West Coast Strategy 2050" (Te Whanaketanga). The document states:

"Te Tai Poutini has an abundance of natural resources that form the backbone of our regional economy. To secure our long term economic prosperity and resilience, we need to actively support the growth of emerging industries and strengthen our economic drivers by focusing on adding value. By focusing on a more circular economic approach, we are able to increase the value of our products and deliver better outcomes for the environment. Our economic activity must actively protect and give back to the natural environment that supports our prosperity. Te Tai Poutini has untapped potential in the green economy space – from the unrealised value of our natural resources to the knowledge economy potential that exists from our strengths in conservation and biodiversity restoration." In addition, the strategy seeks "Enabled and connected resilient and sustainable fit for purpose infrastructure network (transport, energy and digital) that supports increased productivity, strengthens our resilience, and provides growth opportunities."

7.45 The mineral sands industry is an emerging industry on the West Coast, and it could have significance in terms of the retention and revitalisation of port infrastructure. There are significant growth opportunities in the local mining sector which have significant regional economic benefits as outlined in the Economic Assessment (**Attachment P**). The company's intentions are consistent with the aspirations of Te Whanaketanga.

Iwi management plans

7.46 There are no relevant iwi management plans relating to this area. A Te Rūnanga o Ngāti Waewae Pounamu Management Plan is in place, which solely deals with the management of pounamu in the takiwā of Ngāti Waewae. Pounamu will not be extracted during the mineral sand process, and will be returned to the pit as oversized material and returned directly to the pit.

7.47 The Lake Māhinapua Management Plan (Te Rūnanga o Ngāi Tahu, Te Rūnanga o Ngāti Waewae, & Te Rūnanga o Makaawhio) was prepared in 2018 and is considered an iwi management plan by local iwi. A copy of the plan is included in **Attachment U**. The overarching vision of the plan is:

> "Hei whakamana i te wāhi tapu o Te Tāwiri a te Makō mō tātou, ā, mō kā uri ā muri ake nei
>
> To manage, enhance and protect Lake Māhinapua in a manner that upholds its primary cultural significance and sacredness as wāhi tapu, while also recognising its ecological importance and recreational values."

7.48 The plan seeks to manage the bed of Lake Māhinapua as well as the wider catchment. Of relevance to this proposal is the objective Whakakaha i ngā tūmomo koiora, to protect and enhance indigenous biodiversity – the proposal will protect the indigenous biodiversity of Tūwharewhare and its riparian margins, and with the addition of the 30m vegetation strip at the end of the mine life and wetlands for filtration of farm runoff from the site, there will also be enhancement.

7.49 Policy 3.1.3 suggests tangata whenua have an interest in future ownership and management of associated land. While the land is nor directly adjacent to Lake Māhinapua, the ecological reserve offered is what is within the power of the applicant to offer as private land, and in this sense is considered consistent with this policy. Policy 3.2.2 seeks to protect ecosystems and habitats of Lake Māhinapua from water quantity and quality degradation. The application seeks to avoid these effects. Policy 3.2.4 seeks to reduce potential for sedimentation entering Lake Māhinapua – the application seeks to avoid these effects on Tūwharewhare which is part of the Māhinapua catchment. Policy 3.3.3 seeks to identify and protect areas of existing indigenous vegetation at Lake Māhinapua and Policy 3.3.4 specifically seeks to restore indigenous biodiversity through threat removal including Tūwharewhare. The ecological assessment identifies the escarpment forest and wetlands to be significant, and the application takes steps to enhance this area through the establishment of the 30m planting strip as part of rehabilitation, stock fencing to exclude stock from Tūwharewhare and adjacent vegetation.

8. Conclusion

8.1 WMSC are seeking resource consent from both WCRC and WDC for a mineral sands operation at Mananui. The proposed activity includes the excavation of sand ore and processing to obtain a Heavy Mineral Concentrate. Extracted Heavy Mineral Concentrate will be transported by truck to the Port of Greymouth. Consent is sought for a term of 16 years.

8.2 WMSC has consulted with a number of parties who are potentially affected by or have an interest in the proposal. WMSC requests the application be publicly notified, due to the clear public interest in the application.

8.3 We consider with the mitigation proposed for the activity as outlined in this application and the imposition of appropriate conditions of consent the effects of the proposed activity will be adequately addressed, such that they are no more than minor in nature and relevant statutory tests have been met. Accordingly, consent is able to be granted for the proposal.

Attachment A: Record of Title

Attachment B: Site Plan

Attachment C: Archaeological Site Records

Attachment D: Processing Plant Area Site Plan

Attachment E: Building Plans

Attachment F: Integrated Transport Assessment – Novogroup Ltd

Attachment G: Acoustic Assessment | Noise Management Plan – Marshall Day Ltd

Attachment H: Hydrological Assessment | Water Management Plan – Kōmanawa Solutions Ltd

Attachment I: Dust Management Plan – Westland Mineral Sands Co Ltd

Attachment J: Fuel Tank Indicative Design

Attachment K: Ecological Assessment | Fauna Management Plan |– BlueGreen Ecology Ltd

Attachment L: Landscape Assessment | Graphic Supplement – Glasson Huxtable

Attachment M: Ecological Impact Assessment | Fauna Management Plan – BlueGreen Ecology Ltd

Attachment M: Rehabilitation Management Plan – Westland Mineral Sands Co. Ltd

Attachment N: Proposed Conditions of Consent

Attachment O: Compliance Assessment of Relevant Planning Documents

Attachment P: Economic Assessment – Sense Partners Ltd

Attachment Q: Archaeological Assessment – Heritage Properties NZ Ltd

Attachment R: Erosion and Sediment Control Plan – Westland Mineral Sands Ltd

Attachment S: Radiation Assessment – Hardie Pacific

Attachment T: Objectives and Policies Assessment

Attachment U: Lake Māhinapua Management Plan