2. DESCRIPTION OF THE PROPOSAL

2.1 OVERVIEW

In accordance with Schedule 5 (clause 5 (1)(a)), Schedule 6 (clause 3 (1)(a), Schedule 7 (clause 2 (1)(a)), Schedule 8 (clause 2 (1)(f) and Schedule 11 (clause (d)) of the Act, this section of the report provides a description of the activities associated with the proposed construction, operation, maintenance, and the eventual closure of the WNP.

A list of the key activities of the proposed WNP has been provided in Section 1.2 of this report, with further details of those activities provided in the following sections.

2.2 PROJECT DRIVERS

As explained in Section 1.2 of this report, the current life of mine plan for OGNZL's existing Waihi mining operations anticipates a ceasing of production by the end of 2030.

From 2016 to the present day OGNZL has completed exploration work associated with potential expansion opportunities at its Waihi operation. This exploration work has identified additional orebodies in Wharekirauponga that are in excess of 1.8 million ounces of gold and 2.8 million ounces of silver. These resources have the potential to extend mining operations in Waihi beyond 2040.

A broad range of activities are required to be undertaken to enable the development of the identified Wharekirauponga orebody and the extension of mining in Waihi. These activities, and the infrastructure required to undertake them, are described in detail in this section of the report. The gaining of approval for the WNP will realise significant regional and national economic benefits associated with foreign investment, New Zealand exports, employment opportunities, and contribution to the Hauraki District and Waikato Regional economies, as discussed further in Section 6.3.1 of this report.

As set out in Section 1.3 of this report, this application seeks to make use of the Act's "one-stop-shop" approvals process that supports and provides for the timely and integrated processing of large complex projects which would otherwise require sequential approvals under different regulatory statutes.

2.3 SEQUENCING OF ACTIVITIES AND PROPOSED WORKS DATES

At a high level the following sequencing of activities is proposed:

1. The undertaking of further exploration and geotechnical investigations;

2. The establishment of surface infrastructure at Willows Farm and development of the access tunnel system necessary to access the Wharekirauponga ore body and connect to the existing processing facilities operated by OGNZL;
3. Initial construction of TSF3;
4. The commencement of mining at the Wharekirauponga ore body and related resource processing;
5. Construction of the NRS and GOP; and
6. The undertaking of rehabilitation and closure activities.

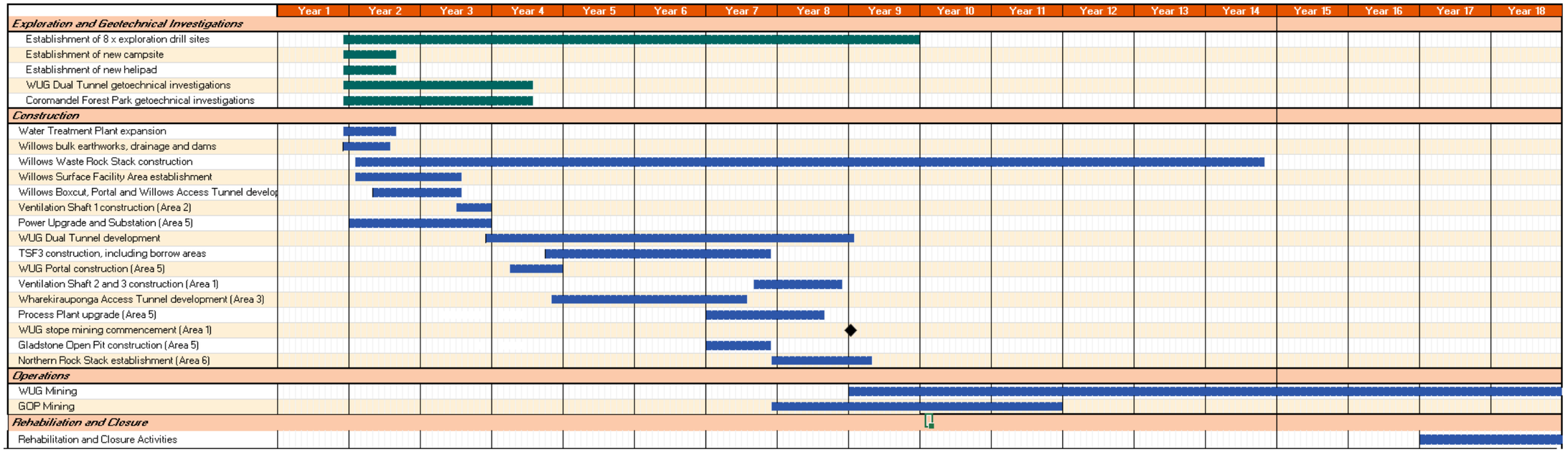
The activities summarised above are anticipated to occur across a period of 18 + years, with OGNZL proposing to commence the WNP as soon as the necessary approvals are obtained.

It is not proposed for the WNP to occur in stages, rather the project it is expected to proceed generally following the order of sequencing set out above, with each activity to follow another in a logical sequence (as detailed further in the sections below).

Table 2-1 below provides further details of the anticipated sequencing of the WNP activities across the life of the project.

OGNZL proposes to commence works on the WNP as soon as possible, and ideally in the first quarter of 2026. The works will run for approximately 18 years, with it anticipated that the activities covered by the approvals being sought in this application will be completed around the end of 2043, assuming ore volumes mined, and processing rates are generally as anticipated.

Table 2-1: Anticipated Sequencing of the Waihi North Project Activities



2.4 UTILISATION OF EXISTING INFRASTRUCTURE

As noted in Section 1.7 of this report, OGNZL proposes to utilise some of its existing already authorised mining infrastructure to assist with the development and operation of the proposed WNP.

This includes the use of:

- The existing conveyor,[9] and existing surface mine roads to transport ore and rock;
- The Processing Plant (subject to the proposed upgrades) to process ore;
- Existing stockpile areas for the stockpiling of rock and topsoil, including the Processing Plant Stockpile, Polishing Pond Stockpile, Northern Stockpile, Eastern Stockpile, the Central Stockpile, and Topsoil Stockpile F;
- The existing batch plant for producing cement for use in underground activities;
- The existing underground mines for the placement of excavated rock material as backfill;
- The existing mine water management system, including the use of the existing WTP (subject to the proposed upgrades) to treat water from mining operations;
- The existing / approved TSFs (TSF1A and TSF2) for the disposal of tailings from the Processing Plant, including all aspects of those facilities that are authorised but still to be constructed;
- The existing / approved haul roads to transport materials to TSF3, and their ongoing maintenance;
- The existing pipelines to carry materials such as decant water and tailings, and the ongoing maintenance of these features;
- The existing lime silo associated with the conveyor (to be relocated as part of the WNP);
- The existing road accesses at Moore Street, Clarke Street, Grey Street, Golden Valley Road and Baxter Road, including the existing Mill Bridge and the heavy vehicle crossing of the Ohinemuri River;
- The existing Martha Open Pit entrance and parking areas off Kenny Street (subject to the proposed upgrades);

[9] For the avoidance of doubt rock and ore from the WNP would not be transported to the crusher within Martha Mine for processing.

- The existing core sheds and administration offices, including those that are consented but still to be constructed; and
- The existing Favona Underground Mine amenities building and associated facilities located within the existing Waihi SFA, to the south of the Processing Plant.

2.5 PROJECT AREAS

As explained in Section 1.2, for the purposes of this document the project has been divided into 7 geographically distinct areas. The areas are shown in Figure 2-1 below and include:

- **Area 1:** Comprising the WUG, WUG Dual Tunnel, and surface exploration, environmental monitoring, and pest control activities;
- **Area 2:** Comprising the Willows SFA, the Willows Access Tunnel, and supporting infrastructure;
- **Area 3:** Comprising the Wharekirauponga Access Tunnel;
- **Area 4:** Comprising the Services Trench[10];
- **Area 5:** Comprising the GOP, GOP TSF, and Waihi SFA;
- **Area 6:** Comprising the NRS and borrow pit; and
- **Area 7:** Comprising TSF3 and borrow pits.

In addition, a small number of activities associated with the WNP will occur outside Areas 1 – 7, comprising:

- The operation of the existing conveyor in the reverse direction;
- Terrestrial and riparian restoration and enhancement planting; and
- The establishment of carparking at Kenny Street, Waihi.

[10] Whilst the Services Trench forms a key part of the WNP, it has already been applied for and is currently being processed by WRC and HDC. An application for an easement required for the Services Trench has also been approved by DOC (refer to Section 3.2.4). As such, no approvals are being sought for the Services Trench as part of this application.

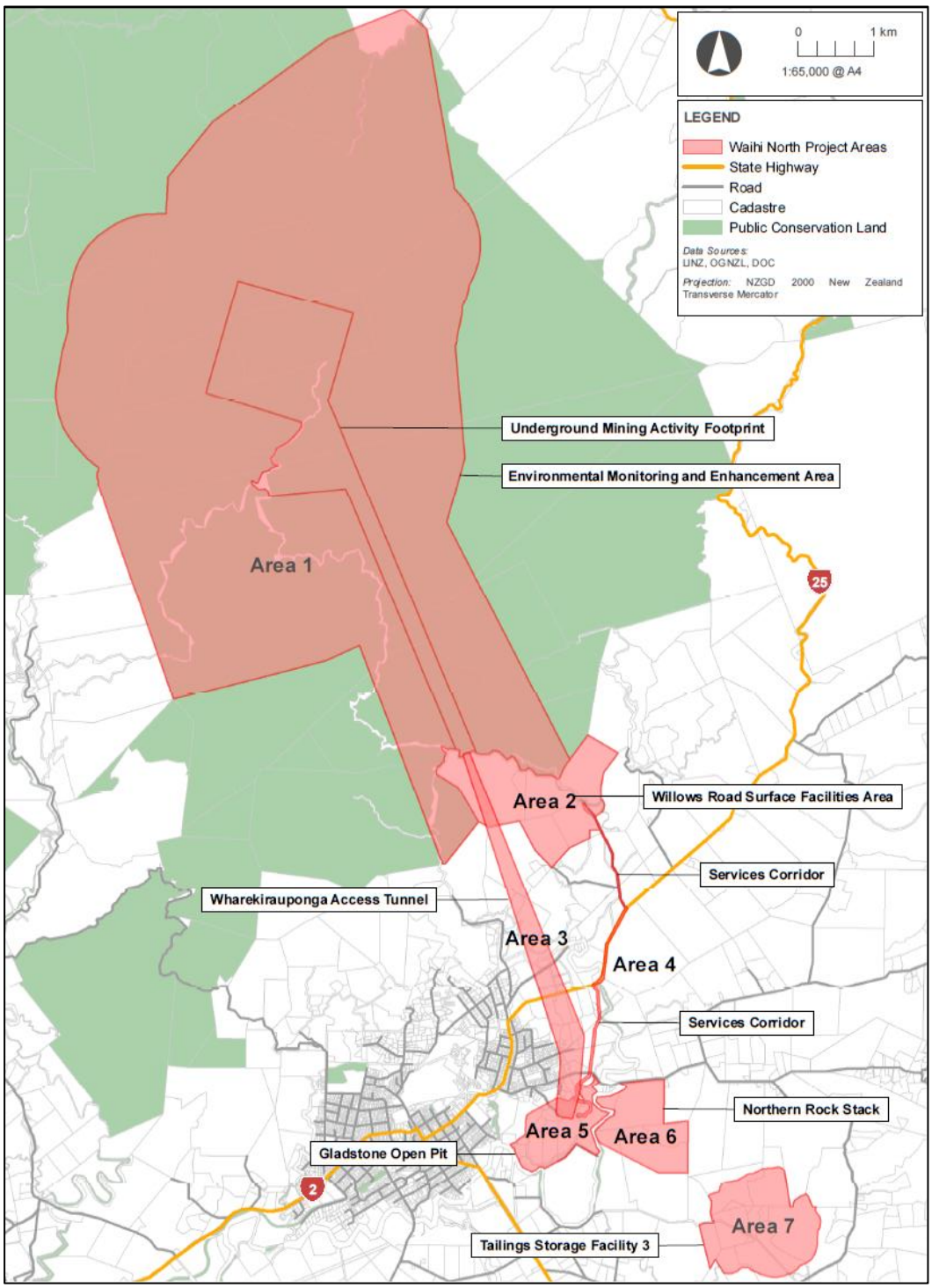


Figure 2-1: Waihi North Project – Project Areas

The activities proposed in each of those areas is described in detail below.

2.6 AREA 1

The key features of the WNP within project Area 1 include:

- Activities associated with mine resource investigation, exploration and environmental monitoring;
- Terrestrial and riparian restoration and enhancement planting where it is necessary to rehabilitate sites used for mine resource investigation and exploration;
- The construction and maintenance of the WUG Dual Tunnel;
- The establishment and operation of the WUG including the construction of up to four ventilation shafts and associated evasé;
- Ecological mitigation and enhancement activities designed to manage potential effects on terrestrial ecology and to improve populations of native frogs on public conservation land;
- The undertaking of works in areas with recognised heritage and / or archaeological values; and
- Closure and remediation activities at the completion of the mining of the WUG.

2.6.1 Resource Investigation and Exploration

OGNZL currently holds a number of approvals for activities associated with mine resource investigation and exploration within Area 1. Details of these existing approvals are set out in **Part E** of this application.

In addition to the currently approved investigation and exploration activities (detailed further in Section 3,2 of this report), as part of the WNP, within Area 1 OGNZL is proposing to:

- Establish up to 20 additional investigation and exploration drill sites comprising;
  - Eight exploration drill sites;
  - Four geotechnical investigative drill sites within the existing Access Arrangement area;
  - Four geotechnical investigative drill sites above the WUG Dual Tunnel; and
  - Four hydrogeological investigate drill sites;
- Undertake investigative and exploration activities at / from these drill sites;
- Establish sites for hydrological testing;
- Take groundwater for drilling activities;

- Undertake monitoring activities;
- Establish marked access tracks;
- Establish fenced predator controlled areas; and
- Establish frog fences around drill sites.

Further details of these proposed activities are provided in the sections below.

2.6.1.1 Investigation and Exploration Activities

As noted previously, OGNZL currently holds a number of approvals for activities associated with mine resource investigation and exploration within Area 1. These include the approval for 12 exploration drill sites in locations within the Coromandel Forest Park. Further to these existing approvals, OGNZL proposes to establish additional exploration and investigation drill sites, pumping test sites, and ventilation shaft exploration measures within Area 1 (detailed further below).

Table 2-2 details the number of existing and proposed work sites within the Coromandel Forest Park and also details the associated limited vegetation clearance or disturbance associated with each of these sites. The total clearance and disturbance associated with the proposed additional sites will comprise nominally 6,600 m^2 / 0.66 ha. This is a small footprint (approximately 0.0009%) of the 71,899 ha Coromandel Forest Park.

Table 2-2: Area 1 Existing and Proposed Vegetation Clearance and Disturbance

Description	Number of Sites	Clearance per site (m^2)	Total Clearance (m^2)
Currently Approved Investigation and Exploration Activities			
Exploration drill sites (also used as helipads and temporary accommodation for drill crew)	12	150	1,800
Total currently approved clearance			*1,800*
Proposed Additional Investigation and Exploration Activities			
Exploration drill sites	8	150	1,200
Geotechnical investigative drill sites within existing Access Arrangement area	4	150	600
Geotechnical investigative drill sites above the WUG Dual Tunnel	4	150	600
Hydrogeological investigative drill sites	4	150	600
Ventilation shaft sites (including pumping test sites)	Up to 4	900	3,600
Ventilation shaft geotechnical investigation / piezometers	50	Minimal disturbance e.g. canopy trimming and moving ground cover	
Total proposed additional clearance and disturbance			*6,600*
Total Combined Clearance and Disturbance of Currently Approved and Proposed Additional Activities			**8,400 m^2**

For the 'ventilation shaft geotechnical investigation / piezometers' listed in Table 2-2, OGNZL would utilise portable drill rigs at these sites (refer to Figure 2-2), resulting in minimal disturbance (and an absence of clearance) required for these activities. Portable drill rigs are compact and have the capability to be broken down into components no heavier than 100 kg. This allows for equipment to be lowered down to site by helicopter, and for personnel to then handle the rig components below any tree canopy. The portable drill rigs will be set up at locations that do not require vegetation clearance (e.g. on existing tracks or in natural forest clearings), and any disturbance would be minimal comprising activities such as canopy trimming and the moving aside of any ground cover material across an area of up to approximately 32 m^2 to accommodate the portable drill rigs. The ground cover material would be stored adjacent to the sites for the duration of the investigation activities, and at the completion of those activities the material would be respread across the site.

Figure 2-2: Typical Portable Drill Rig Set Up

For the proposed additional investigation and exploration drill sites, the ELMP-WUG proffers that for sites where native fauna may be present, vegetation clearance must be carried out between March – May (inclusive, and in suitable, warm weather). In addition, site selection protocols require that no trees greater than 50 cm in diameter at breast height be cleared, and that any frogs or lizards located during vegetation clearance are relocated to a pre-

prepared release area where pest control has been undertaken until target pest densities are met (discussed further in Section 6.6 of this report and in the ELMP-WUG).

For the pumping test and ventilation shaft sites, up to four trees with a diameter of 50 – 100 cm may need to be cleared. However, any impact on trees greater than 50 cm in diameter will be minimised as far as practicable.

Indicative locations of the proposed additional eight exploration drill sites and four geotechnical investigative drill sites will be located within the existing Department of Conservation Access Arrangement area outlined in Figure 2-3.

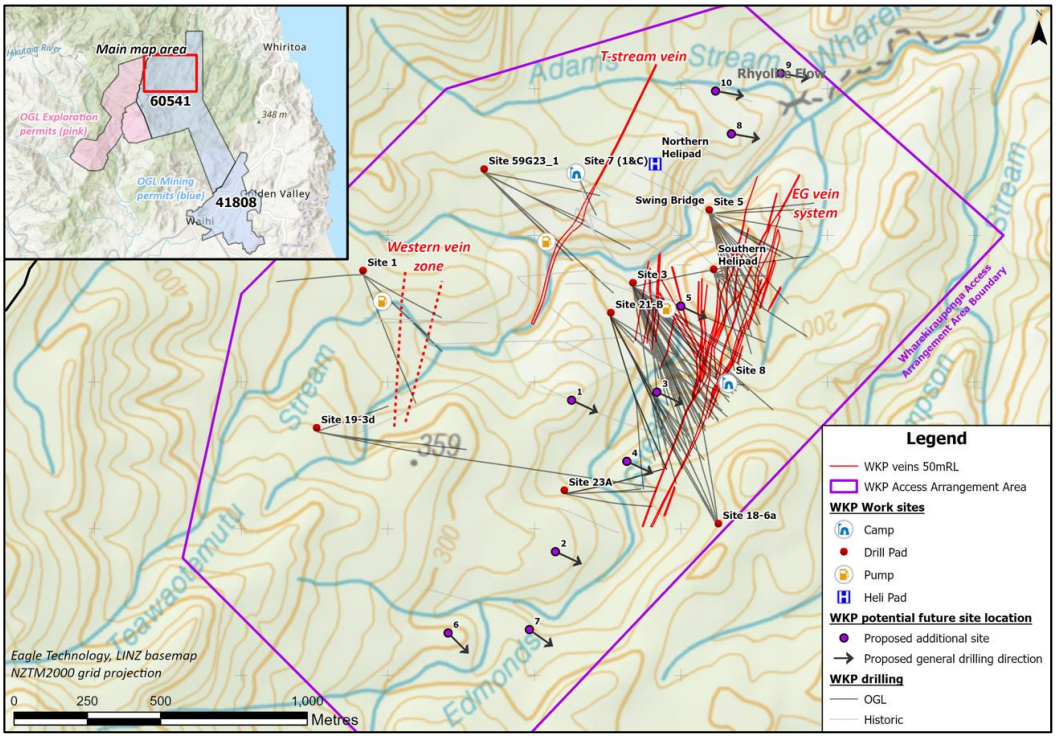


Figure 2-3: Area Within Which Exploration Drill Sites will be Established (at any Eight of the Proposed Additional Sites)

Up to four surface geotechnical investigative drill sites will be located above the WUG Dual Tunnel alignment, within the area outlined in Figure 2-4.

Figure 2-4: Area for Proposed Drill Sites above the WUG Dual Tunnel Corridor

Four hydrogeological investigative drill sites will be utilised to drill additional piezometer holes to assist with hydrogeological testing, baseline data collection, and / or ongoing groundwater monitoring. The location of these sites will be determined based on a site selection protocol which is set out in Section 2.6.1.2.

Four pumping test sites will be located within the area outlined in in Figure 2-5, with efforts made to utilise any existing / already cleared sites if they are considered to be suitable. These sites will also be utilised for baseline data collection also.

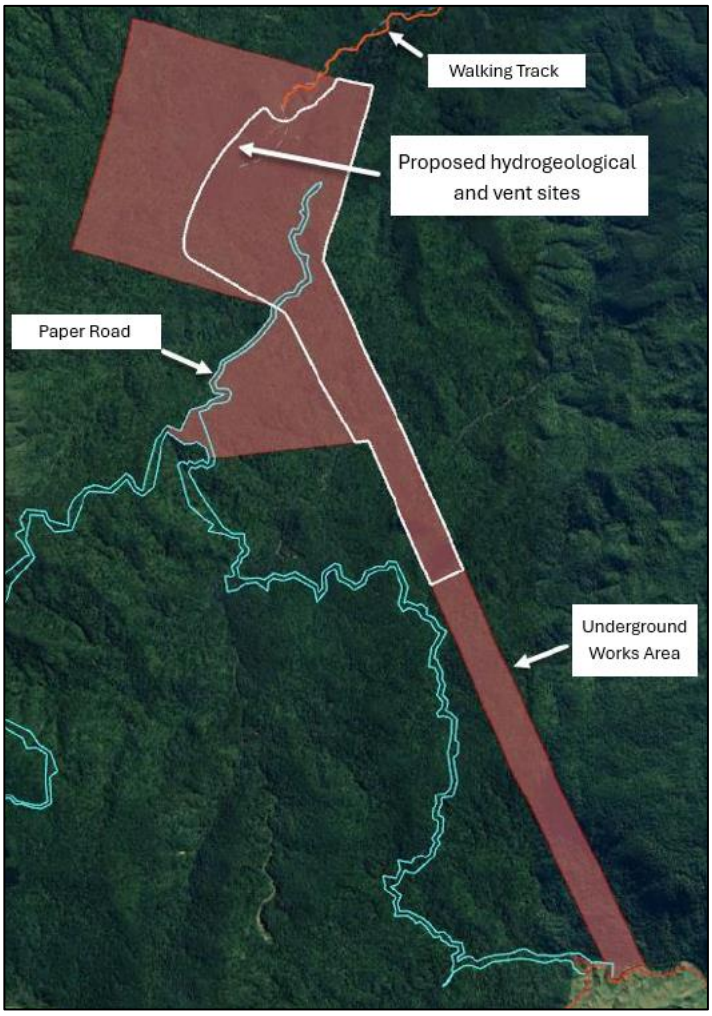


Figure 2-5: Area for Proposed Pumping Test / Ventilation Shaft Sites

OGNZL also proposes to establish up to four ventilation shafts associated with the WUG mining operations within the area outlined in Figure 2-5, and as discussed further in Section 2.6.2.2 below. It is possible that the ventilation shafts may be established on the same sites as the pumping test sites mentioned above.

As with the location of the hydrogeological drill sites, the sites for the pumping tests and ventilation shafts will be carefully determined based on the site selection protocol set out in Section 2.6.1.2.

As referred to in Section 3.2.1 of this report, OGNZL will also utilise up to 24 currently authorised near stream piezometers across 12 sites. The area in which these piezometers will be located / installed is illustrated in Figure 2-6. OGNZL is also proposing 50 portable drill rig sites, to assess suitable shallow surface conditions for siting the ventilation shafts. Up to 12 of these will be utilised for near stream piezometers. For piezometers of a standpipe design, groundwater quality samples up to 2 L in volume may be collected each

quarter using a bailer or small submersible pump. Of note, whilst these piezometers have HDC approval for their installation and use, OGNZL has not obtained approval from the WRC for the associated drilling below the water table. This is applied for as part of this application.

OGNZL also holds Concession 87585-OTH which authorises the installation and drilling of six piezometers at existing drill sites, and the provision of an extension of term for four existing piezometers. As part of this application, OGNZL proposes to replace Concession 87585-OTH with a new concession and access arrangement to obtain authorisation for the activities covered by Concession 87585-OTH for the life of the WNP (refer to Section 3.2.1).

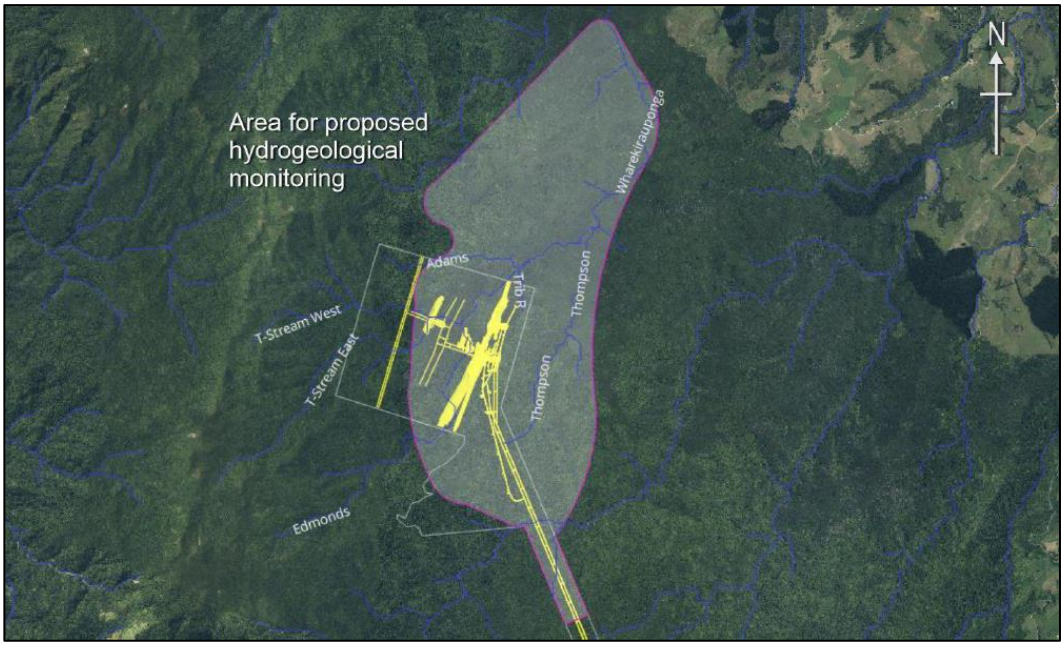


Figure 2-6: Area for Proposed Piezometers Installation

These piezometers will accommodate vibrating wire piezometers ("**VWP**") within 20 m of the stream bed and will be utilised to:

> Establish an extensive baseline data set of groundwater levels at and below stream beds for an extended period of time to better understand / identify natural state waterbody conditions; and

> Assess the vertical gradient of groundwater to increase knowledge of hydrogeological properties of near-stream lithology to assist in evaluating potential underdrainage effects.

In addition, two near stream piezometers are proposed in the northern portion of Area 1 located within the Thames Coromandel District Council's ("**TCDC**") regulatory boundaries.

These piezometers will be drilled using a portable rig and will require minimal vegetation disturbance, with all equipment to be lowered in by helicopter (and contained within a nominal 32 m^2 area). Approximately 20 helicopter flights will be required for the installation of each near-stream piezometer (to occur predominantly across a two day period and within a two hour timeframe on each of these days).

The indicative location of these piezometers is shown in Figure 2-7.

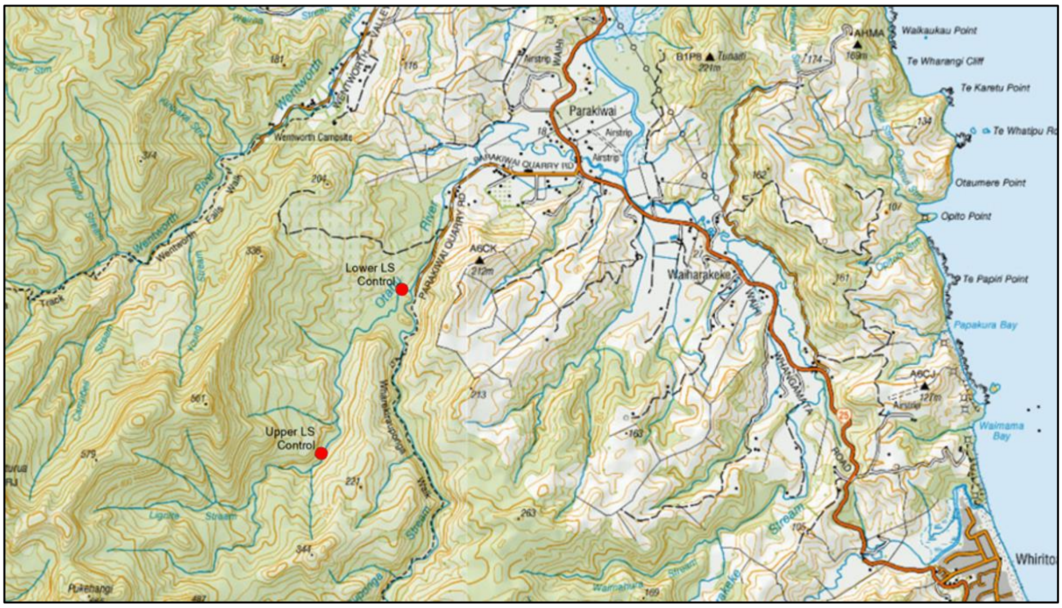


Figure 2-7: Indicative Locations of Proposed Piezometers Within the TCDC Boundaries (Red Circles)

2.6.1.2 Site Selection Protocol

The hydrogeological drill sites, the sites for the pumping tests and ventilation shafts will be carefully selected.

The exact locations of the hydrogeological drill sites, the sites for the pumping tests, and the ventilation shaft sites will be carefully determined, taking into consideration:

1. The hydrogeological data requirements;
2. The general area in which drilling is required from a technical perspective; and
3. Ecological, freshwater, landscape, heritage, and recreational values in those areas.

A site selection protocol will be used for determining these sites, which utilises a multicriteria assessment ("**MCA**"). Utilisation of the site selection protocol will ensure that sites are best located to provide the necessary data and avoid as far as practicable any harm to ecological, freshwater, landscape, heritage, and recreational values.

It is intended that this protocol will apply a cascading assessment approach whereby a short list of suitable drill sites is selected based on OGNZL's technical requirements, with each shortlisted site then subject to the MCA referenced above. The final drill sites will be those of the shortlisted sites which best meet technical requirements whilst also best aligning with the following outcomes:

Terrestrial Fauna

> The loss of 'At Risk' or 'Threatened' herpetofauna is avoided;

> The loss of 'At Risk' or 'Threatened' terrestrial invertebrates is avoided;

> The removal of trees where bats are actively roosting is avoided; and

> The removal of trees in which native birds and / or birds protected under the Wildlife Act are actively nesting is avoided.

Terrestrial Flora

> The loss of 'At Risk' or 'Threatened' flora is avoided;

> The loss of mature trees (trees that are greater than 50 cm in diameter at breast height (1.4 m above ground level)) is minimised where practicable; and

> Preference is given to sites where trees can be trimmed or tied back in such a way as to minimise felling.

Freshwater Values

> Sites selected are located as far from surface waterbodies (including natural inland wetlands) as is reasonably practicable; and

> The loss of riparian vegetation within 20 m of a waterway is minimised.

Landscape and Visual Amenity Values

> Sites selected can be visually contained and assimilated into the environment so that they are reasonably difficult to see from public viewpoints.

> Once work has been completed, selected sites can be successfully rehabilitated to ensure that long term landscape and visual effects are avoided.

Heritage and Cultural Values

> Disturbance to, or interference with listed or known heritage features and / or sites is avoided; and

> Archaeological features and features of particular significance to iwi are avoided.

Recreation Values

> Sites selected are located as far away as is practicable from formal walking tracks.

The site selection protocol is set out in full in **Part D** of these application documents.

2.6.1.3 Drill Site Construction, Set Up, and Layout

Figures 2-8, 2-9, and 2-10 illustrate a typical drilling platform construction, set up, and layout, as is proposed for the exploration, geotechnical investigation, and hydrogeological assessment drill sites.

Figure 2-8: Typical Drilling Platform Construction

Figure 2-9: Typical Drilling Set Up (vertical drilling will be employed for shaft geotechnical investigation)

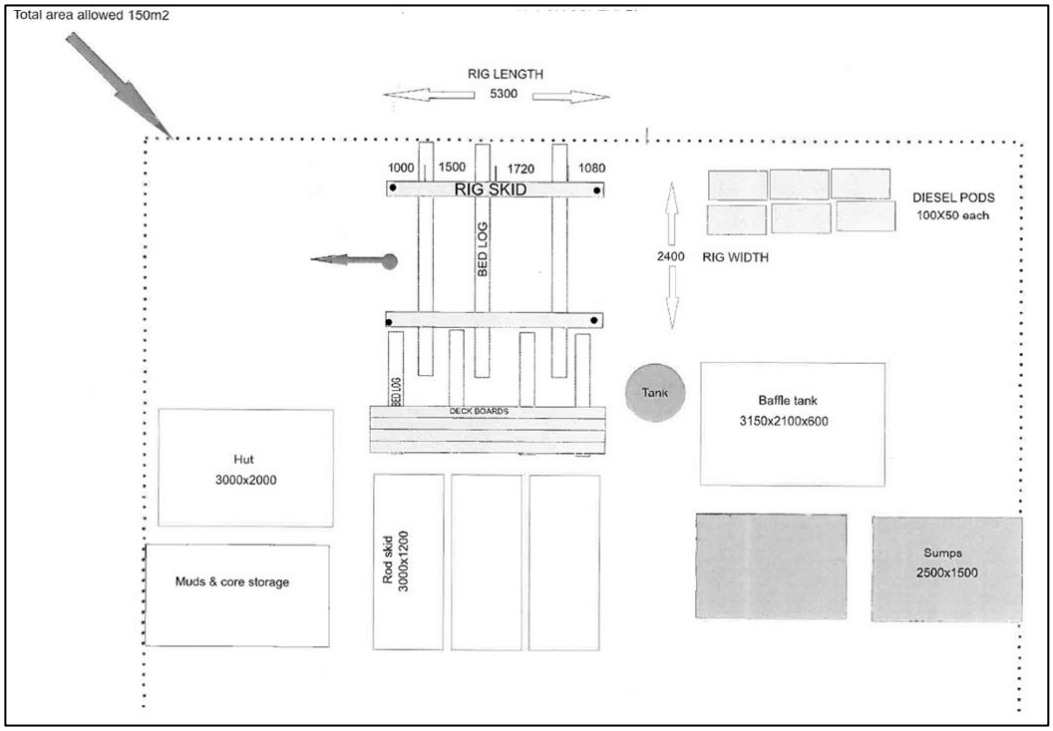


Figure 2-10: Typical Drilling Platform Layout

The ventilation shaft sites will comprise levelled concrete pads, with associated earthworks and retaining walls as required (depending on topography and ground conditions). Whilst the currently authorised platforms for the 12 exploration sites within the Coromandel Forest Park utilise wooden deck arrangements (similar to that shown in Figure 2-8 above), OGNZL is proposing for the ventilation shaft sites to comprise a concrete arrangement to enable the utilisation of a raise bore rig (similar to that shown in Figure 2-11) at the sites, with the ability to drill larger diameter holes.

Figure 2-11: Example Raise Bore Machine

A visual comparison of the currently authorised wooden deck arrangements verses the levelled concrete pad option is provided in Figure 2-12.

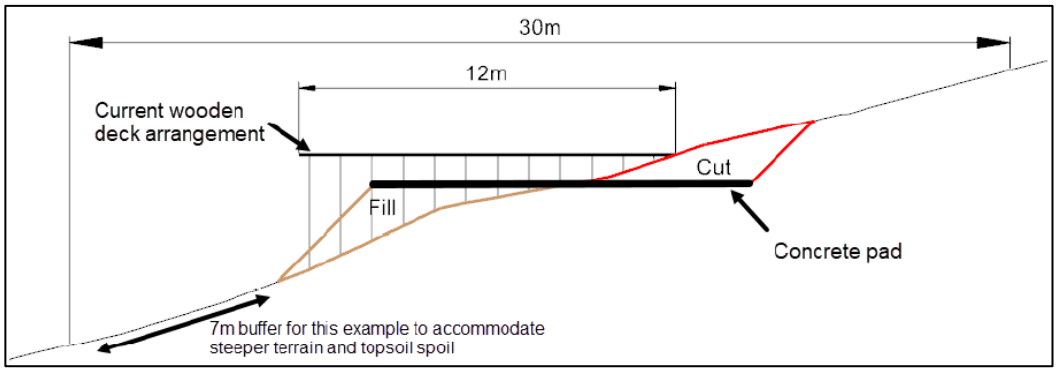


Figure 2-12: Current Wooden Deck Arrangement Verses Proposed Concrete Pad Arrangement

Site clearance of up to 900 m^2 will be required to provide for the construction of the concrete pads (with effort made to reduce total clearance as far as practicable). At the completion of construction, the sites will reduce to the extent of the concrete pads, being approximately 12 m x 12 m (144 m^2).

During the construction of the pumping test sites and ventilation shaft sites, helicopters will be utilised for site preparation works (including the set up of a raisebore machine), and to assist with the delivery of equipment to and from site. This could comprise up to approximately 50 helicopter flights per week (with 3.2T lifting capacity), over a nominal period of four weeks, with the need for / frequency of helicopter flights to be determined by sites characteristics such as site topography, soil composition, and construction methodology.

A groundwater pumping well will be constructed at each of the sites.

OGNZL proposes to conduct pumping tests and the associated:

- Testing and discharge of well water (if it is of an acceptable quality), or alternatively either the storage and reuse of the well water for drill-rigs or its removal by helicopter;
- Discharge of 2 – 20 L/s of pumping test water for up to 30 days;
- Installation of piezometers to measure any response in shallow groundwater from pumping of deeper groundwater; and
- Adherence to water quality restrictions which align with those applicable to existing WRC pumping test approvals held by OGNZL,[11] and include:

[11] WRC AUTH146336.02.01

- Compliance with dissolved copper, dissolved iron, dissolved manganese, and dissolved zinc limits in the receiving environment;
- Undertaking of water sampling tests within the piezometers prior to the discharge of pumping test waters. These tests will analyse pH, conductivity, hardness, sulphate, copper, iron, manganese, and zinc;
- Discharges will not occur unless a water sampling test demonstrates that the receiving environment limits can be achieved; and
- Ongoing discharge monitoring will be undertaken for turbidity, flow, pH, conductivity, hardness, sulphate, copper, iron, manganese, and zinc.

At the completion of the ventilation shaft construction works, areas of the concrete pads at those sites will be broken up and removed with a smaller 12 m x 12 m area of the concrete pad to remain for the duration of the WNP for the placement of the evasé.

The broken concrete will be removed either via helicopter, or by way of the lowering of the material through the ventilation shafts for removal via trucking through the underground tunnels.

Previously cleared ground cover at the sites (which will have been retained in piles adjacent to the sites) will be returned and respread following removal of the concrete pads.

The removal of the ventilation shafts and evasé at the completion of underground mining activities are detailed in Section 2.6.2.12 of this report.

2.6.1.4 Operations at Drill Sites

To assist with the investigation and exploration activities proposed to be undertaken at the drill sites identified above, OGNZL proposes to:

- Operate three additional drill rigs at any given time within Area 1 (three are currently approved; the proposed addition will result in a total of up to six drill rigs operating concurrently). OGNZL proposes that if required one of these drill rigs can be a portable rig. A typical set up of a portable drill rig is shown in Figure 2-13;
- Have four additional camps and messing facilities (including self-contained, portable toilets) located on any of the existing or proposed drill sites (two are currently approved; the proposed additions will result in a total of six camps / messing facilities);
- Have two additional helipads located on any of the existing or proposed drill sites (two are currently approved; the proposed additions will result in a total of four helipads within Area 1);

- Have the ability to utilise a portable rig for drilling shorter holes (likely <100 m) at up to 50 sites;
- Have the ability to install piezometers either in standpipes or grouted (VWP) from any new exploration holes, including the telemetry equipment to enable gathering the required data from these piezometers; and
- Have the ability to conduct packer testing within any exploration hole.

Figure 2-13: Typical L140 Portable Drill Rig Set Up

Drilling contractors will be under the supervision of OGNZL personnel and hydrogeological experts. Drilling activities will be undertaken in the same or a similar manner to current drilling activities at Wharekirauponga, which comprise:

- The undertaking of fauna and flora surveys by suitably qualified ecologists at potential drill sites;
- The implementation of appropriate fauna related effects management (e.g. avoidance of areas with 'at risk' or 'threatened' species, translocation, salvaging, installation of fencing,
- Restricting total areas of disturbance to 150 m^2 to minimise ground disturbance and damage to vegetation;

- Use of biodegradable drill fluids and lubricants that are not hydrocarbon based;
- Use of a Solids Recovery Unit to remove solids, and to recycle the water and drilling fluids;
- Quick response to any spills, and the use of safe and secure containers for fuel, and holding of a spill kit on site;
- Clear signage around drill sites;
- Minimisation of aircraft idle times and flight numbers; and
- Appropriate rehabilitation of disturbed sites.

Diamond drilling will be used on all holes to reduce vibrations from equipment with precautions made regarding:

- The use of biodegradable drill fluids and lubricants;
- The disposal of drilling muds / fluids and cuttings downhole;
- The utilisation of a small sump and / or Intermediate Bulk Containers at the collar of the drill hole to catch and contain any spillage for pumping down the hole;
- Use of a Solids Recovery Unit to remove solids, and to recycle the water and drilling fluids;
- The collection and disposal of thick slurry produced by the Solids Recovery Unit at an appropriate disposal facility; and
- Quick response to any spills, and the holding of a spill kit on site.

Where sites are close to existing water lines, water will be used from the existing pumps. Where they are not close to existing drill sites, a small pump will be positioned to take water from the nearest stream.

On completion of the works at those sites where piezometers are to be installed, all equipment will be removed from the surface, with the exception of two wires which will lead to a small, locked box containing a data logger. This will be situated in a location that is not easily visible from any public viewpoints and will be attached to a post or waratah driven into the ground (refer to Figure 2-14).

Figure 2-14: Example of Data Logger Box Installation after Piezometer Construction

2.6.1.5 Water Supply

Several water supply sources are required to support the proposed investigative and exploratory activities in Area 1. OGNZL requires approvals for the following activities:

- The take of groundwater via bores for drilling purposes. The groundwater take will occur from any new or existing drill site, and / or from two known historical workings located at the sites identified in Table 2-3. For the new or existing drill sites, the abstraction hole will be up to 200 mm in diameter and will accommodate a submersible pump; with a generator to be positioned on the adjacent drill pad or pump site. This take may also be utilised for the supplementation of potential, but unlikely, losses in water flows and levels within natural state waterbodies and wetlands resulting from the dewatering of the WUG (as detailed further in Section 6.4.1.1 of this report).

Table 2-3: Location of Proposed Historic Workings from which Groundwater will be Abstracted

Description	NZTM_X	NZTM_Y
Historic Shaft	1,849,912	5,868,362
Historic Adit	1,849,894	5,868,408

- To conduct ecological surveys to assess potential impacts of the proposed water abstraction set out above;
- To establish four water supply pump sites (one for each of the proposed drill sites located above the WUG Dual Tunnel corridor) to be located at the closest stream to the drill site with reliable supply (noting that a separate application has already been made by OGNZL for the associated water take activities); and
- In addition to the four water supply pump sites associated with the WUG Dual Tunnel corridor, to establish, maintain and operate three river pumps to supply water for exploration drilling (in addition to three of which are currently authorised under OGNZL's existing access arrangement[12]) (noting that a separate application has already been made by OGNZL for the associated water take activities).

OGNZL will take surface water (in accordance with WRC AUTH119755 detailed in **Part E** of this report) from the closest pump site to the drill sites.[13]

2.6.1.6 Monitoring Activities

To further contribute to the monitoring activities already undertaken in Area 1, OGNZL will establish an additional rain gauge that will be attached to an existing drill platform (one is currently approved; the proposed addition will result in the total of two rain gauges). It may be relocated from time to time.

An example rain gauge configuration is shown in Figure 2-15.

[12] The water take associated with the existing three pumps is authorised by WRC RC119755. OGNZL intend to seek resource consent for the pump sites themselves during the renewal of RC119755.

[13] This consent expires on 1 July 2025 and a renewal application has been lodged with WRC outside the WNP Fast-track application

Figure 2-15: Example Rain Gauge Configuration

2.6.1.7 Site Access

To provide access to the various proposed sites identified in the sections above, OGNZL proposes to establish marked walking / field tracks between sites and / or off the existing paper road tracks located within Area 1. The number of tracks will be minimised as far as practicable, and no vegetation clearance will be required for the establishment of the marked tracks.

2.6.1.8 Minimum Impact Activities

OGNZL is seeking to undertake 'minimum impact activities' within the proposed access arrangement area. Minimum impact activities are defined by the Crown Minerals Act and for the WNP include activities such as:

- Geological, geochemical, and geophysical surveying;
- Taking samples by hand or handheld methods:
- Aerial surveying;
- Land surveying;
- Stream bed conductance testing;

- Tracer injection and testing; and
- Soil conductance testing.

Prospecting is also defined by the Crown Minerals Act and involves investigating land likely to contain mineral deposits or occurrences. It is not possible to know the exact nature or location of prospecting activities in advance, however, for the WNP they are likely to involve:

- Camping;
- Geological mapping;
- Geochemical sampling;
- Soil sampling;
- Rock sampling;
- Sediment sampling; and
- Ground based geophysical surveys, ground magnets, gravity surveying and electrical surveying.

Camping

A selection of minimum impact activities will be undertaken in remote areas for the WNP. For this reason, OGNZL is seeking authorisation for staff and contractors to camp anywhere within the access arrangement area whilst undertaking minimum impact activities. Camping will be tent-based and will adhere to the 'leave no trace' principle, including removing rubbish, disposing of toilet waste properly (buried in a shallow hole at least 50 metres away from waterways and formal walking tracks), using chemicals carefully, and disposing of cooking or washing water away from any natural water source. No fires will be lit on public conservation land.

Geological Mapping

Geological mapping will involve geologists traversing areas of interest on foot and recording basic information on rock type and geological structure.

Geochemical Sampling

Geochemical sampling involves the collection and analysis of soil, rock and fluvial sediment. There will be no track cutting or clearance of vegetation for any sampling purposes. Biodegradable flagging tape will be used to mark sample sites, and all site locations will be recorded using a hand-held GPS.

Soil Sampling

Soil sampling will involve collecting soil samples of approximately 0.5 – 2 kg for geochemical and spectral analysis. All soil samples will be obtained through hand-held, non-mechanical methods. Holes created by hand augers will be approximately 100 –150 mm in diameter and will be refilled once the sample has been taken. Any leaf litter removed will be replaced on top of the hole.

Soil surveys are typically carried out in a grid formation with samples 25 – 50 m apart with a distance between survey lines of 100 – 200 m.

There will be no track cutting or clearance of vegetation for any sampling purposes. Biodegradable flagging tape will be used to mark sample sites, and all site locations will be recorded using a hand-held GPS.

OGNZL will avoid any recorded archaeological sites or identified waahi tapu (places or features of special significance) or waahi taoka (resource) sites within the proposed soil sampling locations.

The number of soil samples taken will vary depending upon the results obtained in the first year of the survey. However, it is expected that approximately 450 – 500 soil samples may be collected per year (noting that this figure is indicative, rather than an annual maximum).

Rock Sampling

Rock sampling will involve collecting samples of rock chips for geochemical analysis. Rock samples are typically 1– 2 kg in weight (and never more than 5 kg) and taken from key rock exposures. All rock samples will be obtained through hand-held, non-mechanical methods.

OGNZL will take steps to ensure that samples are taken from sites that are not visible to recreational users, and away from formal walking tracks where possible. At the completion of sampling activities, sites will be restored to appear consistent with the surrounding environment as far as practicable.

The number of rock samples taken will vary depending upon the results obtained in the first year of the survey. However, it is expected that approximately 50 rock samples may be collected per year (noting that this figure is indicative, rather than an annual maximum).

Fluvial Sediment Sampling

Fluvial sediment sampling will involve collecting approximately 5 kg samples of fluvial sediment from stream banks or beds using a shovel or pan.

OGNZL will avoid sampling from banks where seepages or side streams join the main stream, or within stream headwaters or side seepages which may be breeding habitat for Hochstetter's Frogs.

The number of fluvial sediment samples taken will vary depending upon the results obtained in the first year of the survey. However, it is expected that approximately three fluvial sediment samples may be collected per year (noting that this figure is indicative, rather than an annual maximum).

Ground Based Geophysical Surveys, Ground Magnets, Gravity Surveying and Electrical Surveying

Ground based geophysical surveys, ground magnets, gravity surveying and electrical surveying activities will involve OGNZL staff or contractors undertaking surveys and taking measurements as follows:

- The undertaking of ground based geophysical surveys involving a team of geophysicists and field staff taking measurements at various intervals;
- The undertaking of ground magnetic surveys involving one person walking along lines using GPS for location and taking measurements using a magnetometer;
- The undertaking of gravity surveying involving the use of a gravitometer to measure the earth's gravitational field from a selected station point. This will require no active ground disturbance; and
- The undertaking of electrical surveying involving the transmission of a controlled electric signal at a suite of frequencies into the ground from one location (transmitter site) and measuring the received electric and magnetic fields in the area of interest (receiver site). Ground disturbance associated with electrical surveying is minimal and limited to the placement of a stake in the ground and the creation of a divot for pots, both of which will be immediately remediated upon completion of the survey.

2.6.2 Wharekirauponga Underground Mine

The key works to provide for the mining of the Wharekirauponga orebody within project Area 1 include:

- Vegetation disturbance and clearance, geotechnical drilling, construction and maintenance of ventilation shafts within the Coromandel Forest Park;
- Construction of the WUG Dual Tunnel and associated declines from the boundary of the Coromandel Forest Park to the Wharekirauponga ore resource;

- Establishment of services and water management systems both within tunnels and the mine;
- Establishment of underground exploration facilities at the Wharekirauponga orebody and associated access drives;
- Development of new explosives magazines and workshops within the underground mine;
- Mining of the ore resource;
- The pumping of mine water to the WTP (Area 5); and
- Transportation of the ore and rock utilising underground tunnels.

Each of these elements is described in the sections below, along with an overview of the core operational components of the mine and details regarding its eventual closure.

2.6.2.1 Tunnel System

The access tunnel arrangement for the WUG comprises three key components:

- The Willows Access Tunnel (Area 2) connecting the Willows SFA to the WUG Dual Tunnel;
- The WUG Dual Tunnel extending from the termination of the Willows Access Tunnel to the Wharekirauponga orebody, located within Area 1;
- The Wharekirauponga Access Tunnel (Area 3) connecting the southern terminus of the WUG Dual Tunnel to the existing Waihi SFA.

Figure 2-16 below provides an overview of the proposed access tunnel arrangement.

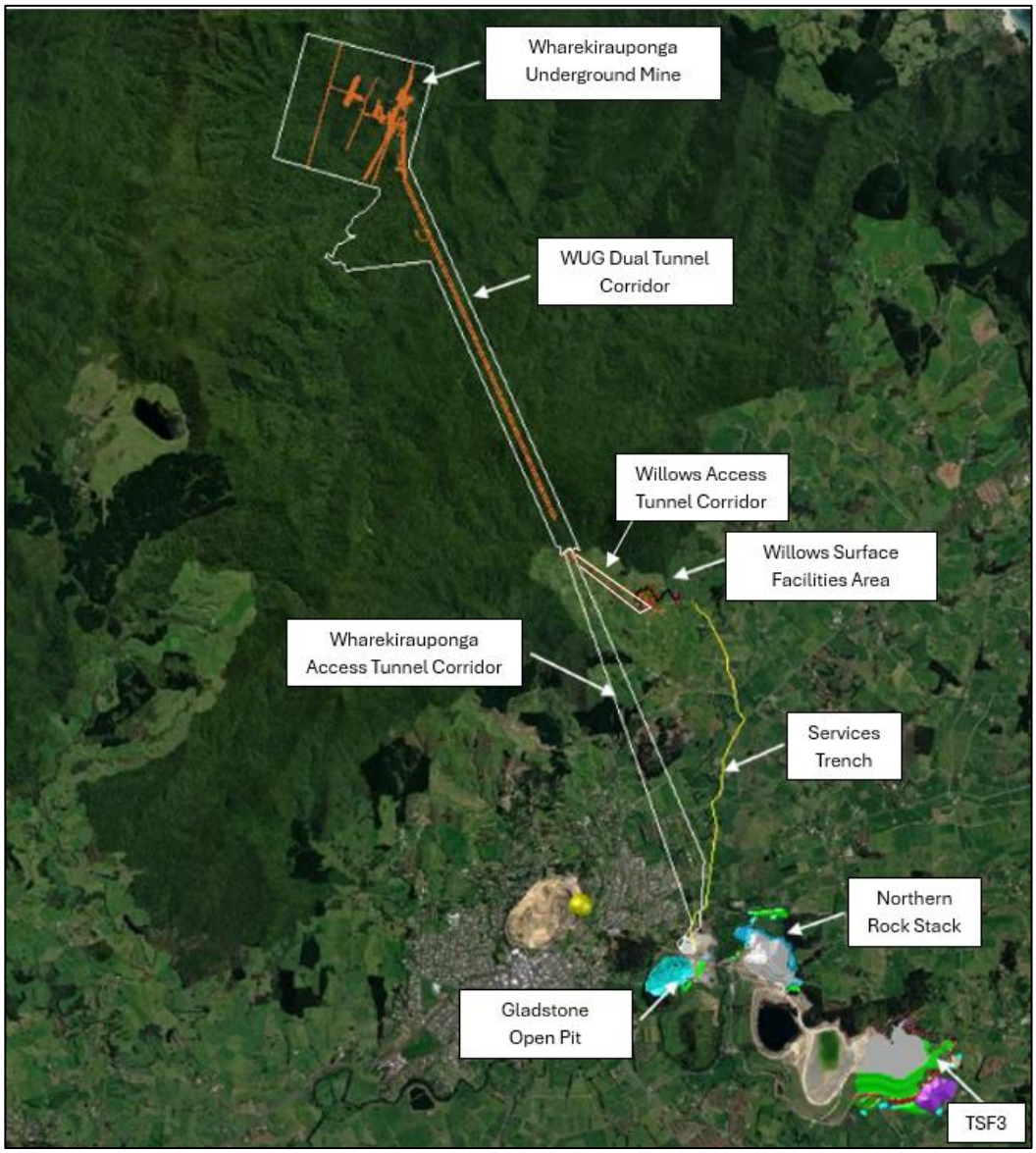


Figure 2-16: Proposed Access Tunnel Arrangement for the WNP

Within Area 1 the tunnel arrangement includes:

- The WUG Dual Tunnel running from the terminus of the Willows Access Tunnel (at the northern boundary of Area 2) to the Wharekirauponga orebody (approximately 5,500 m long) (refer to conceptual long section in Figure 2-17);
- Multiple declines as the WUG Dual Tunnel approaches the top of the Wharekirauponga orebody, for access to the lower portions of the orebody;
- Sumps, pumps, pipelines, electrical equipment and ventilation infrastructure;
- Underground stockpiles and ventilation connections along the length of the tunnel and sumps;

- Refuge chambers and stockpiles at various junctures along the tunnel; and
- Up to four ventilation shafts each rising to the surface to be located on carefully selected sites within the Coromandel Forest Park (Ventilation Shafts 2 – 5). At least one of these shafts will also function as an emergency egress from the WUG.

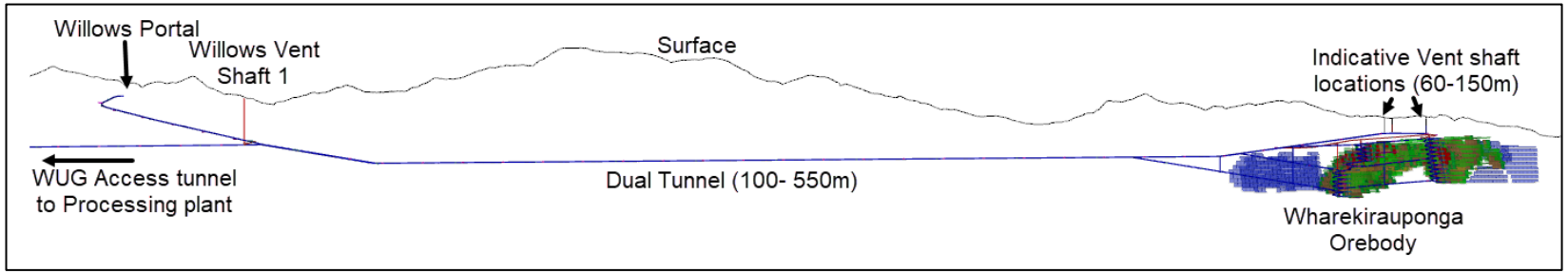


Figure 2-17: Conceptual Long Section View of WUG Dual Tunnel Design

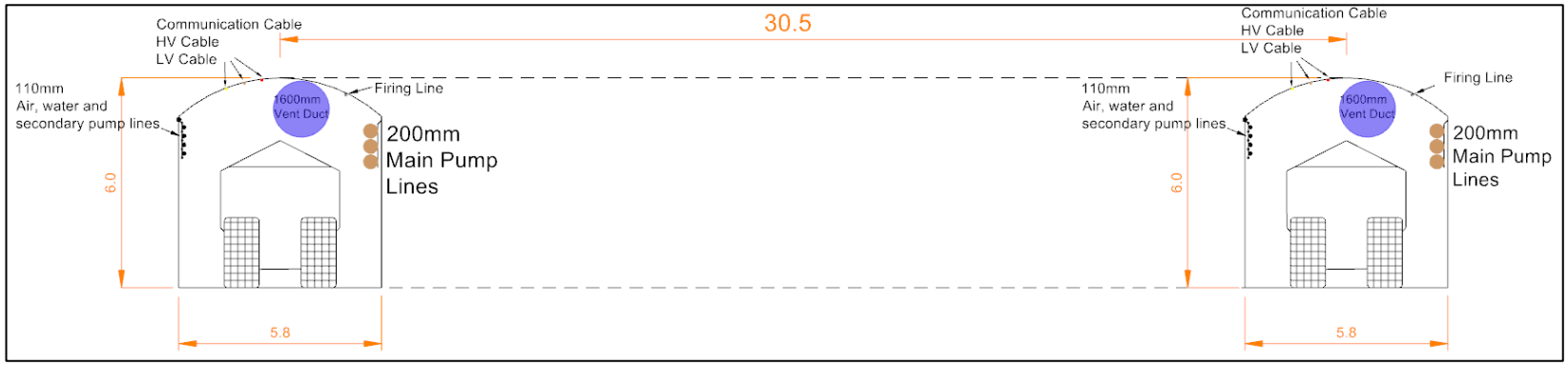


Figure 2-18: Indicative Dual Tunnel Cross Section

Tunnel Design

The WUG Dual Tunnel will be developed to facilitate materials handling equipment, as well as personnel access, and will be developed with approximate dimensions of 5.8 m (W) x 6.0 m (H) for areas required to facilitate truck access, with an indicative cross-section of the tunnel provided in Figure 2-18. For any lateral development not required to facilitate truck access the tunnel will be developed with approximate dimensions of 4.5 – 5.0 m (W) x 4.5 – 7.5 m (H).

Each of the tunnels located within the WUG Dual Tunnel will incorporate, or include at regular intervals, the following services and infrastructure:

> Communications, electricity, water supply, compressed air supply, drainage and ventilation infrastructure;

> Sumps to collect water;

> Refuge chambers;

> Storage and stockpile areas; and

> Tunnel recesses.

In addition to the above generic services and infrastructure in each tunnel, the WUG will include (but is not limited to):

> Crib rooms;

> Maintenance workshops with bunded hydrocarbon storage;

> An explosives magazine;

> A separate chamber for the storage of detonators;

> Diesel storage in portable tanks;

> A gasser storage area;

> Ammonia Nitrate Emulsion ("**ANE**") storage areas; and

> Pumping and ventilation infrastructure chambers.

The location of some of these services will change / be relocated as tunnelling and mining advance.

As described in (WSP (2025a)) provided in **Part B** of these application documents, the proposed location and design of each tunnel has been selected to prevent any surface-level subsidence.

Tunnel Construction Methodology

Construction of the WUG Dual Tunnel will commence at the southern boundary of the Coromandel Forest Park. The WUG Dual Tunnel will be developed at a gradient to ensure optimised water management. Once the tunnel reaches the Wharekirauponga orebody, Ventilation Shafts 2 – 5 will be constructed.

The method of tunnel construction will be drilling and blasting using jumbos for face drilling and ground support installation, as has been successfully used for other OGNZL underground mines. Load haul dump ("**LHD**") units will be used to move material away from the drilling face, with underground trucks then used to transport rock to surface stockpiles.

Construction of the tunnel system will initially proceed via the Willows Portal.

During initial stages of tunnel construction, a ventilation fan will be located outside the Willows Portal, mounted within an acoustically treated container or similar (until such time as Ventilation Shaft 1 is constructed). Once Ventilation Shaft 1 has been completed, all active ventilation equipment will be located underground.

Development of the WUG Dual Tunnel will take place over approximately four years and will involve scaling and rock bolting, bogging (clean-up), face drilling, charging, firing and final bogging. These activities will be performed with standard underground mining equipment.

Development of the WUG Dual Tunnel and Willows Access Tunnel (Area 2) will involve approximately 21 firings per calendar week.

Rock from the drilling face will be loaded into trucks and hauled to the WRS (Area 2) for stockpiling. Any development ore intercepted during tunnelling will also be hauled to the WRS for stockpiling and later transported to the Processing Plant.[14]

Forward Drilling Programme

As construction of the tunnel advances, holes will be drilled ahead of the development face, with information collected for geotechnical and hydrogeological analysis. The forward drilling will inform any geotechnical and water management requirements for the corresponding length of tunnel.

Water Management

Water encountered during tunnel construction or mining operations in Area 1 will be recycled for drilling purposes and / or drained to sumps. Water not recycled will be pumped

[14] Following completion of the Wharekirauponga Access Tunnel (Area 3).

to the Willows Collection Pond and WTP (Area 5) for treatment and discharge. The Willows Collection Pond and WTP have sufficient capacity to deal with anticipated / modelled inflow conditions associated with the WNP, with contingency storage options available should they be required.

Engineering controls, including sealing or grouting tunnels and shafts with grout or shotcrete during construction may be required to manage water ingress to ensure a safe and efficient working environment underground. This management would also ensure that the potential to affect surface waters is appropriately managed.

2.6.2.2 Ventilation Shafts

Ventilation Shaft Site Selection

A maximum of up to four ventilation shafts (Ventilation Shafts 2 – 5) will be located above the Wharekirauponga orebody within the Coromandel Forest Park on carefully selected sites. The sites will be in combination with requirements for hydrogeological / pumping test sites, as detailed in Section 2.6.1.1. The location of the sites will have been determined based on the MCA site selection protocol discussed previously and set out in full in **Part D** of these application documents, with potential short-listed sites to be determined using the portable rigs (as detailed in Section 2.6.1.4).

The alignment of the WUG Dual Tunnel (refer to Figure 2-16) will be confirmed / finalised following identification of suitable ventilation shaft sites and the analysis of any geotechnical information.

All surface ventilation shaft works will be serviced via helicopter, staged from helipads located at either the Waihi SFA (Area 5), the former Golden Cross Mine (outside the boundaries of the WNP), or from a proposed helipad at the Willows site (Area 2) (discussed further in Section 2.7.1.9). Up to ten helicopter flights will occur per week during construction of the ventilation shafts for periods of between one and four weeks per shaft.

Ventilation Shaft Construction

Construction of up to four ventilation shafts (Ventilation Shafts 2 – 5) may be carried out either from the surface, from underground, or a combination of both. Depending on the geotechnical conditions encountered at the surface, some concreting and / or reinforcing of each site is expected to support the surface breakthrough.

If excavation is to occur from the surface, spoil management will comprise either:

> Removal by helicopter; and / or

> Temporary storage at the surface prior to being returned underground once the surface connection is created.

Should ground conditions require, a concrete slab will be formed, reinforced and poured from the surface to form the shaft surface collar onto which the required surface infrastructure can be placed. It is possible that concrete will need to be pumped from underground for this purpose due to limitations with transporting large quantities of concrete via helicopter. Fresh air shafts will employ a protective grate.

Upon the completion of the construction of each ventilation shaft, an evasé up to 8 m in height will be installed and fenced (refer Figure 2-19).[15] Ventilation fans will be installed underground. Further technical drawings that illustrate the proposed ventilation evasé are provided in **Part C** of these application documents.

One of the ventilation shafts will be used as an emergency egress, Figure 2-19 shows the concept with the evasé and escapeway used in tandem. If egress were to be a separate shaftsurface expression at the egress shaft will be minimal, with a 1-2 m diameter ladder appearing at the surface. All shafts will be secured to prevent vandalism and unauthorised access with fencing.

Figure 2-19: Typical Surface Ventilation Evasé

[15] The final height of the evasé will be confirmed at the time of detailed design.

Ventilation Shaft Construction Amenities

One of the ventilation shaft sites will accommodate construction amenities. This will include a building with a helipad established on the roof (refer Figure 2-20), which will be utilised during the construction of the first of Ventilation Shafts 2 – 5. Subsequently, access to the surface during further ventilation shaft construction will be available via the initial ventilation shaft. Following which the amenities facility will be disestablished.

Technical drawings that further illustrate the proposed construction amenities facility are provided in **Part C** of these application documents.

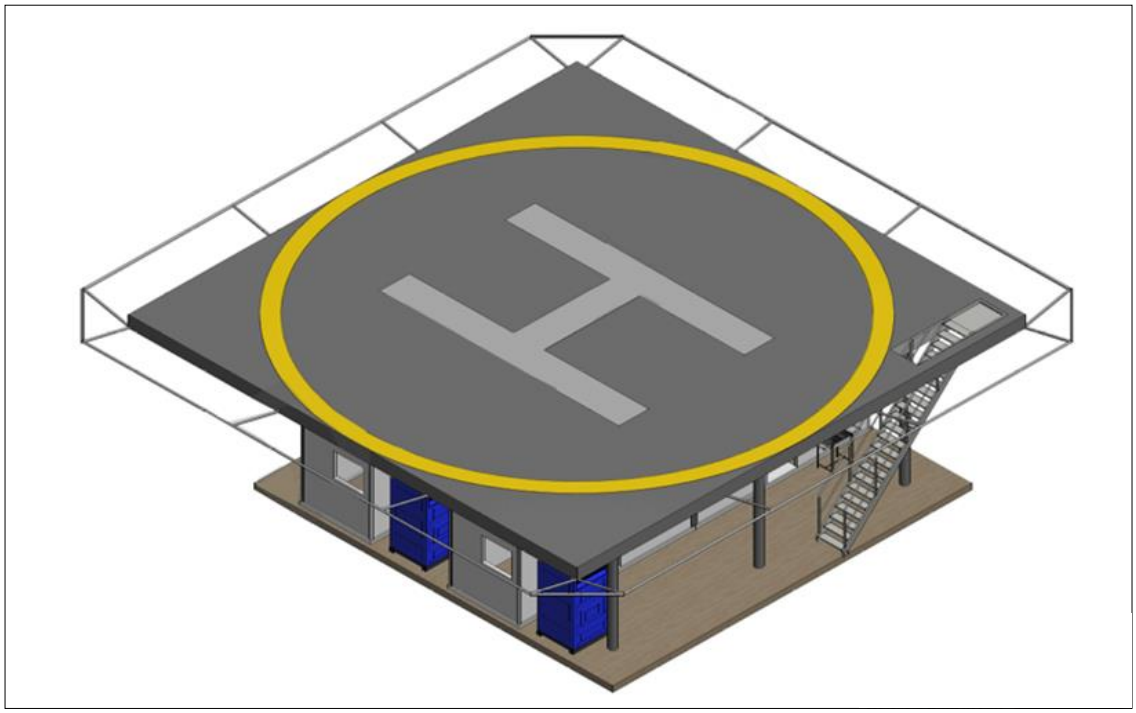


Figure 2-20: Proposed Amenities Facility Concept

2.6.2.3 Explosives Products

Secure Class 1 explosives magazines conforming to the Health and Safety at Work (Hazardous Substances) Regulations 2017 will be constructed underground close to the orebody. These will consist of a high explosive magazine and an emulsion storage area with target capacities of 6 tonne and 34 tonne respectively. The location and holding capacity of the high explosive magazine will be selected to ensure the required surface overpressure offsets do not extend beyond the fenced footprint of the ventilation evasé.

2.6.2.4 Underground Exploration Drilling

While modelling has been undertaken to define the likely extent of the Wharekirauponga orebody, further exploration drilling is required to confirm the final WUG design.

As the tunnel construction approaches the Wharekirauponga orebody, drilling platforms will be established underground to determine the vertical and horizontal extents of the orebody and improve the resource confidence. Drives will also be progressively developed to allow exploration of vein strikes. Diamond drilling rigs will be set up to drill from these underground drill drives in accordance with the planned exploration and resource drilling programme.

Drill cores will be processed and stored in the existing OGNZL Waihi operations facilities located within Area 5.

2.6.2.5 Mining of the Orebody

Mine Development

Initially access drives for the WUG will be mined to develop drilling and loading levels, intersecting the orebodies. Ore drives will then be developed from the access drives. Development design profiles for the WUG will be the same as currently used at existing Waihi mines and all development has been designed at a maximum 1 (V): 7(H) gradient. Declines requiring truck access will likely be 5.5 m (W) x 5.8 m (H).

Further lateral development is required for infrastructure including sumps, pump / dewatering tunnel recesses, crib rooms, electrical infrastructure, refuge chambers, underground workshop and underground magazine. Level accesses beyond truck access areas and ore drive development have been designed at 5.0 m (W) x 5.0 m (H).

Vertical development will include 2 m to 5 m diameter evasé and drill holes to provide ventilation, secondary egress, and services throughout the mine. Flexibility is sought for the shaft construction methodology for internal vertical development underground, so as to allow for both bottom-up and top-down options.

Mining Method

Mining of the Wharekirauponga orebody will be carried out using a combination of two main mining methods:

> Modified Avoca mining method (refer to Figure 2-21); and

> Transverse sublevel stoping with cemented rock fill. This method involves the use of consolidated fill which is waste rock already mined for the tunnels and cement slurry.

By backfilling with a consolidated fill this enables the entire extraction of wider orebody sections as shown in Figure 2-22.

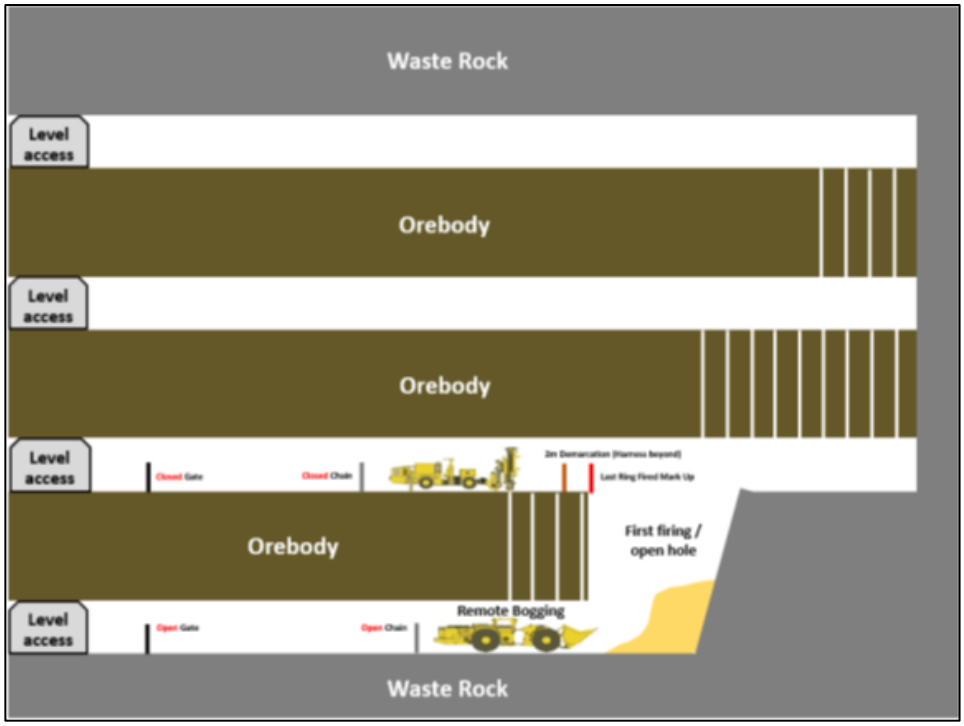


Figure 2-21: Conceptual Modified Avoca Mining Method

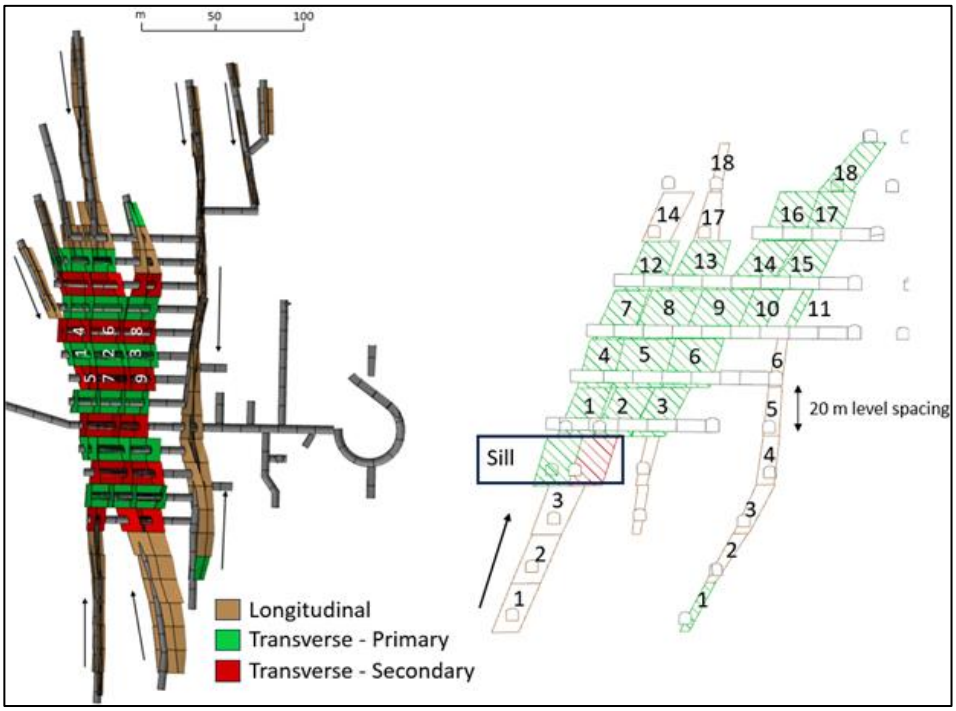


Figure 2-22: Transverse Mining Method

Modified Avoca has been used successfully at the existing underground mines at Waihi for several and similar transverse open stoping methods have been successfully carried out in the existing Martha operations over the last two years. They have been found to be effective methods to minimise dilution and are standard practices throughout the mining industry.

Following completion of mining a stope, the stope void will be tight filled with rockfill or cemented rockfill from the upper level leaving an open drive for access on top of the fill material. Once the stope has been filled, the mining of the next panel will commence.

Stoping will occur no closer than 50 m from the surface at any point.

2.6.2.6 Ore and Surplus Rock Handling During Mining

Once ore extraction commences it will be transported underground to the Processing Plant (Area 5) utilising the WUG Access Tunnel (Area 3).

As the mining operations progress, surplus rock development will cease and all rock from the WRS returned underground to backfill the mined stopes. A loader and mine truck will be used to return rock via the Willows Portal.

Once the WRS is exhausted, rock for backfilling stopes will be sourced via alternative locations, e.g. from underground stockpiles or the NRS.

2.6.2.7 Water Management

Water Use and Supply

Water will be used for various underground mining operations, including:

- Tunnel construction, including jumbo drilling and watering down fired headings;
- Dust suppression on underground roads;
- Underground stope production drilling;
- Underground diamond drilling; and
- Crib rooms.

Recycled water harvested from tunnel water inflows will be used for tunnel construction and underground dust control post construction.

Dewatering

The volume of dewatering required in the tunnels will increase as tunnel development progresses. Assessments to date have predicted 11,800 m^3/day will be pumped from the

access tunnels and mining operations. The mine dewatering system will be designed to manage all water inflows with the ability to stage and increase capacity when or if required.

2.6.2.8 Environmental Monitoring

Various environmental monitoring activities are contemplated within Area 1, including, but not limited to:

- Meteorological weather stations;
- Rain gauges (as previously discussed in Section 2.6.1.6);
- Track counters;
- Surface water flow gauges and level loggers;
- Piezometers;
- A telemetry system;
- Vibration monitoring; and
- Low impact monitoring.

Meteorological Weather Stations

To assist with the environmental monitoring, a meteorological station that is currently installed and authorised through an existing Department of Conservation concession at Drill Site 5 / South Helipad will be utilised to measure and record meteorological data such as:

- Air temperature;
- Barometric pressure;
- Precipitation;
- Wind speed; and
- Wind direction.

Track Counters

To assist with the monitoring of potential recreational effects associated with the WNP a directional pedestrian Eco-Counter which is installed along the Te Wharekirauponga Track, approximately 1.5 km west of the Parakiwai Quarry Road carpark (see Figure 2-23) which records the number of walkers on the track and the direction in which they travel. This track counter is installed on the currently closed section of the track and DOC have requested it be removed. This is scheduled to occur in 2025, however OGNZL proposes to reinstall the counter at the same location if the track reopens, or an alternative on the open section of the track. Count data will be downloaded in field on a quarterly schedule.

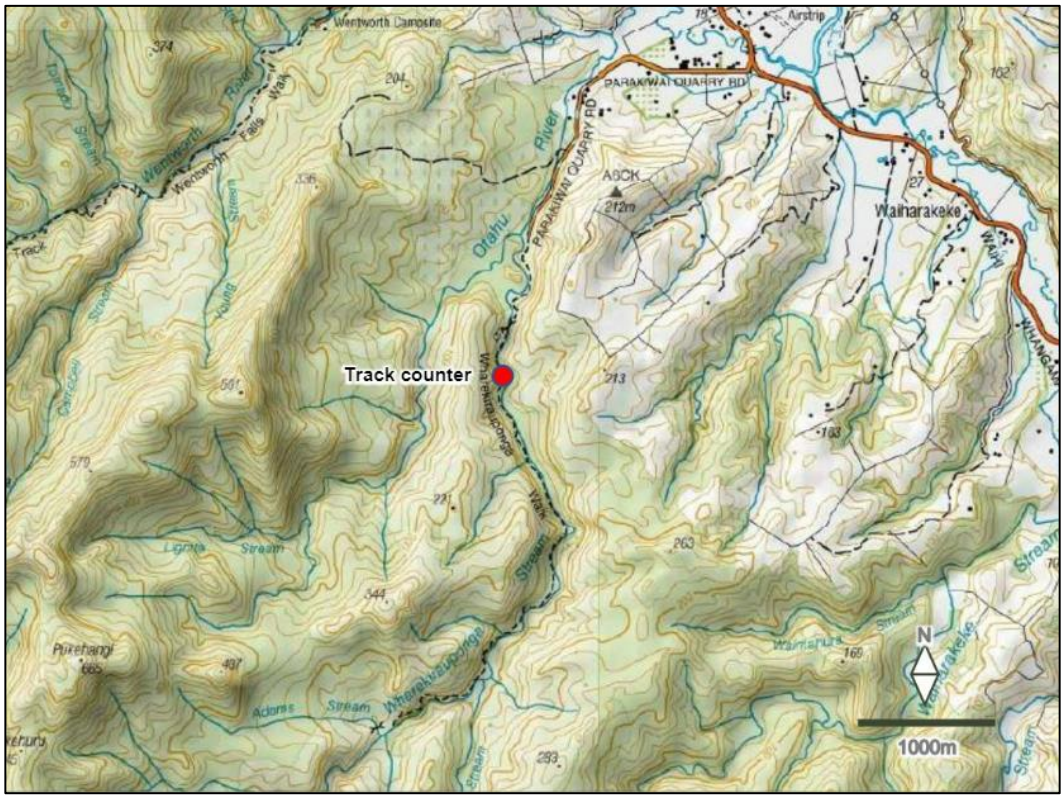


Figure 2-23: Location of Pedestrian Track Counter

Surface Water Monitoring

Surface water within the Wharekirauponga Sub-Catchment is currently monitored by OGNZL for water quality, water level, and flow rate between Wharekirauponga and Waihi, and Wharekirauponga and Golden Cross.

OGNZL proposes to undertake surface water monitoring at 12 locations for the WNP. Seven of these locations are new monitoring sites, while five of them are already established monitoring sites. OGNZL currently holds Concession 87585-OTH authorising the five existing sites. As part of this application, OGNZL proposes to replace Concession 87585-OTH with a new concession and access arrangement to obtain authorisation for the activities covered by Concession 87585-OTH for the life of the WNP (refer to Section 3.2.1).

The existing (installed) and proposed surface water monitoring locations are shown in Figure 2-24.

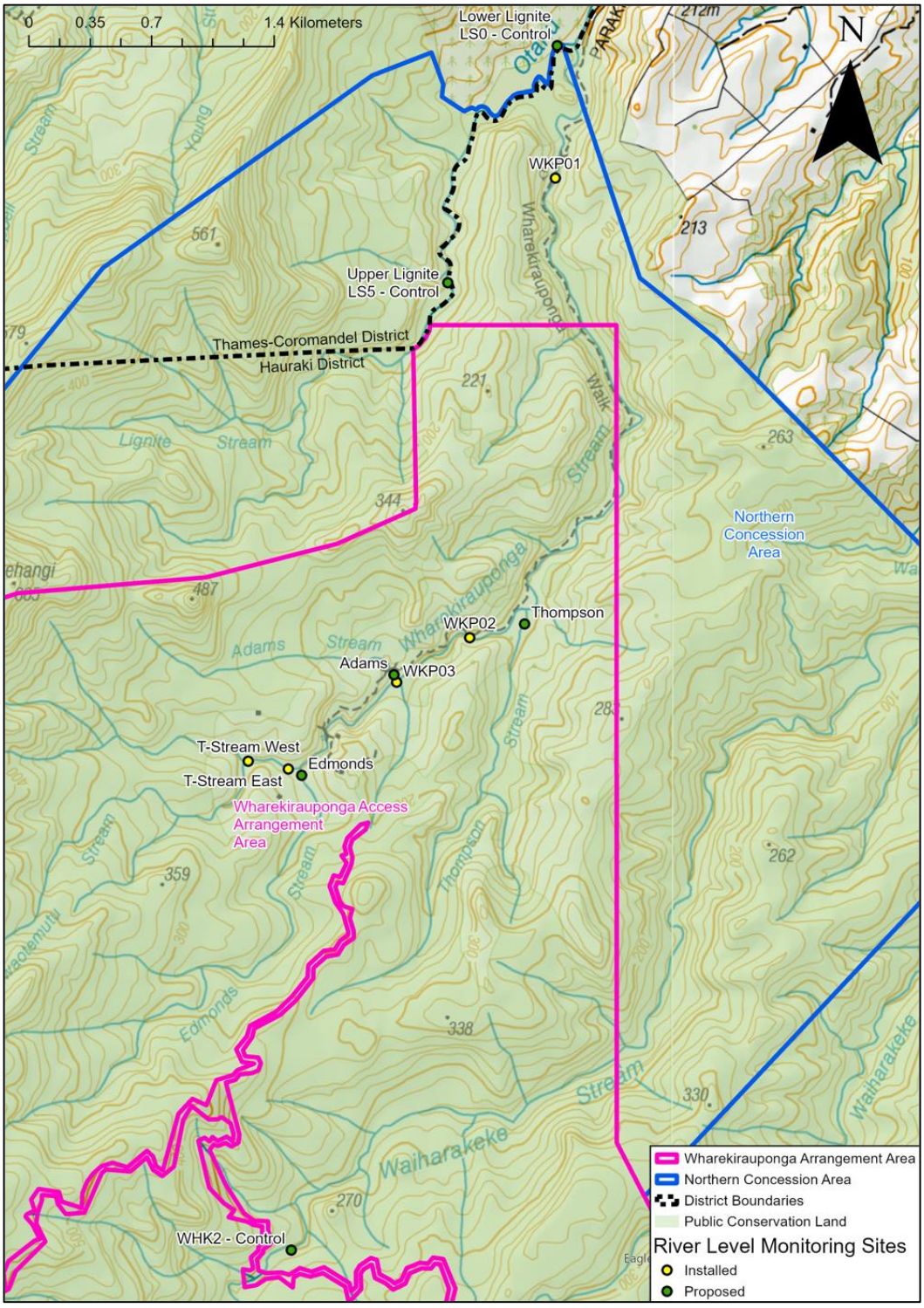


Figure 2-24: Existing and Proposed Surface Water Monitoring Sites in Area 1

As part of this application OGNZL proposes to replace the existing telemetry related approvals which are held from HDC and the Department of Conservation (refer to Section 3.2 of this report) for these sites to obtain authorisation for their use for the life of the WNP.

River level monitoring stations will be a similar design to existing stations; a 1 m length of 32 mm diameter PVC pipe attached to a waratah and driven into the streambed. A monitoring instrument (data logger) will be installed below the water level within the PVC pipe. Alternatively, a dynabolt may be drilled into a rock with a D-shackle attaching the level logger directly to the rock. A plastic housing will be attached to a tree or a secondary waratah on the stream bank to protect electrical connections and telemetry equipment. A small solar panel may be required to be installed on top of the plastic housing.

Water quality samples are collected from monitoring locations manually using sterile containers and analysed off-site for different analytes and water quality indicators.

Flow rate is measured using a hand-held Flowtracker.

An example of an existing surface water monitoring station at Wharekirauponga is shown in Figure 2-25 below.

Figure 2-25: Surface Water Monitoring Station

Groundwater Monitoring

OGNZL proposes to install a set of two shallow piezometers, at up to eight wetland locations (i.e. 16 piezometers in total) to monitor the potential effects of mining activities on wetlands, both within and surrounding wetlands located above the WUG. Six wetlands will be monitored for potential effects, and two will act as monitoring control sites.

Each of the monitored wetlands will have one ready-made piezometer driven into the wetland by hand using a slide hammer. A second piezometer will be installed approximately

two metres from the wetland boundary and will be installed either by hand using a slide hammer or using a portable rig.

Telemetry

The current system for data collection utilised by OGNZL is largely manual, with staff accessing sites on foot to retrieve information on a monthly basis. OGNZL proposes to gradually transition this system to be automated.

The exact arrangement of this telemetry system is dependent on site specific details at each monitoring location such as toppograpy and vegetation cover; however, it will comprise the following (or similar):

- Ackcio technology involving a gateway with solar panels installed at Drill Site 5 / South Helipad and the North Helipad. Depending on network strength, additional gateways may be required at further afield locations, or monitoring sites in steep gullies. The gateway housing is similar in size to the piezometer data logger box being approximately 50 cm x 40 cm and is installed on a mast measuring approximately 1.5m; and
- 'Nodes' at each data collection point (piezometers, weather station, river level monitoring sites, etc.) which create a mesh network between all nodes. These nodes will be encapsulated in a single box with a long-life battery that lasts up to 12 months, or a solar arrangement

Figures 2-26 and 2-27 show examples of the gateway and node installations.

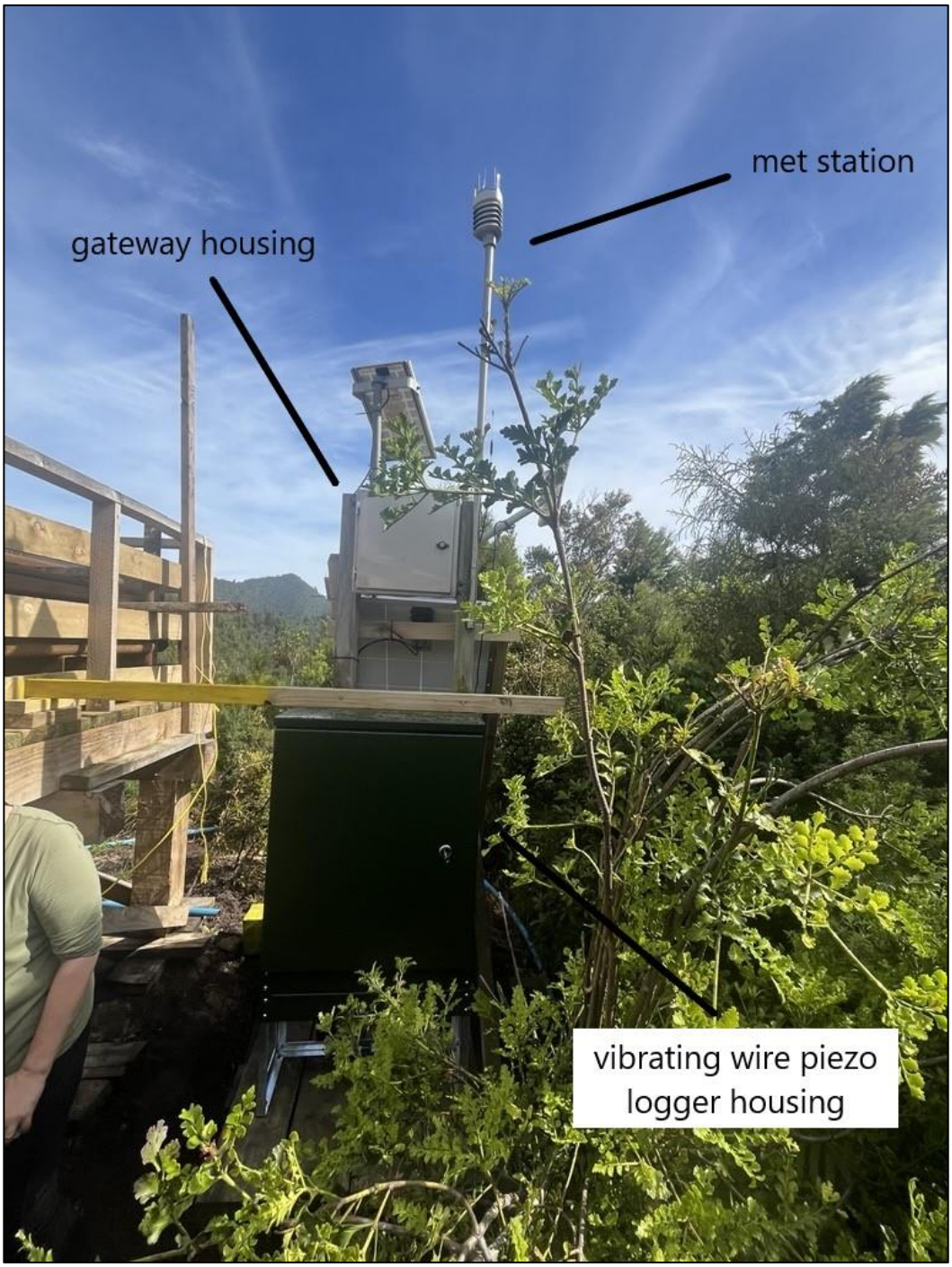


Figure 2-26: Example of Telemetry System Gateway

Figure 2-27: Example of Telemetry System Node

The automation of data collection will reduce foot traffic in monitoring areas to that associated with equipment maintenance, repair, and calibration.

Vibration Monitoring

To calibrate predicted surface vibration levels to vibration monitors underground, OGNZL propose to monitor vibration at the surface of the WUG. This will require a small excavation (using a spade) measuring 30 cm x 30 cm x 30 cm at each of 12 sites. Pre-cast concrete blocks will be installed in the excavated holes, with soil compacted around the concrete blocks. Each concrete block will have a bolt installed at the top, upon which a geophone can be installed while monitoring takes place.

The vibration monitoring equipment (including the concrete block) will remain in place throughout the life of the project and will be removed upon mine closure.

Low Impact Monitoring and Maintenance of Equipment

Throughout the life of the project, access to public conservation land for various types of low impact environmental monitoring will be required. This includes but is not limited to noise and dust monitoring, terrestrial and aquatic ecological surveys, pest control and monitoring, river flow gauging, meteorological monitoring / rainfall monitoring, data downloads from piezometers, surface and groundwater quality sample collection, and regular maintenance and repairs to environmental monitoring equipment.

Monitoring and maintenance will be conducted by teams of two – three OGNZL staff or contractors.

Some monitoring may require the temporary installation of equipment at the surface, but associated excavation will not be required.

2.6.2.9 Hours of Work

Tunnelling and Exploration

Development of the WUG tunnel system will progress 24 hours per day, seven days per week.

A typical tunnelling working week will consist of:

- Approximately 21 firings of approximately 4 m in length (multiple headings to be fired at the same time);
- 50 return trips (average) per week at the start, increasing to approximately 140 return trips per week from the development face in the tunnel to the surface rock stockpiles (in accordance with applicable noise standards);
- Deliveries of consumables and equipment; and
- Fuel deliveries twice per day to surface and underground tanks.

Exploration will proceed 24 hours per day, seven days per week following the construction of the exploration platforms.

Mining

Mining of ore is expected to occur for up to 10 years, with underground mining, ore transport, and rock return carried out 24 hours per day, seven days per week.

Mining Equipment

The WUG will require a range of mining equipment during its operating life (with the number and size of units varying depending on the staging of the development and production activities). Equipment will likely include:

- Development Jumbo Drills
- Production and Exploration Drills
- Underground Loaders
- Underground Trucks
- Graders.
- Underground agitators
- Grouting equipment
- Explosives charge up units
- Service vehicles
- Water cart
- Light vehicles
- Raisebore rigs
- Fibrecrete rigs

2.6.2.10 Use of Drones

OGNZL proposes to operate drones over the Coromandel Forest Park to undertake ecological and geotechnical mapping / investigations for both exploration and mining related activities. This may include, but is not limited to, the collection of lidar and photogrammetry data.

Drone operations will occur no more than twice yearly over the life of the WUG, and never at the same time as helicopter flights. If drone operations are used, they will replace an otherwise authorised helicopter flight and will be undertaken in accordance with DOC's Standardised Drone Operating Conditions.

2.6.2.11 Storage and Use of Hazardous Substances

Table 2-4 lists the hazardous substances that will be stored within Area 1 for use as part of the WUG. The storage of hazardous substances will be consistent with the current and approved practices for the Favona, Trio and Correnso Underground Mines.

Table 2-4: Hazardous Substance Volumes and Classifications

Substance	Hazard classification -Post 2021	Proposed maximum volume	Storage Location
ANFO (UN 0082)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) Eye irritation Category 2 Carcinogenicity Category 2 Hazardous to the aquatic environment chronic Category 4	6,100 kg	Underground explosive magazines (max 1,000 kg in any magazine)
Booster (UN 0042)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 3 (oral, dermal and inhalation route) Specific target organ toxicity – single exposure Category 2 Hazardous to the aquatic environment chronic Category 2		
Packaged explosive (UN 0241)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) Skin irritant Category 1 Eye irritation Category 2 Reproductive toxicant Category 3 Specific target organ toxicity – repeated exposure Category 1 Hazardous to the aquatic environment Category 1 Harmful to terrestrial vertebrates		
Detonators (UN 0030 / UN 0456 / UN 0360)	1.1B - Substances and articles that have a mass explosion hazard	100 kg (100,000 articles)	Underground chamber (separate to others)

Substance	Hazard classification -Post 2021	Proposed maximum volume	Storage Location
Diesel	Flammable liquids Category 4, Aspiration hazard Category 1, See Note 1 Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2	6,000 L	Portable tank underground
Ammonium nitrate emulsion (ANE)	Oxidising liquids Category 2 Aspiration hazard Category 1, Eye irritation Category 2 Hazardous to the aquatic environment chronic Category 4	34,000 kg	Oxidiser storage area – underground
Gasser	Acute oral toxicity Category 4 Eye irritation Category 2 Skin sensitisation Category 1 Germ cell mutagenicity Category 2 Specific target organ toxicity – repeated exposure Category 2	4,000 L	Gasser storage area - underground
Oils, greases	Not classified as hazardous	8,000 L	Workshop stores – underground

Small quantities of hazardous substances will also be stored and used at the proposed drill sites located within the Coromandel Forest Park. The hazardous substances used and stored on-site during drilling operations will include diesel and petrol, LPG, drilling lubricants and maintenance chemicals including oils and greases. Double skinned diesel pods will be delivered by helicopter and stored at the drill sites and water pump sites in secondary containment. The diesel will be used for the refuelling of the pumps and other equipment. Trigene disinfectant will also be used and stored for the management of Kauri Dieback Disease risk.

The nature and quantities of hazardous substances that could be deployed at an active drill site is set out in Table 2-5.

Table 2-5: Active Drill Site Hazardous Substances

Substance	Hazard classification -Post 2021	Maximum volume	Storage Method
LPG	Flammable gas - high hazard	9 kg	Pressurised gas containers segregated from all flammable liquids or solids and oxidising substances
Diesel	Flammable liquids Category 4 Aspiration hazard Category 1 See Note 1 Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2	1,500 L in 6 pods of 250 L capacity each	Diesel pods are double skinned and bunded with sufficient capacity to hold an excess of the container volume
Petrol	Flammable liquid - Category 1 See Note 1 Carcinogenicity Category 2 Aspiration hazard Category 1 Hazardous to the aquatic environment chronic Category 2	40 L	Petrol is stored in 20 L packages and kept in storage with secondary containment.
Maintenance oils	Non hazardous	80 L	No specific requirements but will have require secondary containment
Grease	Non hazardous	6 kg	No specific requirements but will have require secondary containment
Soda ash (sodium carbonate)	Acute inhalation toxicity Category 4 Skin irritation Category 2 Eye irritation Category 2	15 kg	No specific requirements
Trigene disinfectant	Skin irritation Category 2 Skin sensitisation Category 1 Serious eye damage Category 1 Hazardous to the aquatic environment chronic Category 2	10 L	No specific requirements

All hazardous substances will be stored in approved bunded containment in accordance with the relevant New Zealand Standards and Codes of Practice and the Hazardous Substances and New Organisms Act 1996 and Regulations.

All fuel will be stored in secure tanks or packages that have secondary containment. Where substances are stored within secondary containment, the bunding capacity will be a minimum 110% of the largest container and constructed of material impervious to the substance stored. Chemicals will be stored such that incompatible substances are segregated.

2.6.2.12 Closure and Rehabilitation

Mine Stopes and Tunnels

Stopes will be progressively backfilled using rock throughout the life of the project. Areas of potential instability will be backfilled to ensure long-term stability.

Ventilation Shafts

All fencing and ventilation / egress surface infrastructure (ventilation evasé) will be removed at mine closure. Ventilation shafts will be backfilled from underground with a low strength cementitious grout, or a secure structural cap will be constructed. Shaft collars will be concrete sealed, covered with topsoil, and allowed to revegetate with as minimum interference as possible, following the process set out in the ELMP-WUG (with weed management to be undertaken by OGNLZ for approximately 60 months post closure to ensure survival of native vegetation). The bottom-up placement of cemented backfill will be constructed from within the underground mine using specialist equipment and will not require additional surface disturbance around the shaft opening. Further consideration of backfilling materials, methodology and equipment will be required during detailed design. This method is endorsed by the Department of Conservation for existing exploration drill sites. Such rehabilitation effectiveness will be monitored and managed for a period of five years following closure to ensure the success of such remediation.

Monitoring Equipment

All monitoring equipment and associated structures will be removed at mine closure.

2.6.3 Ecological Mitigation and Enhancement Activities

2.6.3.1 Native Frog Monitoring

Within and Outside the Potential Vibration Impact Mitigation Area

OGNZL proposes to undertake a comprehensive habitat enhancement programme, which includes approximately 632 ha of pest control in locations across the WNP work areas and surrounds (including areas of high value frog habitat) to address any uncertainty surrounding potential effects of the project on native frogs. A long term monitoring programme for Archey's frog (classified as "At Risk- Declining") will be established and implemented following a Before-After Control-Impact ("**BACI**") design. Whilst the monitoring will focus on Archey's frogs, OGNZL is also seeking authority to handle Hochstetter's frogs if they are located during these surveys.

To understand both the effects of mining activities, and effectiveness of the proposed pest control measures (discussed in Section 6.6), OGNZL will undertake native frog monitoring in three areas:

- Within an area that is subject to >2 mm/s vibration, and is also subject to pest control ("**Vibration and Pest Control**");
- Within an area that is not subject to mine related vibration, but is subject to pest control ("**Pest Control**"); and
- Within an area that is neither subject to mine related vibration, nor subject to pest control ("**Control**").

The proposed location envelopes for these three study areas are shown in Figure 2-28.

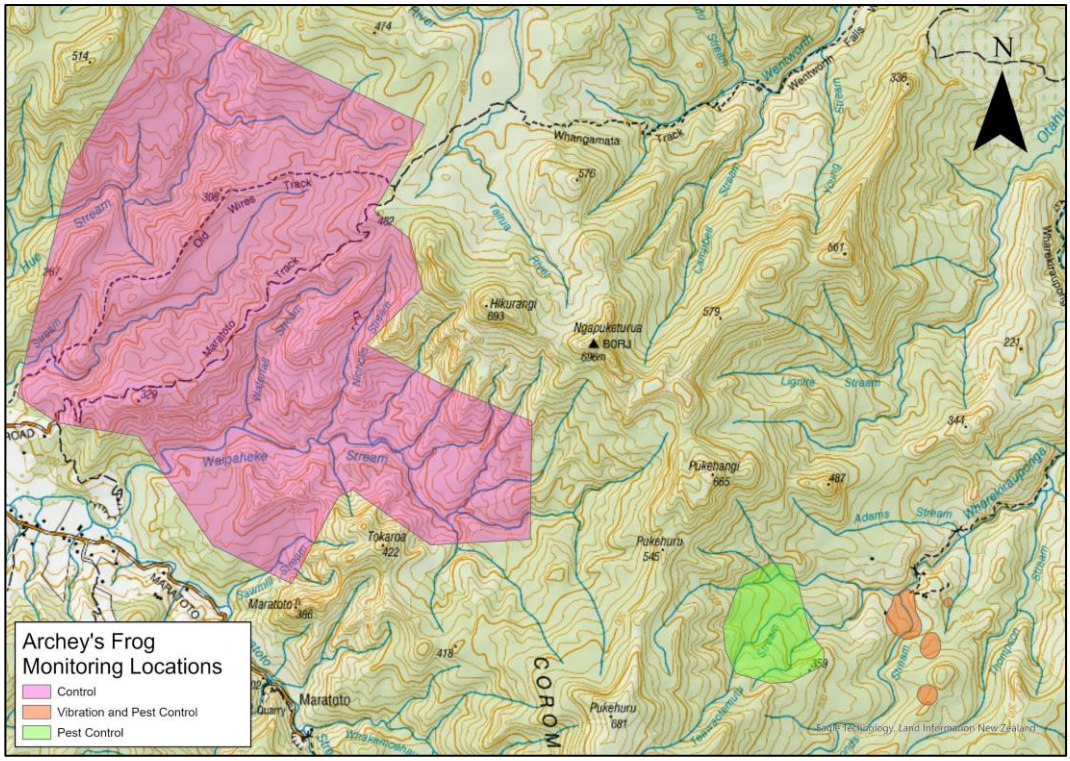


Figure 2-28: Proposed Archey's Frog monitoring location envelopes

Characteristics of the three areas will be as similar as possible. Monitoring for the collection of baseline data will begin prior to the commencement of underground mining and pest control activities and will continue throughout the life of the WNP. This will enable OGNZL to quantify potential effects of the WNP on frogs.

The monitoring will involve setting up a 30 m x 30 m permanent monitoring plot in each of the three monitoring areas and surveying each plot five times (weather permitting) between March and September, annually . Each plot will be hand searched for frogs using a head

torch. Frogs will then be photographed onsite and / or DNA swabbed before being returned to the location they were found.

All handling of frogs will be undertaken or supervised by an appropriately qualified ecologist.

Full details of the proposed monitoring can be found within Bioresearches (2025b) provided in **Part B** of these application documents.

Within and Outside the Potential Dewatering Impact Area

It is possible that dewatering of the WUG may affect stream flows in some surface water bodies located within the Wharekirauponga Sub-Catchment (as discussed in Section 6.4 of this report). While effects on Hochstetter's frogs that are resident in these streams is not considered to be likely, OGNZL proposes to implement a BACI design monitoring programme to observe any potential effects on the Hochstetter's frog population. This will ensure that appropriate management measures can be implemented if required.

The monitoring will involve setting up survey transects along streams in two areas, both within the Coromandel Forest Park:

- One within a stream located within the area potentially affected by dewatering of the WUG; and
- One within a stream located outside of the area potentially affected by dewatering of the WUG but being a stream which has characteristics which align with the stream identified above (e.g. similar elevation and stream size).

Monitoring for the collection of baseline data will begin prior to the commencement of activities by carefully flipping refuge items such as rocks and logs. Captured frogs will be photographed onsite before being returned to their refuge item. Surveys will be repeated on streams multiple times each season.

All searching and handling of frogs will be undertaken or supervised by a suitably qualified ecologist.

Full details of the proposed monitoring can be found within Bioresearches (2025b) provided in **Part B** of these application documents.

2.6.3.2 Handling, Salvage and Translocation of Native Fauna within the Coromandel Forest Park

As set out in Section 2.6.1.1, if frogs and lizards are found during vegetation clearance at drill sites and / or pumping test sites / ventilation shaft sites, OGNZL will translocate these to intensively pest-controlled fauna release sites within the Coromandel Forest Park. Pre-

clearance salvage activities will be undertaken over two days and nights in suitable conditions from March – May.

Species which inhabit the area and OGNZL are proposing to translocate if identified include:

> Hochstetter's and Archey's frogs;

> Two ground dwelling skink species (Elegant gecko (*Naultinus elegans*) and copper skink (*Oligosoma aeneum*)); and

> The arboreal gecko (Forest gecko (*Mokopirirakau granulatus*).

Full details of the site selection process for the drill, pumping test, and ventilation shaft sites and the salvage translocation process can be found in the WUG Ecology and Landscape Management Plan ("**ELMP-WUG**"), provided in **Part H** to these application documents.

Fauna Release Site

A fenced fauna release site will be established to provide an intensively pest-controlled location for salvaged fauna to be released into.

The fauna release site may contain resident native fauna, and will be prepared with material collected from the site that is being cleared. The site will comprise an electric fence (with associated safety / warning signage) to exclude pigs, and pest control across a 5 ha area. Within the pest-controlled area, smaller 20 m x 20 m 'release pens' will be fenced using polythene and wooden stakes to release salvaged individual fauna into.

OGNZL will ascertain the number of resident frogs in each release pen prior to the release of any salvaged frogs. This will involve nocturnal hand searches of the pens, repeated over multiple nights.

Annual monitoring of the release pens will occur to track the success of the salvage translocations. This will involve nocturnal searching for translocated and resident frogs within the release pens.

2.6.3.3 Pest Control and Monitoring

Pest control and monitoring measures are addressed in Section 6.6.1.1, and within the Wharekirauponga Pest Animal Management Plan provided in **Part H** to these application documents.

In addition to the pest control measures to mitigate the effects of the WNP, pest control will be undertaken to ensure that fauna release sites meet the required pest tracking targets.

2.6.4 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within Area 1 of the WNP (as well as within other project areas of the WNP).

OGNZL proposes to undertake works within close proximity to these recognised values and acknowledges that there is a potential for further (yet unidentified) heritage and/ or archaeological values to be discovered as the proposed WNP progresses. Actual and potential heritage and archaeological effects associated with the proposed works are considered in Section 6.15 of this report.

In relation to the proposed works within areas with recognised heritage and / or archaeological values, OGNZL is proposing to:

> Obtain an Authority (that outside of the fast-track process would be required under the HNZPT Act) for any works that could impact pre-1900 subsurface remains; and

Undertake archaeological investigation and recording of any archaeological remains affected and uncovered during the proposed WNP works. Any information gained will aid in understanding of early mining and timber extraction activities in the area, with results to be shared and used by the people of Waihi and / or visitors to the area.

2.7 AREA 2

The key features of the WNP within project Area 2 will include:

> The Willows SFA;

> The Willows Portal and Willows Access Tunnel;

> Terrestrial and riparian restoration and enhancement planting;

> The salvage and translocation of freshwater fish, kōura and mussels;

> The undertaking of works in areas with recognised heritage and / or archaeological values;

> Closure and remediation activities at the completion of the mining of the WUG.

2.7.1 Willows Surface Facilities Area

The Willows SFA will provide surface-based supporting mine infrastructure for tunnelling activities and the subsequent mining of the WUG. The proposed layout of the Willows SFA is shown in Figure 2-29, with further technical drawings provided in **Part C.** The Willows SFA

will be approximately 18 ha in area and will be established prior to tunnelling operations occurring.

The Willows SFA (and supporting infrastructure) will include the following features:

- Office, crib room, change house and ancillary facilities;
- First aid room and security gatehouse;
- Small service workshop;
- Heavy vehicle wash facility and light vehicle wash pad;
- Stores building;
- Lay down area for storage of tunnelling consumables;
- Rock[16] and topsoil stockpiles;
- Sumps / ponds for both general surface water collection / settling and contact / mine water collection;
- Poly tanks for water storage;
- Stormwater diversion drains and channels;
- Internal site access roads;
- Storage of water and air supply equipment to service tunnelling, exploration and mining;
- A helipad ("**the Willows Helipad**");
- Carparking for 50 cars at the Willows SFA, and 10 cars adjacent to the helipad;
- Bunds;
- An above ground magazine compound;
- The storage of hazardous substances, including but not limited to ammonium nitrate emulsion, diesel, oils, greases, coolants and limestone;
- A package sewage treatment plant and soakage lines;
- Security fencing, gatehouse, camera systems, signage and lighting;
- A substation, switch rooms and transformers; and
- Screen planting.

[16] Non-acid forming ("**NAF**") and potentially acid forming ("**PAF**") rock.

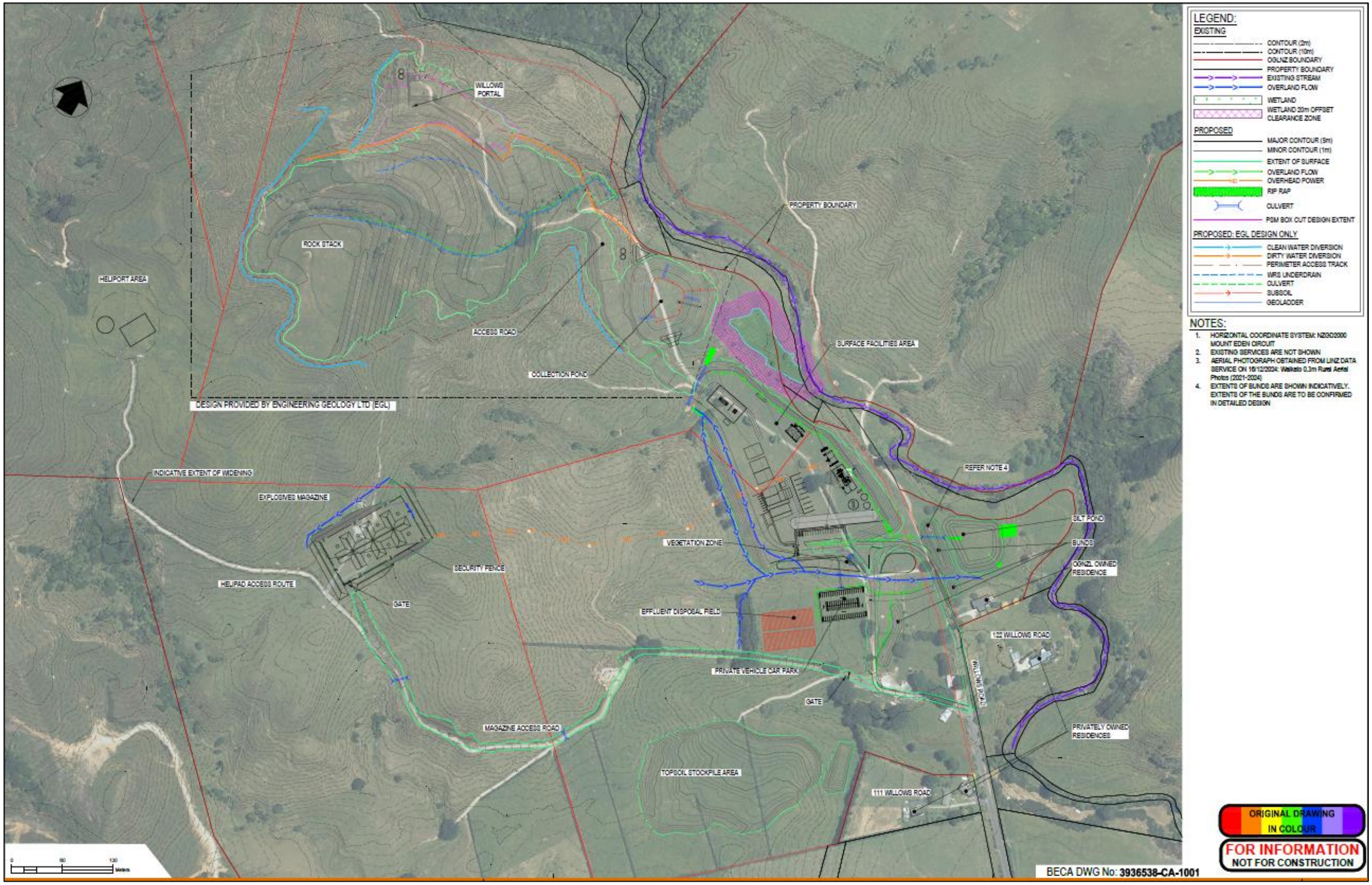


Figure 2-29: Overview of the Willows Surface Facilities Area

2.7.1.1 Preparatory Works

Preparatory works at the Willows SFA will include the stripping of topsoil from proposed works areas and its stockpiling for use in bunding and site rehabilitation. Figure 2-29 illustrates the approximate location of the topsoil stockpile. This will cover an area of approximately 2 - 3 ha and will be hydroseeded to prevent erosion and enable dry stock grazing during mining operations. Erosion and sediment control measures will be employed in accordance with Section 2.7.1.4.

2.7.1.2 Site Access

Two vehicle crossings will be constructed from Willows Road to the Willows SFA:

- A crossing providing access to the main office / change house facilities and workshop at the Willows SFA; and
- A crossing to service the surface high explosives magazine and the Willows Helipad.

A haul road constructed of rock base with crushed rock surfacing will connect the Willows Portal, rock storage pads, workshop and vehicle wash facility. This road will be constructed in conjunction with the Willows Access Tunnel with the use of suitable construction material and will incorporate spoon drains to collect WRS contact water from upper locations as well as diverting non-contact water around the WRS.

The total length of on-site roads will be approximately 3.1 km.

2.7.1.3 Bunds

Three bunds will be established at the Willows SFA. The location of the proposed bunds is shown in Figure 2-29. The bunds will be approximately 3 m in height and will mitigate some of the noise effects generated from the service workshop and other activities within the SFA. They will also provide visual screening from neighbouring properties.

The bunds will be established early in the construction phase and will be in place before the tunnelling phase of the development works commences.

2.7.1.4 Erosion and Sediment Control

Southern Skies (2025) describes the erosion and sediment control measures that will be implemented for the proposed Area 2 works. A copy of Southern Skies (2025) is provided in **Part B** of these application documents.

The principles of the WRC Technical Report No. 2009/02 *Erosion and Sediment Control Guidelines for Soil Disturbing Activities*, January 2009 ("**TR2009/02**") have been adopted by Southern Skies (2025) for the design, construction, maintenance and decommissioning of

erosion and sediment control measures. However, as a result of the scale and nature of the works proposed, Southern Skies (2025) has identified that deviations from that standard will be required. These are set out within the report.

By way of summary, the erosion and sediment control measures for Area 2 will include:

> Installation of silt fences on steep slopes where possible;

> Construction of temporary clean and dirty water diversion drains;

> Construction of earth detention bunds;

> Construction of sediment retention ponds; and

> The potential use of flocculants (as required).

2.7.1.5 Electricity and Communications

Electricity, fibre optic cable and other services will be supplied to the Willows SFA and WUG via a cable installed in the proposed Services Trench (Area 4), Willows Access Tunnel, and WUG Dual Tunnel.

Two transformers will be installed within the Willows SFA for supply of electricity to both surface and underground operations. A single overhead electricity and communications line will be installed to supply electricity at the high explosives magazine site for security and lighting purposes. No other services will be required for the high explosives magazine site.

A small freestanding generator will be located on site to power communication and control infrastructure in the event of electricity outages.

2.7.1.6 Office, Crib Room and Change House

An office, crib room, and change house comprised of modular, demountable single-storey buildings, with a total ground floor area of approximately 1000 m^2, will be established in the Willows SFA and serviced with electricity and water connections and a sewerage system.

2.7.1.7 Onsite Vehicles and Vehicle Wash Facilities

Small vehicles / equipment will be used intermittently around the Willows SFA for a variety of purposes (e.g. environmental monitoring and surveying / maintenance), and will include small excavators, articulated dump trucks, tyre handlers, yard cranes, forklifts and explosive cartage.

A heavy vehicle wash bay will be established to provide high pressure washing of vehicles before entering an onsite workshop. The wash bay will include access platforms, a high-pressure spray unit and support davit, a drainage pad and collection sump, and a water

storage tank. A light vehicle wheel wash system will also be installed to provide onsite washing facilities for light vehicles before they access the public roading network.

Water from both the heavy and light vehicle wash bays will be collected and drained through an oily water separator (to remove oils), before being pumped to sediment retention ponds.

2.7.1.8 Workshop

Temporary workshops and facilities will be established during the construction phase of the Willows SFA and construction of the Willows Portal, the Willows Access Tunnel, and the WUG Dual Tunnel. Thereafter, and in alignment with the commencement of mining, a service workshop will be established at the Willows SFA for the life of the project. The workshop will include a sealed undercover area of approximately 400 m^2, and a gravel apron of approximately 200 m^2. The workshop floor will be concreted with drainage directed to a sump and oil separation facility. The workshop building will be approximately 10m in height.

2.7.1.9 Helipad

The Willows Helipad will be established to the south-west of the WRS, as illustrated on Figure 2-29. The helipad will be in addition to the two existing helipads utilised by OGNZL within the vicinity of the Processing Plant (Area 5) and the Golden Cross mine site (outside the boundaries of the WNP). The proposed additional helipad will provide for operational efficiency.

The helipad will be approximately 20 m in diameter. A vehicle parking area will be established adjacent to the helipad, being approximately 25 m x 35 m in area.

The existing farm track which leads to the proposed location of the helipad will be upgraded / widened to facilitate vehicle access to the site.

Up to 200 flights hours associated with the Willows Helipad and the helipads located within the vicinity of the Processing Plant and the Golden Cross mine site will occur per month, being a total of approximately 600 trips.

2.7.1.10 Refuelling

Refuelling activities at the Willows SFA will be undertaken via a dedicated fuel truck drawing from a surface self-bunded 40’ isotainer with a nominal capacity of up to 80,000 L. As tunnelling progresses, a self-bunded and appropriately certified fuel tank will be installed underground. This will likely comprise a relocatable 4,550 L capacity SatSat system located close to the operating area in a refuelling bay cuddy.

The underground tank will be serviced by the fuel truck on a regular basis.

2.7.1.11 Willows Rock Stack

The WRS, being a temporary rock stack of approximately 6 ha in area, will be located as depicted in Figures 2-29 and 2-30 and will result in the infilling of an unnamed tributary of the Mataura Stream.

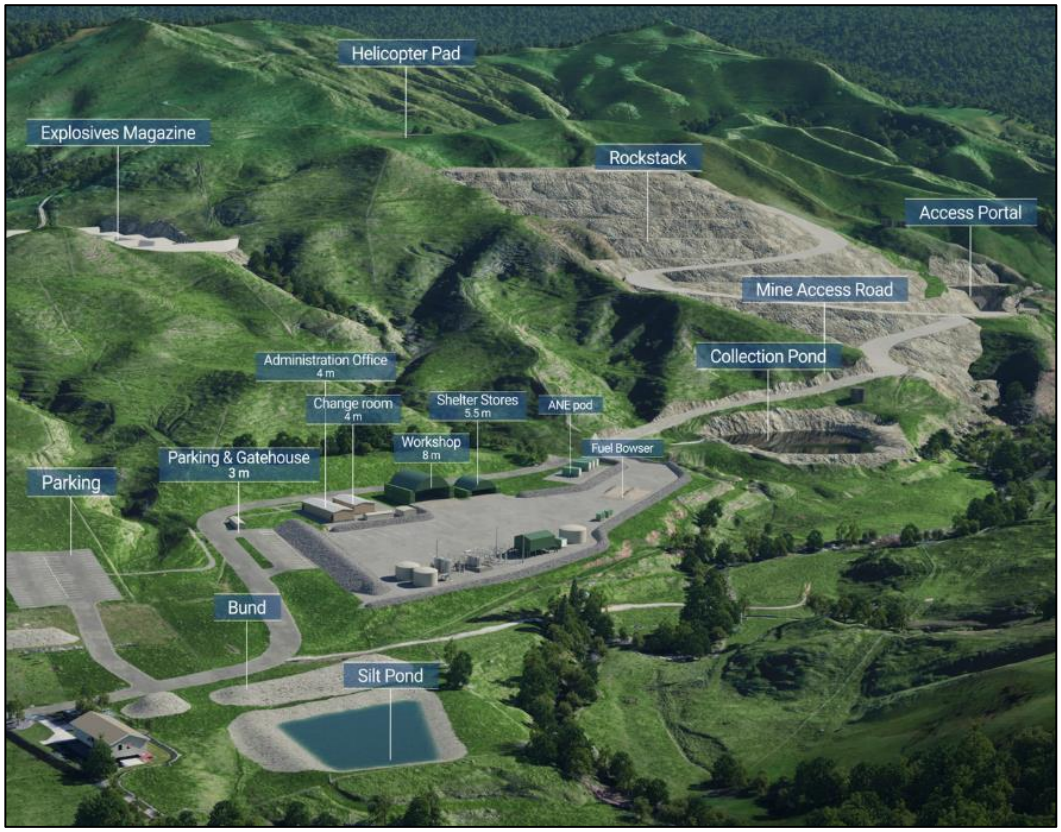


Figure 2-30: Visual Representation of the WRS and Willows Collection Pond (depicted at the right-hand end of the figure)

The WRS will be a temporary stockpile with a total storage capacity of 1,100,000 m^3, and a maximum height of 100 m above natural ground level. As well as the storage of rock, the WRS may be used to stockpile ore.

All rock from the WRS will be progressively returned underground to backfill mined voids approximately 13 years after the initial construction of the WRS. Once all material from the WRS has been utilised, further rock for backfilling will be obtained from the NRS (discussed further in Section 2.11.1 of this report).

The design of the WRS incorporates clean water diversion drains to separate the balance of the catchment water from the WRS contact water. Contact water will be directed to the Willows Collection Pond (refer Section 2.7.1.12). Limestone will be used to neutralise any

PAF materials. The clean water diversion drains will discharge directly to the lower reach of Tributary 2.

Captured flows from the WRS underdrains will be collected in a toe seepage pond located directly below the WRS approximately 200 m upstream from the confluence with Mataura Stream ("**WRS Toe Seepage Pond**"). The WRS Toe Seepage Pond will have a maximum stored volume of 500 m^3 and will accept a mix of groundwater flow and surface infiltration from the WRS.

2.7.1.12 Collection Pond

The Willows Collection Pond will be established to capture groundwater and contact water from the WRS and the onsite haul road. The pond will be approximately 19,900 m^3 in size, will include a pumping station, and will be designed to accommodate a 10 year, 24 hour storm event. The Willows Collection Pond will be run near empty in steady state conditions subject to making appropriate provision for firefighting. Overflows during large storm events will be discharged directly to the Mataura Stream.

The Willows Collection Pond and any associated perimeter drains with a potential to contain any PAF runoff will be designed to incorporate an appropriate liner. Contact water collected in the collection pond will be pumped back to the WTP (Area 5) for treatment. A forebay and causeway into the pond will aid in maintenance in accordance with OGNZL's existing operations. The Willows Collection Pond will be regularly serviced to remove sediment.

2.7.1.13 Stream Diversions and Crossings

The lower reaches of the haul road to the Willows Portal will traverse an unnamed tributary of the Mataura Stream. The tributary will be piped and culverted under the haul road before being discharged into an existing wetland. The new culvert crossing will be constructed to support onsite traffic and to provide for fish and eel passage into the Mataura Stream tributaries.

2.7.1.14 Water Management Infrastructure

A package sewage treatment plant will be installed within the Willows SFA, with discharge water directed to an effluent disposal field that will be located remotely from the Mataura Stream and tributaries (refer Figure 2-29).

A stormwater retention pond will be established at the Willows SFA to capture stormwater runoff from this area.

Three poly tanks are proposed at the Willows SFA for water storage. Two tanks will be located above the Willows Portal, and one will be located above the Willows Collection Pond. These tanks will each have a holding capacity of approximately 20,000 L.

2.7.1.15 Explosives Magazines

A series of secure Class 1 explosives magazines conforming to the Health and Safety at Work (Hazardous Substances) Regulations 2017 will be constructed within the Willows SFA. The proposed location and holding capacity of the magazines have been selected to ensure that the required offsets will be achieved from private land, publicly accessible land, and structures.

A Class 5 emulsion magazine will also be established at the Willows SFA. This will be fenced and have appropriate separation distances from combustibles.

2.7.1.16 Carparking

60 carparking spaces are proposed at the Willows site for the WNP.

50 of these carparks will be located at the Willows SFA, and 10 adjacent to the Willows helipad.

2.7.2 Willows Portal and Willows Access Tunnel

The Willows Portal will provide access to the Willows Access Tunnel, being the main access for tunnelling and mining activities at WUG.

The proposed location of the Willows Portal and the proposed arrangement of the Willows Access Tunnel is identified as a yellow square and a yellow dashed line, respectively, on Figure 2-30 below, and shown on Figure 2-16 in the context of the wider tunnel arrangements for the WNP. It is noted however that precise siting of the portal and tunnel depend on the outcomes of geotechnical investigations.

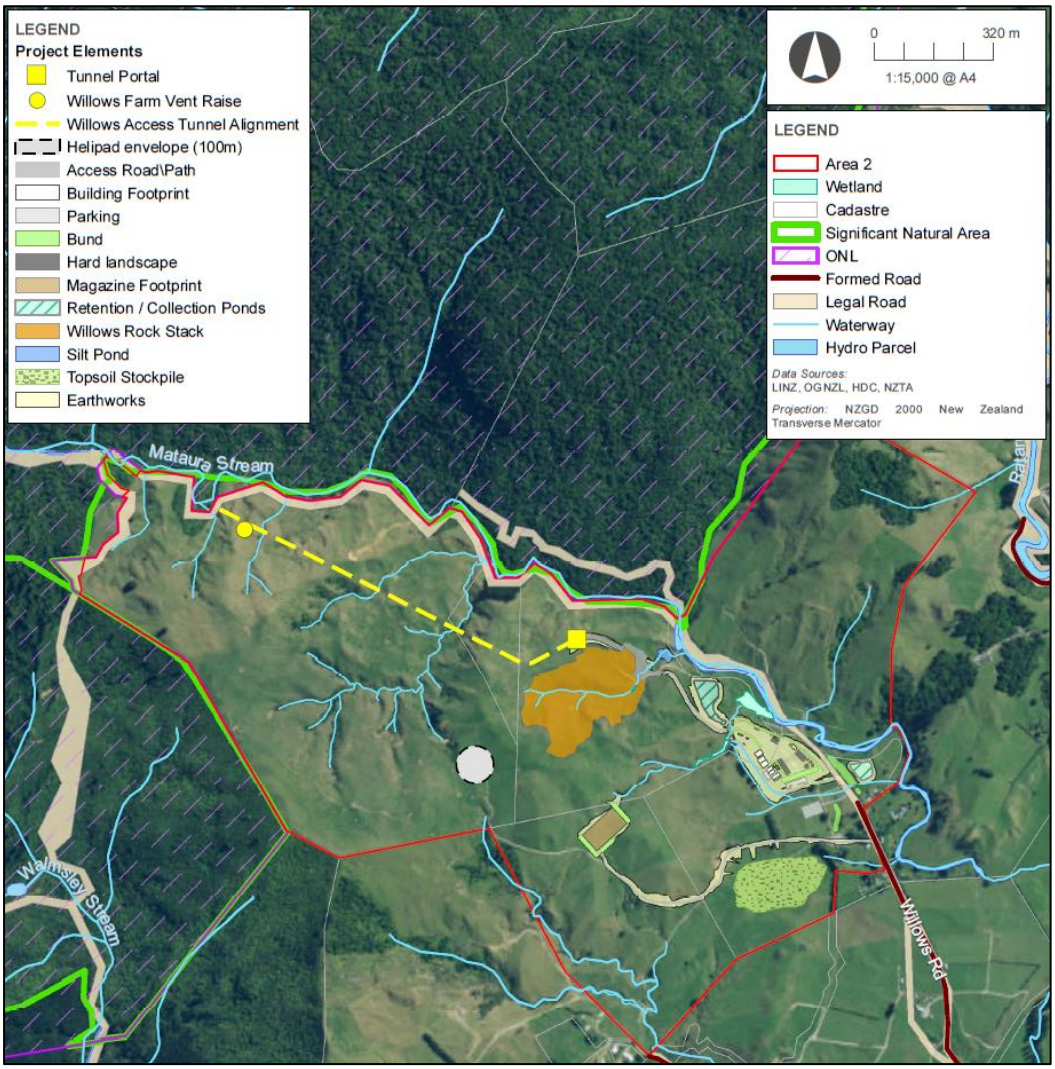


Figure 2-31: Willows Access Tunnel Arrangement

2.7.2.1 Willows Portal

The Willows Portal will form one of two entries to the WUG, with a second entrance (the WUG Portal) proposed to the north of the Processing Plant (Area 5) at the entrance to the Wharekirauponga Access Tunnel. An example of an access tunnel portal is shown in Figure 2-32.

Figure 2-32: Example Access Tunnel Portal

2.7.2.2 Willows Access Tunnel

The Willows Access Tunnel will be a single heading underground tunnel running between the Willows Portal and the southern boundary of the Coromandel Forest Park. The tunnel will be approximately 1,300 m in length and will connect the Willows Portal to the location of the proposed first ventilation shaft (within Area 2) (shown as a yellow circle on Figure 2-31), as discussed further below.

The Willows Access Tunnel will be used for general operational access between the WUG and the Willows SFA, and to transport rock from underground to the WRS and from the WRS to underground for backfilling purposes.

Tunnel Design

The Willows Access Tunnel will be constructed with approximate dimensions of 5.8 m (W) x 6.0 m (H) for areas requiring truck access, and 4.5 – 5.0 m (W) x 4.5 – 7.5 m (H) for any lateral development not required to facilitate truck access.

The tunnel will incorporate communications, electricity, water supply and drainage provisions. It will also include self-contained, independently serviced refuge chambers at regular intervals.

As described in (WSP (2025a)) provided in **Part B** of these application documents, the Willows Access Tunnel will be located and designed to prevent surface-level subsidence from occurring.

Tunnel Construction Methodology

The proposed method of tunnel construction is drilling and blasting using drilling jumbos for face drilling and ground support installation, as has been used for other OGNZL underground mines. Load haul dump units will be used to move material away from the drilling face, with underground trucks then used to transport rock to the WRS.

Development of the Willows Access Tunnel will take approximately 16 months, and will involve scaling and rock bolting, bogging (clean-up), face drilling, charging, firing and final bogging. These activities will be performed with standard underground mining equipment.

During initial stages of tunnel construction, a ventilation fan will be located outside the Willows Portal, mounted within an acoustically treated container or similar (until such time that Ventilation Shaft 1 is constructed, as detailed further below).

Any development ore intercepted during tunnelling will be stockpiled in the WRS for later transport to the Processing Plant.[17]

Forward Drilling Programme

A forward drilling programme which aligns with that set out in Section 2.6.2.1 for the Area 1 tunnels will be implemented for the Willows Access Tunnel.

Water Management

Water management for the Willows Access Tunnel will align with that proposed for the Area 1 tunnels, as set out in Section 2.6.2.1.

Ventilation Shaft Construction

Once the construction of the Willows Access Tunnel has reached the northern boundary of Area 2, Ventilation Shaft 1 will be constructed.

Ventilation Shaft 1 will be located within the Area 2 boundaries, just south of the Coromandel Forest Park, as illustrated on Figure 2-31.

[17] Following completion of the Wharekirauponga Access Tunnel (Area 3).

Construction of Ventilation Shaft 1 will be carried out from the surface using a Raise Boring Machine in the same manner to the ventilation shaft construction methods provided in Section 2.6.1.3 of this report.

No vegetation clearance is proposed for the construction of Ventilation Shaft 1; however, some minor earthworks and vegetation disturbance will be required to create the platform for the Raise Boring Machine.

Access to Ventilation Shaft 1 will be via a farm track.

Upon completion of Ventilation Shaft 1, a ventilation evasé, up to 8 m in height, will be installed and fenced.[18] Ventilation fans will be installed in the shaft beneath ground level.

2.7.3 Restoration and Enhancement Planting

While the design and layout of the Willows SFA infrastructure has been developed to avoid native vegetation areas where possible, restoration and enhancement planting is proposed within and in close proximity to Area 2, as illustrated in Figure 2-33.

This planting will include riparian enhancement planting, wetland planting, and enhancement native terrestrial planting which will connect a forest fragment on the Willows site with the Coromandel Forest Park. Planting within and in close proximity to Area 2 will occur on public conservation land within the Coromandel Forest Park and within the marginal strip of the Mataura Stream, as shown in Figure 2-34. Planting will occur both within, and outside of the area covered by Mining Permit 60541.

Planting works will involve site preparation (e.g. spraying, hand pulling, using power tools to remove existing exotic cover species), followed by the planting of native species. Initially maintenance visits will occur annually and will involve hand weeding around planted vegetation, replacing dead plants, and weed spraying. Maintenance visits will reduce in frequency as plantings become established.

[18] The final height of the ventilation evasé will be confirmed at the time of detailed design.

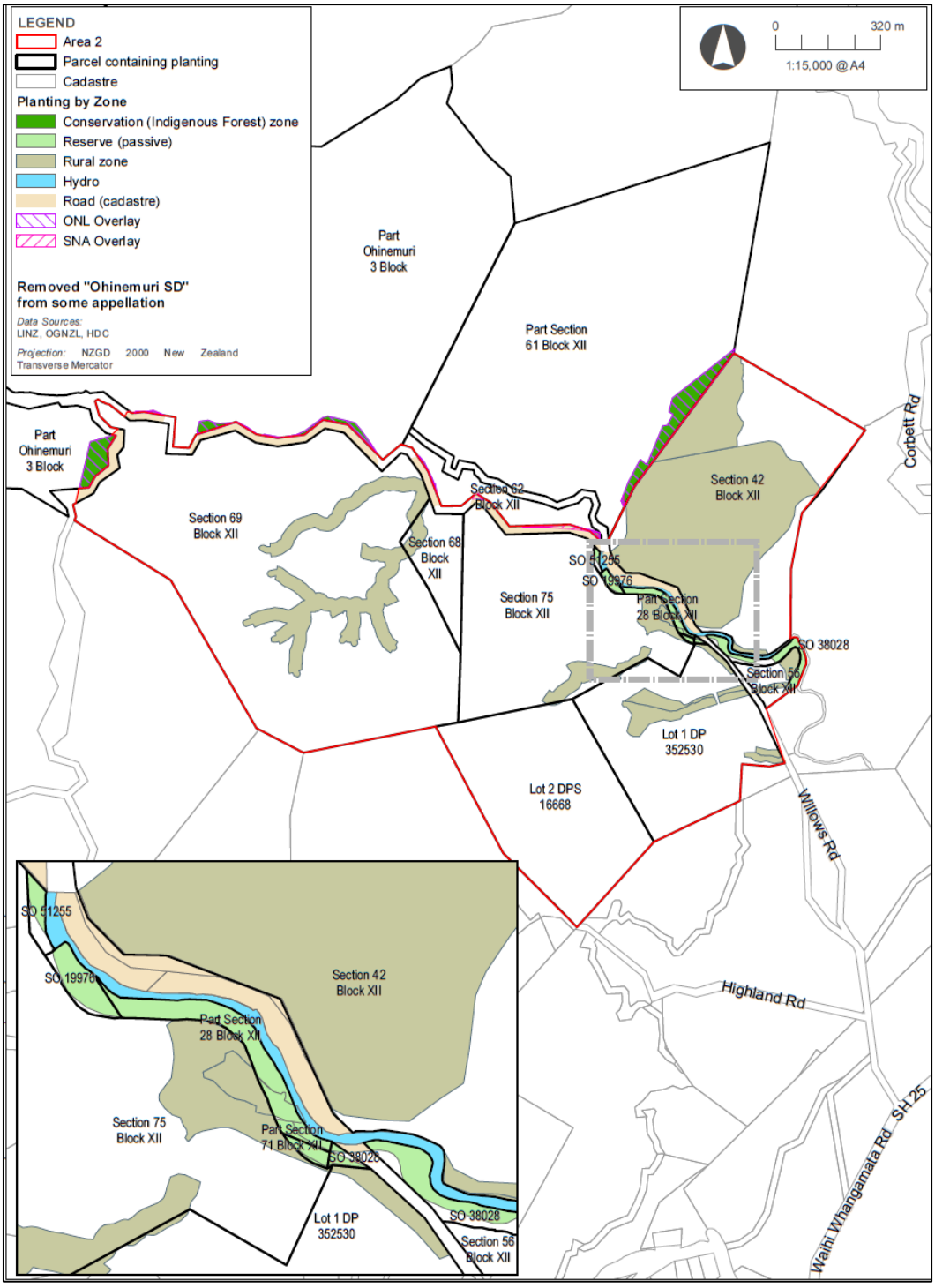


Figure 2-33: Proposed Planting Within and in Close Proximity to Area 2

Figure 2-34: Proposed Planting on Public Conservation Land Within and in Close Proximity to Area 2

Further details of the proposed restoration and enhancement planting are provided in Boffa Miskell (2025e), and in the ELMP-WUG provided within **Part H** to these application documents.

2.7.4 Lighting

Lighting will be established around the Willows site to provide for any activities occurring outside of daylight hours. This will include fixed pole and building mounted lighting and the use of mobile lighting. Mobile lighting will be operated in accordance with OGNZL's *Standard Operating Procedure for Towing and Setting up Lighting Plants* (provided in **Part D** to these application documents). This procedure includes a requirement to "*not shine towards a public road or buildings*".

All lighting will be designed, located and directed so that the level of artificial lighting measured at the boundary of any privately owned property (or property not subject to an agreement with OGNZL) is no greater than 8.0 Lux.[19]

2.7.5 Hours of Work

Activities may occur within Area 2 on a 24 hour / seven days per week basis subject to meeting specified noise limits. Those noise limits are likely to mean only low noise generating activities (being those activities which meet the night time noise standard) can be undertaken on Sundays and between 2200 and 0700 on Monday to Saturday.

2.7.6 Storage and Use of Hazardous Substances

Table 2-6 lists the hazardous substances that will be stored within Area 2 for use as part of the Willows SFA, and their location of storage. The storage of hazardous substances will be consistent with the current and approved practices for the Waihi SFA.

Table 2-6: Hazardous Substance Volumes and Classifications in Area 2

Substance	Hazard Classification Post 2021	Proposed maximum volume	Storage Location
ANFO (UN 0082)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) Eye irritation Category 2 Carcinogenicity Category 2	7,350 kg	Explosives magazine

[19] Note this is consistent with the lighting requirements at OGNZL's existing mining operations.

Substance	Hazard Classification Post 2021	Proposed maximum volume	Storage Location
	Hazardous to the aquatic environment chronic Category 4		(max 1,300 kg in any magazine)
Booster (UN 0042)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 3 (oral, dermal and inhalation route) Specific target organ toxicity – single exposure Category 2 Hazardous to the aquatic environment chronic Category 2		
Packaged explosive (UN 0241)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) Skin irritant Category 1 Eye irritation Category 2 Reproductive toxicant Category 3 Specific target organ toxicity – repeated exposure Category 1 Hazardous to the aquatic environment Category 1 Harmful to terrestrial vertebrates		
Detonators (UN 0030 / UN 0456 / UN 0360)	1.1B - Substances and articles that have a mass explosion hazard	10 kg (10,000 articles)	Explosives magazine (separate to others)
Diesel	Flammable liquids Category 4, Aspiration hazard Category 1, See Note 1 Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2	80,000 L	Services bay
		6,000 L[20]	Underground
		550 L	Generator tank
		150 L	Fire pump

[20] This quantity is inclusive of that stored underground in Area 1.

Substance	Hazard Classification Post 2021	Proposed maximum volume	Storage Location
Ammonium nitrate emulsion (ANE)	Oxidising liquids Category 2 Aspiration hazard Category 1, Eye irritation Category 2 Hazardous to the aquatic environment chronic Category 4	40,800 kg	Oxidiser storage area
Gasser	Acute oral toxicity Category 4 Eye irritation Category 2 Skin sensitisation Category 1 Germ cell mutagenicity Category 2 Specific target organ toxicity – repeated exposure Category 2	8,000 L	Oxidiser storage area
Limestones	Skin corrosion Category 1C Serious eye damage Category 1	70,000 kg	Limestones silo
Oxygen gas	Oxidising gas Category 1	60 m^3	Up to ten cylinders in a segregated storage area in the workshop in the SFA
Acetylene gas	Flammable gas Category 1A, chemically unstable gas Category A	20 m^3	Up to four cylinders in a segregated storage area at the workshop in the SFA
Oils, greases	Not classified as hazardous	14,000 L	Workshop stores

2.7.7 Closure and Rehabilitation

All surface infrastructure will be removed from the Willows SFA (unless infrastructure can be utilised for other purposes) and footprint areas rehabilitated to a state suitable for dry stock farming following the completion of the mining of the WUG, with stockpiled topsoil used in rehabilitation.

All stored rock will be returned underground, and the area of the WRS will be rehabilitated with topsoil and planting to return the area as close as practicable to its original landform.

The Willows Portal will be securely sealed, and the immediate entrance area backfilled with benign rock prior to placement of topsoil and the establishment of pasture.

Riparian areas will be re-established and fenced to prevent stock access. Stream diversions will remain in their revised location in perpetuity.

At the Ventilation Shaft 1 site, all fencing and ventilation / egress surface infrastructure will be removed via helicopter, and Ventilation Shaft 1 will be backfilled from the surface.

The Water Treatment Plant for the WNP will be used / remain in place until such time that an appropriate water discharge quality criterion from the WTP (Area 5) is met.

The returning of the Willows site to a condition suitable for dry stock grazing may include repurposing some of the proposed buildings within the Willows SFA for farming use.

2.7.8 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within Area 2 of the WNP (as well as within other project areas of the WNP).

OGNZL has already lodged an application under the HNZPT Act for the proposed WNP activities within Area 2 (No. 2025-359).

Further details of this Authority are provided in **Part E** to these application documents.

2.8 AREA 3

The key features of the WNP within project Area 3 will include:

- The Wharekirauponga Access Tunnel;
- Terrestrial and riparian restoration and enhancement planting; and
- Closure and remediation activities at the completion of the mining of the WUG.

2.8.1 Wharekirauponga Access Tunnel

Within Area 3 an underground connection will be provided between the WUG Dual Tunnel (Area 1) and OGNZL's existing Waihi SFA (Area 5). This connection will be provided in the form of the 5,000 m long Wharekirauponga Access Tunnel.

The Wharekirauponga Access Tunnel will be used to transport ore from the WUG (Area 1) to the Processing Plant (Area 5), and for general operational access between these two sites. The Wharekirauponga Access Tunnel will also be used to transport rock from the NRS (Area 6) to the WUG for backfilling once the supply of rock stored at the WRS (Area 2) has been utilised.

The Wharekirauponga Access Tunnel will be located within the Area 3 boundaries, as shown in Figure 2-29.

2.8.1.1 Tunnel Design

The Wharekirauponga Access Tunnel will be developed with approximate dimensions of 5.8 m (W) x 6.0 m (H) for areas requiring truck access, and 4.5 – 5.0 m (W) x 4.5 – 7.5 m (H) for any lateral development not required to facilitate truck access.

The tunnel will incorporate communications, electricity, water supply and drainage provisions. It will also include self-contained, independently serviced refuge chambers at regular intervals.

As described in the geotechnical reporting (WSP (2025a) provided in **Part B** of these application documents, the Wharekirauponga Access Tunnel will be located and designed to prevent surface-level subsidence from occurring.

2.8.1.2 Tunnel Construction Methodology

The construction of the Wharekirauponga Access Tunnel will take place over approximately 16 months and will be timed such that completion occurs prior to the WUG production. Construction of the tunnel will occur from both the Waihi SFA and the Willows SFA ends (in parallel), meeting at a point near the middle. This will minimise construction timeframes and enable the tunnel to be built and operated without the need for an additional ventilation evasé.

The proposed method of tunnel construction aligns with that for the Willows Access Tunnel, being drilling and blasting using drilling jumbos for face drilling and ground support installation. Load haul dump units will be used to move material away from the drilling face, with underground trucks then used to transport rock to surface stockpiles. The closest stockpiles are the WRS at the northern end, and the existing Polishing Pond stockpile located within the Waihi SFA at the southern end.

Development of the Wharekirauponga Access Tunnel will involve scaling and rock bolting, bogging (clean-up), face drilling, charging, firing and final bogging. These activities will be performed with standard underground mining equipment.

Any development ore intercepted during tunnelling will be stockpiled in the WRS for later transport to the Processing Plant.[21] Any development ore intercepted during construction of the southern extent of the tunnel will be transported directly to the existing Run of Mine stockpile.

2.8.1.3 Forward Drilling Programme

A forward drilling programme which aligns with that set out in Section 2.6.2.1 for the Area 1 tunnels will be implemented for the Wharekirauponga Access Tunnel.

2.8.1.4 Water Management

Water management for the Wharekirauponga Access Tunnel will align with that proposed for the Area 1 tunnels, as set out in Section 2.6.2.1.

2.8.2 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting at the northern end of Area 3, and in locations close to, but outside of Area 3, as illustrated in Figure 2-35. Planting within and in close proximity to Area 3 will occur on public conservation land within the marginal strip of the Ohinemuri River, as shown in Figure 2-36.

Planting methods and maintenance will occur in a manner similar to that detailed in Section 2.7.3.

[21] Following completion of the Wharekirauponga Access Tunnel.

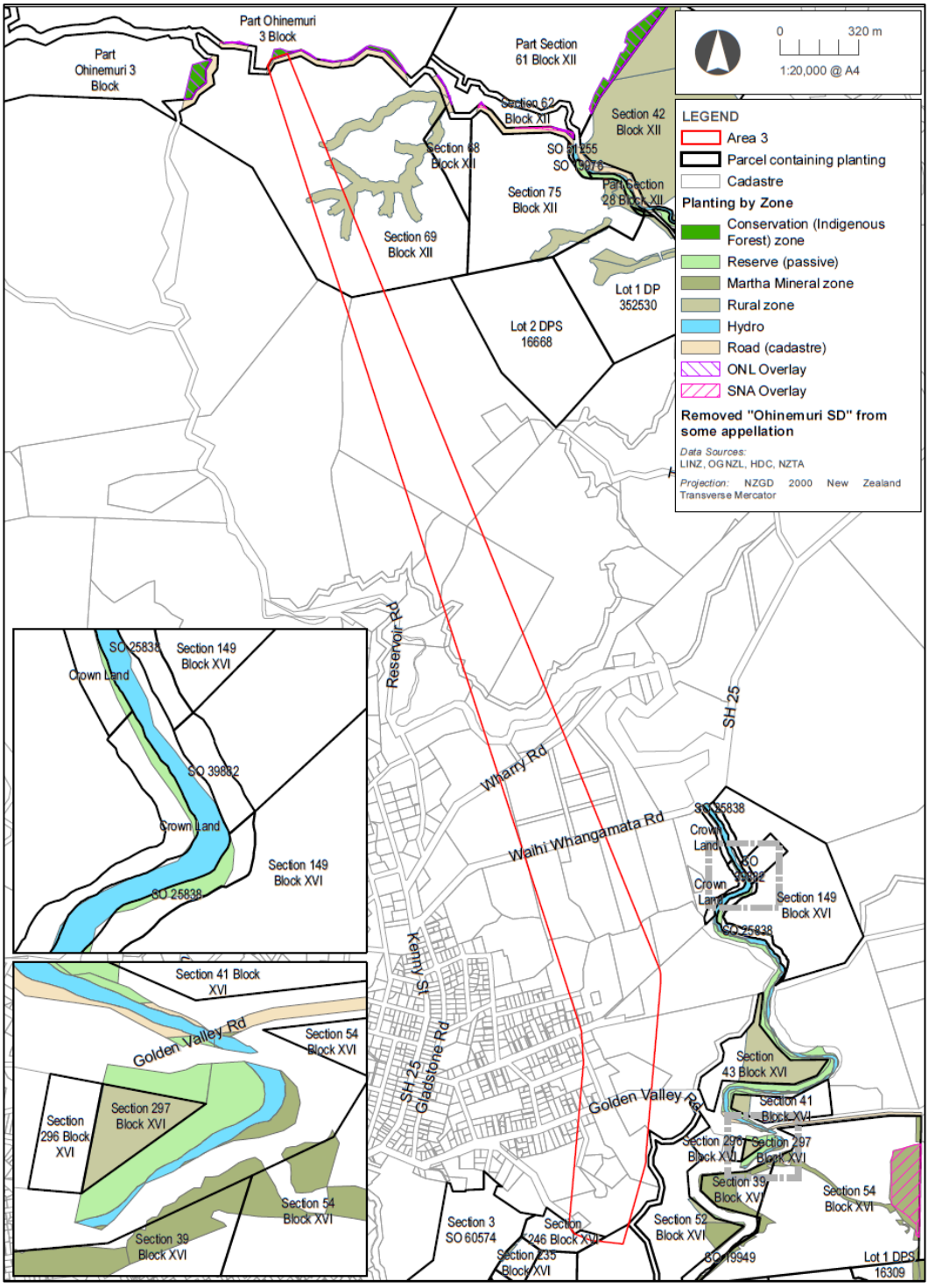


Figure 2-35: Proposed Planting Within and in Close Proximity to Area 3

Figure 2-36 Proposed Planting on Public Conservation Land in Close Proximity to Area 3

This planting will include riparian enhancement planting, native terrestrial enhancement planting, and wetland edge planting.

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), Boffa Miskell (2025a) and in the Waihi Area Ecology and Landscape Management Plan ("**ELMP-WA**") provided within **Part H** to these application documents.

2.8.3 Hours of Work

The tunnelling activities within Area 3 may occur on a 24 hour / seven days per week basis subject to meeting specified vibration limits, being:

> Level of vibration for all blast events must be monitored at non-company owned residences, and the peak level of vibration at any location must comply at the 95th percentile with 5 mm/s between the hours of 7 am – 8pm, Monday to Saturday, excluding public holidays;

> The 95th percentile with 1 mm/s will apply for all blast events at all other times; and

> The percentile calculation is based upon all recorded vibration data that exceeds the pre-set threshold level set in the Vibration Management Plan provided in **Part H** to these application documents.

2.8.4 Closure and Rehabilitation

All stored rock excavated during the Wharekirauponga Access Tunnel construction will be returned underground following the completion of the mining of the WUG.

2.8.5 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within close proximity to Area 3 of the WNP (as well as within other project areas of the WNP).

As set out in Section 2.6.4 of this report OGNZL proposes to obtain an Authority for any works that could impact pre-1900 subsurface remains, and to undertake archaeological investigation and recording of any remains affected and uncovered during the proposed works.

2.9 AREA 4

The key features of the WNP within project Area 4 will include:

> The Services Trench; and

> Terrestrial and riparian restoration and enhancement planting.

2.9.1 Services Trench

To facilitate the provision of support services to the Willows SFA (Area 2), OGNZL will construct, operate, and maintain an underground purpose-built Services Trench between the proposed Willows SFA and the existing Waihi SFA (Area 5). The Services Trench will carry electricity, fibre, potable water, treated water and mine water (including rock stack contact water).

As set out in Section 1.2, whilst the Services Trench forms a key part of the WNP, applications for the associated activities have already been applied for from WRC (APP147193) and HDC (LUSE-202.2024.00001981.001) and are currently being processed. An application for an easement required for the Services Trench has also been submitted to the Department of Conservation (refer to Section 3.2.4). As such, no approvals are being sought for the Service Trench as part of this application.

The alignment of the Services Trench will follow the Willows Road and State Highway 25 ("**SH25**") road reserve corridors until west of the Ohinemuri Bridge. The alignment will then trend south towards the existing Waihi SFA. The indicative alignment / concept design of the Services Trench is shown in Figure 2-37, below.

OGNZL proposes to construct the Services Trench in advance of the WNP activities that comprise this application. The construction period for the Services Trench will be approximately 165 days / 24 weeks and will occur immediately following the granting of all necessary approvals and completion of detailed design.

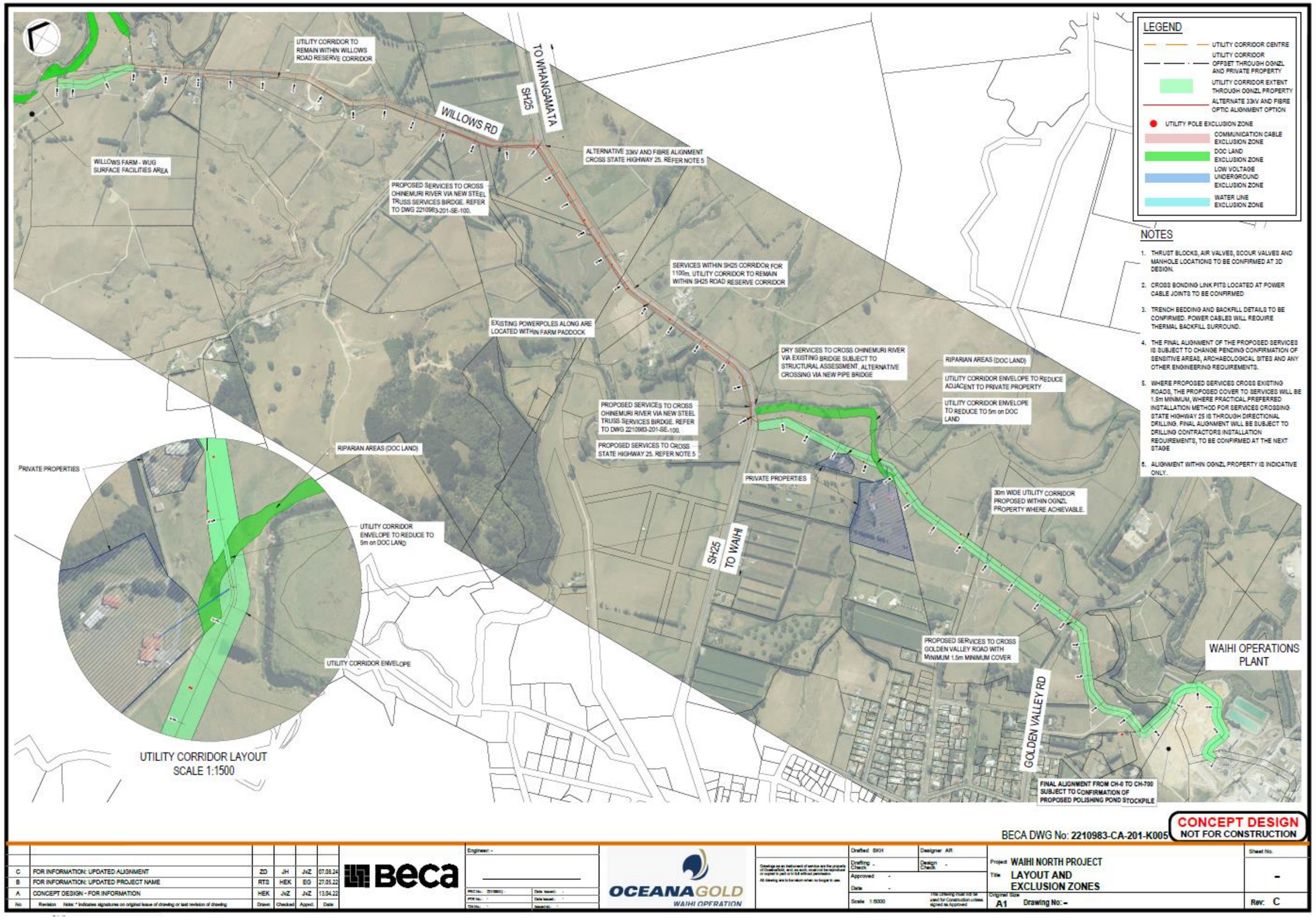


Figure 2-37: Indicative Services Trench Alignment

2.9.2 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting in small areas at the northern end of Area 4, and in locations close to, but outside of Area 4, as illustrated in Figure 2-38.

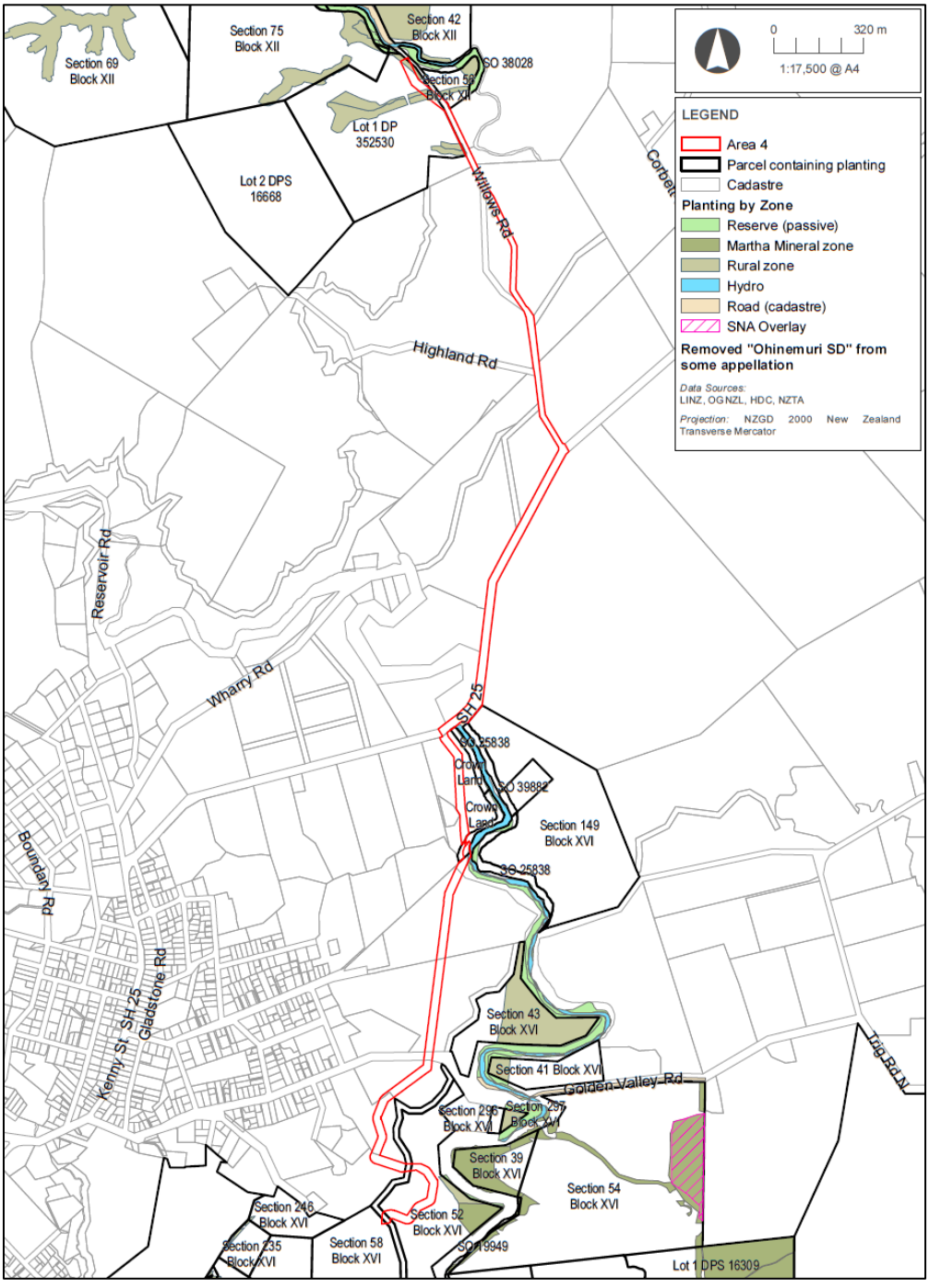


Figure 2-38: Proposed Planting Within and in Close Proximity to Area 4

This planting will include riparian enhancement, native terrestrial enhancement planting, shelter belt planting, and the establishment of pasture grass. Planting methods and maintenance will occur in a manner similar to that detailed in Section 2.7.3.

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), and in the ELMP-WA provided within **Part H** to these application documents.

2.10 AREA 5

The key features of the WNP within project Area 5 will include:

- The GOP and subsequent TSF (GOP TSF);
- The WUG Portal, Gladstone Portal, and potential MUG Portal;
- Upgrades to the existing Processing Plant;
- Upgrades to the existing WTP;
- Terrestrial and riparian restoration and enhancement planting;
- The undertaking of works in areas with recognised heritage and / or archaeological values; and
- Closure and remediation activities at the completion of the mining of the WUG.

2.10.1 Gladstone Open Pit

OGNZL proposes to establish, operate and maintain the GOP for gold and silver production. The GOP and associated infrastructure will be situated predominantly over Gladstone Hill and part of Winner Hill, immediately east of the existing Processing Plant, as illustrated in Figure 2-39.

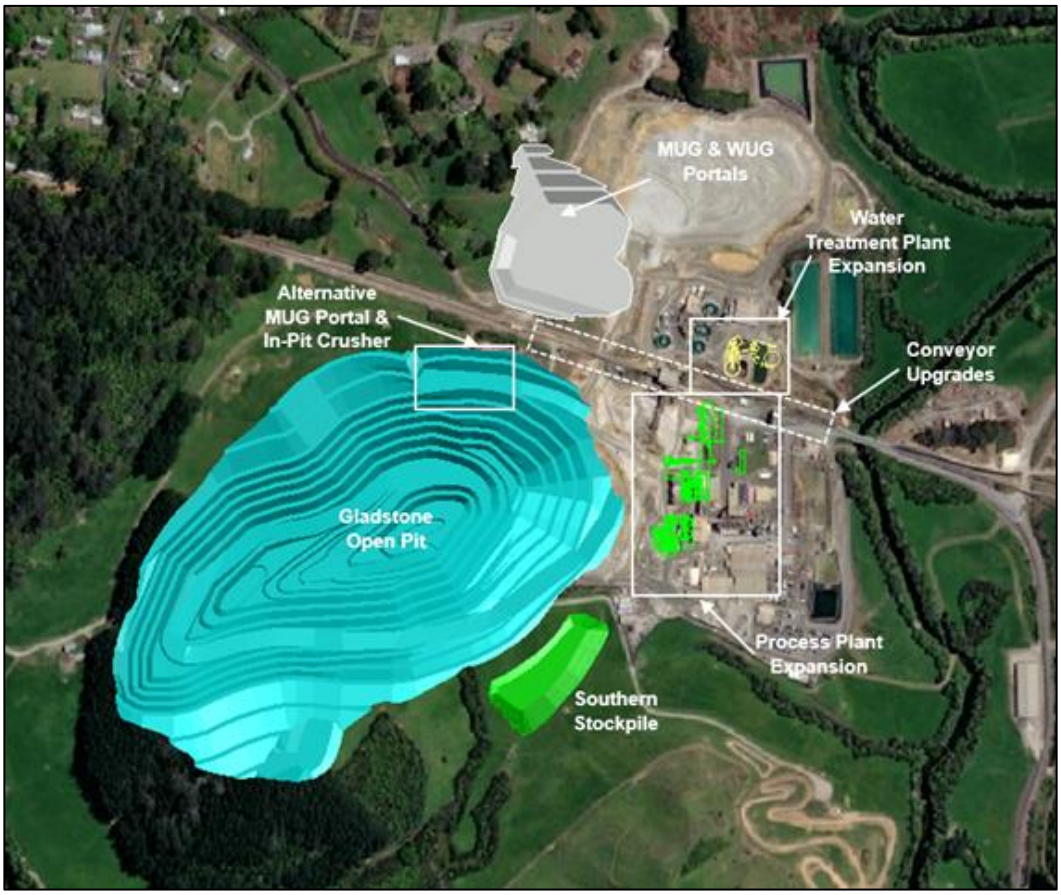


Figure 2-39: Overview Plan of the Gladstone Open Pit

The key works associated with mining the GOP will include:

> Exploration, geotechnical and dewatering drilling;

> Vegetation and topsoil clearance, earthworks and stockpiling, and the implementation of erosion and sediment control measures;

> Construction of bunds or barriers around the pit rim, where required;

> The establishment of a topsoil stockpile ("**Southern Stockpile**");

> The construction of a new crusher and interconnecting conveyor onto the existing conveyor to transport rock from the GOP to the NRS area;

> The disestablishment of the existing Favona Portal and related infrastructure which provides access to the MUG via the Trio Upper Drive, and establishment of a new portal to the Trio Upper Drive within the GOP (referred to as the "**Gladstone Portal**") or adjacent to the WUG Portal (referred to as the "**MUG Portal**");

> Open pit mining of the GOP (including drilling and blasting);

- The transportation of rock to the Polishing Pond Stockpile for temporary storage, or to the NRS or the new TSF3 for disposal;
- The establishment of dewatering drains within the GOP;
- The partial backfilling and lining of the GOP in preparation for tailings disposal;
- Filling of the GOP with tailings; and
- Rehabilitation of the GOP TSF, including its capping with NAF rock.

2.10.1.1 Preparatory / Ancillary Works

Clearance of the Forestry Block

A block of pine trees is located at the western end of the footprint of the GOP. Approximately 5.1 ha of this block, being trees located within the footprint of the pit and the access track, will be cleared to enable mining at the western end of the pit. However, where practicable trees will be retained to provide a visual buffer between the GOP and surrounding areas and properties (particularly along the southwestern side of the GOP).

The trees will be cleared using conventional logging methods administered by an OGNZL appointed tree harvesting contractor. The logging teams / trucks will access the site via Baxter Road.

Standard sediment control measures will be utilised to minimise sediment runoff from the harvesting area. Such measures will be generally in accordance with the erosion and sediment control measures set out in Section 2.10.1.2.

Topsoil Stripping and Stockpiling

Approximately 18.7 ha of topsoil will be progressively stripped from the footprint of the GOP. A temporary stockpile area, the Southern Stockpile, will be established to the south-east of the pit for storing topsoil stripped from the GOP (see Figure 2-39 above), being approximately 0.9 ha in area and approximately 12 m high. The approximate volume of the Southern Stockpile will be 52,500 m^3.

NAF and PAF rock mined from the GOP will be transported to the NRS for storage or to TSF3 for use as construction material.

Standard sediment control measures, including diversion drains and settlement ponds, will be utilised to minimise sediment runoff from the Southern Stockpile or other workings. Such measures will be in accordance with the WRC's TR2009/02. In addition, the Southern Stockpile will be grassed or hydroseeded in stages as it is raised to minimise sediment runoff.

Of note, the Southern Stockpile has been located to avoid interference with the adjacent unnamed stream and wetland.

New Crusher and Conveyor Upgrades

Transportation of rock from the GOP to the NRS will require a new crusher to be installed within the pit and an interconnecting conveyor that ties the new crusher with the existing conveyor.

The existing conveyor runs from the Martha Mine (located to the west of Area 5), through Area 5, over the Ohinemuri River, and through Area 6.

To allow it to be used to transfer rock between the GOP, the existing Polishing Pond Stockpile, and the NRS, various upgrades to the conveyor are proposed, including new dump stations and transfer chutes which facilitate material being transferred on and off the conveyor. Rock from the Polishing Pond Stockpile will be transported to its designated location (i.e. as backfill within the GOP or the WUG) by haul trucks. The conveyor will also be upgraded so that it can run in a reverse direction (i.e. from Area 6 back to Area 5). The operation of this part of the conveyor in a reverse direction is not authorised by the existing permitted activity rules in the HDP and in turn OGNZL seeks for it to be authorised by the WNP approvals.

Physical works on the conveyor to enable it to be used will be confined to locations within Areas 5 and 6.

As part of these works the existing limestones silo within Area 6 will also be relocated to a location within Area 5.

Technical drawings that illustrate the proposed changes and additions to the conveyor system are included in **Part C** of these application documents.

Overhead Powerline Relocation

As part of the preparatory works for the mining of GOP, the existing overhead powerline that runs through Gladstone Hill will be relocated along the western side of the pit as illustrated in Figure 2-40. The line is owned by PowerCo and the relocation works will be carried out by OGNZL under an agreement with PowerCo. No sensitive land uses will be affected.

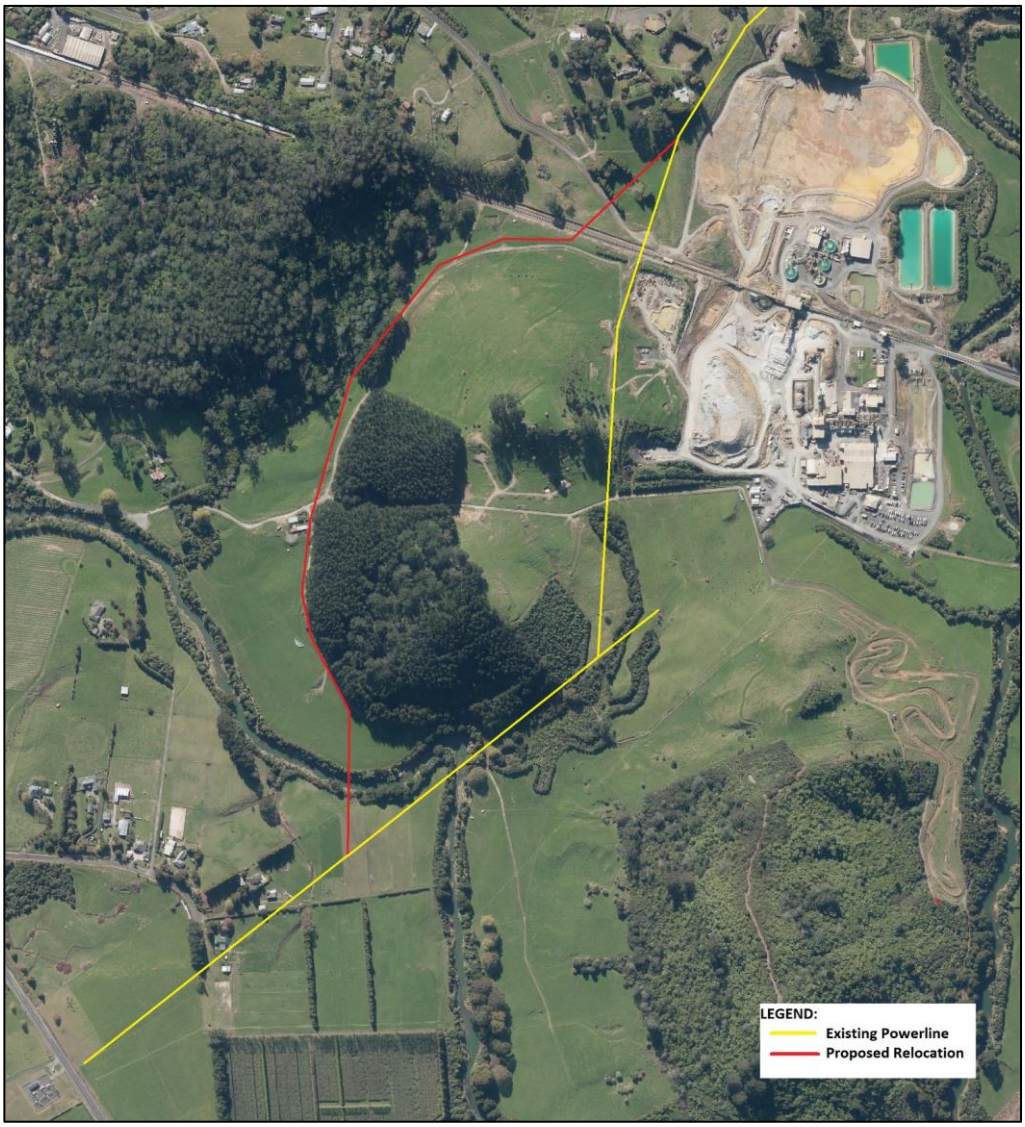


Figure 2-40: Proposed Overhead Powerline Relocation

2.10.1.2 Erosion and Sediment Control

Southern Skies (2025) describes the erosion and sediment control measures that will be implemented for the GOP works. A copy of Southern Skies (2025) is provided in **Part B** of these application documents.

By way of summary, the erosion and sediment control measures for Area 5 will include:

- Installation of silt fences on steep slopes where possible;
- Construction of temporary clean and dirty water diversion drains;
- Construction of sediment retention ponds; and
- Use of flocculants.

2.10.1.3 Mining of the Gladstone Open Pit

The proposed extent of the crest of the GOP is shown in detail in PSM (2025a), a copy of which is provided in **Part B** of these application documents. The proposed works will mine out parts of Gladstone Hill and Winner Hill over a period of approximately 6 years, at an average mining rate of 3.5 million tonnes per annum.

At its maximum, the GOP will comprise the following dimensions:

- Pit area – approximately 18.7 ha;
- Pit depth – approximately 95 m;
- Pit floor level – approximately 1005 m RL; and[22]
- Pit length and breadth – approximately 375 m by 625 m.

Ore will be hauled directly to the existing Run of Mine Stockpile or the Processing Plant Stockpile.

Selected NAF material will be stockpiled in the Southern Stockpile. Rock from the GOP will be crushed in the pit and conveyed to the existing Central Stockpile located adjacent to existing TSF2. Some of this material may be neutralised with limestones, as necessary. As mining of the pit advances, rock will also be disposed of at the NRS (Area 6).

Given the GOP will mine out the existing Favona Portal that provides access to the MUG, provision will be made for a new portal (the Gladstone Portal) and decline within the north wall of the GOP itself. Alternatively, a new portal to the MUG (the MUG Portal) may be established adjacent to the proposed WUG Portal (as described further in Section 2.10.2.2).

Blasting

Drilling and blasting in the GOP will be required for the removal of ore and rock. Blasting will occur daily between 7 am and 6 pm on Monday to Saturday (excluding public holidays).

Blasting will follow the existing blasting practices employed by OGNZL for the Martha Mine. This will involve:

- The drilling of blastholes in benches of approximately 5 m to a consistent depth;
- The loading of a known quantity of explosive into the base of the blasthole;
- Adding stemming material to the blasthole above the explosive column; and
- Initiating the blasting series with small intervals between successively detonating blastholes.

[22] Mine datum.

Prior to each blasting phase commencing, a risk assessment will be conducted by OGNZL with the objective of minimising the risks associated with flyrock. Any identified methods or procedures for minimising such risks will be implemented in advance of the blasting.

The peak particle velocity for blasts within the GOP will be 5 mm/s for the 95th percentile of monitored events, while the maximum overpressure from blasting will be limited to 120 dBL per blast at the nearest non-company owned residence.

Dewatering and Water Management

It is unlikely that the GOP will have been fully dewatered by the existing underground mine.[23] As such, some dewatering of GOP may be required to manage pit wall run off or to lower perched groundwater levels. It is intended to capture as much pit wall runoff as practicable to avoid having to pump it from underground.

Pumps will be located in the GOP, with all pumped water being transferred to the WTP for treatment before discharge.

The walls of the GOP will be depressurised using horizontal drain holes which will generally be 20 m to 100 m long. This dewatering will be monitored by the existing network of piezometers around the perimeter of the pit. Additional piezometers will be installed as required to fill data gaps as they become evident. If required, additional piezometers will be either standpipe or VWP design. They will be installed between 1 – 50 m deep, surrounding the GOP footprint.

Hours of Work

The GOP will operate 24 hours a day, seven days per week. Blasting will only occur during the dayshift, between 7 am and 6 pm, Monday to Saturday, excluding public holidays.

Mining Equipment

The GOP will require a range of mining equipment during its operating life (and the number and size of units will vary depending on the staging of mining activities in the pit). This will likely include:

- Excavators
- Trucks
- Production drills
- Explosives charge up units
- Service vehicles
- Water cart

[23] AUTH 139551.01.01.

- Loaders
- Dozers
- Graders
- Light vehicles
- Rock breakers
- Compactors

Small vehicles / equipment will also be used intermittently around the GOP for a variety of purposes (e.g. environmental monitoring and surveying), and will include small excavators, articulated dump trucks, tyre handlers, yard cranes, forklifts, and explosive cartage.

Lighting

Lighting will be established in the GOP and around the laydown areas to provide for mining activities outside of daylight hours. This will include the use of both permanent and mobile lighting plant. The lighting within the pit will be relocated as required and as mining activities progress. Mobile lighting plant will be operated in accordance with OGNZL's *Standard Operating Procedure for Towing and Setting up Lighting Plants*. This procedure includes a note to "*not shine towards a public road or buildings*".

All lighting will be designed, located and directed so that the level of artificial lighting measured at the boundary of any privately owned property (or property not subject to an agreement with OGNZL) is no greater than 8.0 Lux.[24]

2.10.1.4 Gladstone In-Pit Tailings Storage Facility

Construction

Following the completion of the mining of the GOP, it will be converted into a fully lined TSF. This will involve backfilling the pit with 5 Mt of suitable rock material and the reworking and capping of PAF pit walls if required. The rock for backfilling will be transported across the Ohinemuri River by reversing the existing conveyor.

Backfill will be placed in 1 m lifts utilising paddock dumping and compaction by bulldozer and mobile compactor. Limestones will be mixed with the rock in situ as required. Once the base layer is formed, a geomembrane liner will be installed in preparation for tailings disposal.

The pit will be capable of storing approximately 2.1 Mt of tailings with a final elevation after settlement / consolidation of tailings at 1,103 m RL.

[24] Note this is consistent with the lighting requirements at OGNZL's existing mining operations. Refer to Section 3.2 of the report for a description of the existing mining activities.

Figure 2-41 shows a typical section through the GOP TSF and Figure 2-42 shows an isometric view of the facility.

No tailings will be discharged to the GOP TSF until the production from the MUG has ceased.

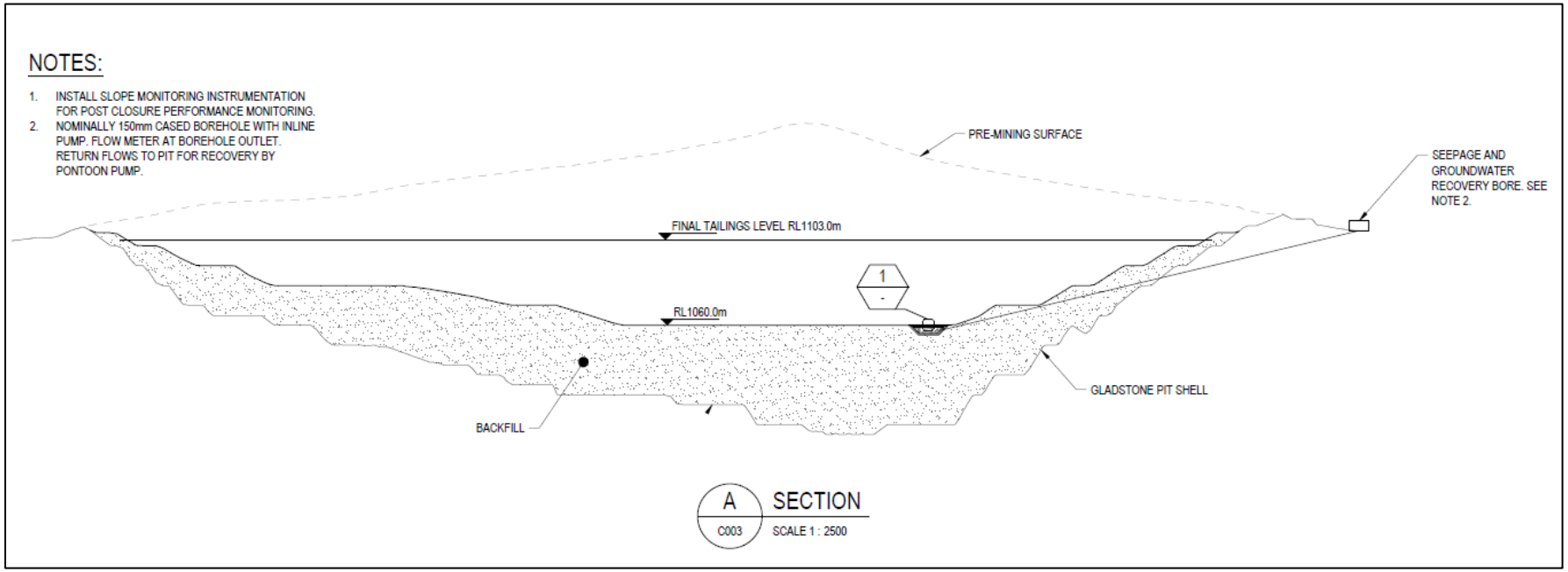


Figure 2-41: Typical Cross Section of the GOP TSF (GHD (2025a)

Figure 2-42: Isometric View of the GOP TSF Prior to Tailings Input

Operation

Tailings deposition in the GOP TSF will adopt the operating procedures that apply to the existing TSFs. With the full tailings stream directed to the GOP TSF, the rate of rise of the tailings is expected to be upwards of 30 m per year. To limit the rate of rise, improve consolidation and reduce post closure settlement, the deposition of tailings in the GOP TSF will be limited to less than 50% of the tailings stream.

Throughout the operational phase, excess decant water from the GOP TSF will be either recycled to the Processing Plant or pumped to the WTP.

Closure and Rehabilitation

After tailings deposition and settlement is complete, the surface decant water pond will be pumped to the WTP, and a low permeability NAF rock cover placed over the tailings surface. The final capped surface will be mounded to accommodate any ongoing settlement and to shed rainfall. The mound will also be grassed or similar to prevent sediment runoff. The final capped surface will be graded towards two outlets, one on the southern side of the GOP TSF (adjacent to the Gladstone Wetland), and one on the western side where the pit crest is lowest. This will enable surface water flow to assist with the functioning of the Gladstone Wetland located to the south, with any additional runoff directed to the Ohinemuri River via an appropriately formed drain.

A closure concept of the GOP TSF following completion of mining activity is shown in Figure 2-43.

Figure 2-43: GOP TSF Closure Concept

2.10.2 Mine Access Portals

A selection of mine access portals is proposed within Area 5 to facilitate access to the underground mining activities. These comprise:

- The WUG Portal – providing access to the Wharekirauponga Access Tunnel (Area 3);
- The Gladstone Portal – providing access to the MUG via the Trio Upper Drive; and
- The MUG Portal – an alternative option for providing access to the MUG.

An example of a mine portal is shown in Figure 2-32.

2.10.2.1 Wharekirauponga Underground Mine Portal

The WUG Portal will provide access to the Wharekirauponga Access Tunnel (Area 3) and will be a materials handling portal utilised for the transport of ore out of the WUG, and the return of stored rock for backfilling purposes.

The WUG Portal will be located within a proposed cutback between the Polishing Pond Stockpile and the end of Moore Street as shown on Figure 2-44. Its precise siting will depend on the outcomes of geotechnical investigations.

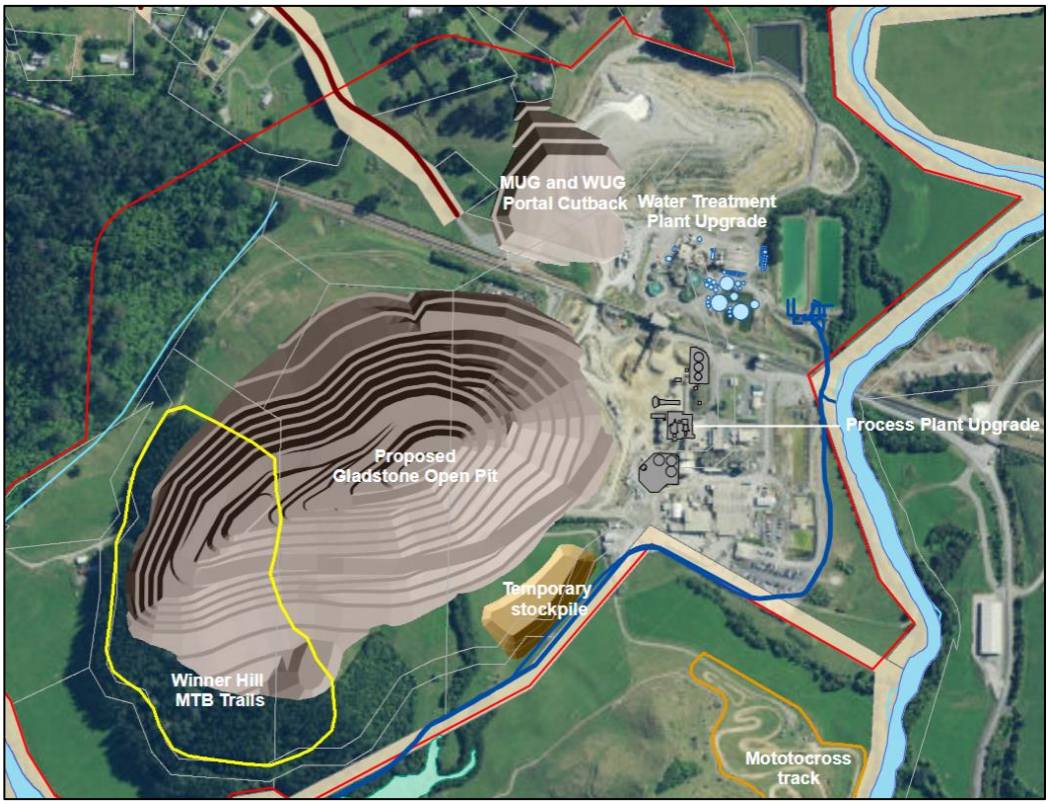


Figure 2-44: Location of Proposed WUG Portal

Cutback for the proposed portal will require an extension of the existing clean water diversion around the Polishing Pond Stockpile and WTP (Resource Consent 109743).

2.10.2.2 Gladstone Portal and Martha Underground Mine Portal

OGNZL proposes to disestablish the existing Favona Portal and related infrastructure which provides access to the MUG via the Trio Upper Drive, and to establish a new portal (the Gladstone Portal) to the Trio Upper Drive within the GOP.

If detailed design identifies that the Gladstone Portal cannot be established within the GOP, a new portal and decline (the MUG Portal) will be established adjacent to the proposed WUG Portal within the same cutback.

2.10.3 Processing Plant Upgrades

The Processing Plant will be upgraded to replace aging machinery and increase its capacity from 1.25 million tonnes per annum of ore to approximately 2.25 million tonnes per annum. This will involve the refurbishment and relocation of processing equipment from OGNZL's Reefton Mine as the preferred option, as well as the installation of some new pieces of infrastructure.

The Processing Plant will be reconfigured to accommodate the new infrastructure. However, all infrastructure will remain within the footprint of the existing Processing Plant (see Figure 2-45). The infrastructure that is proposed to be installed comprises proven technology, with a high level of understanding of operational effects.

The main components to the proposed upgrades and operation of the Processing Plant are:

> Replacing the current mobile and small jaw crusher used to crush ore before it is fed into the Semi-Autogenous Grinding ("**SAG**") Mill with the modular primary crusher plant from the Reefton Mine;

> Adding additional SAG Mill capacity by transferring the SAG Mill from the Reefton Mine onto site, and by reconfiguring the existing SAG Mill into a Ball Mill;

> Adding capacity to the leaching circuit by establishing a new thickener and leach tanks;

> Installation of a mercury retort oven in the gold and furnace rooms; and

> Establishing a new substation and 11 kV switch room.

The proposed layout of the Processing Plant is shown in Figure 2-45 below and detailed further in the following sections of this report.

Figure 2-45: Proposed Layout of the Processing Plant

Accommodating the new and replacement infrastructure will require reconfiguration of the Processing Plant. In this regard:

- The SAG feed crusher plant will be installed at the current location of the plant water tanks;
- The new SAG Mill will be installed at the current location of the pebble crusher. A new pebble crusher will be installed to the north of the new SAG Mill;
- A new Ball Mill will be installed adjacent to the new SAG Mill; and
- The existing SAG Mill will be converted to a Ball Mill.

Of note:

- The Processing Plant will continue to operate 24 hours per day, seven days per week;
- All new / replacement infrastructure installed onsite will be generally the same colour as the existing infrastructure at the Processing Plant;

- The types of hazardous substances used in the Processing Plant will not change as a result of the upgrade, however the quantities stored will increase in line with the increased processing capacity (refer to Section 2.10.5);
- No changes to the existing water management system at the Processing Plant are proposed. The existing system includes:
  - All tailings being pumped to the TSFs;
  - All decant water and seepage from the TSFs being collected and either recycled for use in the Processing Plant or treated in the WTP prior to discharge to the Ohinemuri River;
  - All water used in the elution circuit being pumped to the TSFs via the leach circuit; and
  - All runoff from the Processing Plant being diverted to the mill contingency pond and then treated in the WTP (and then discharged to the Ohinemuri River).

2.10.3.1 New / Replacement Plant Components

Replacement SAG Feed Crusher

The Processing Plant currently utilises a mobile crusher and a small jaw crusher to crush ore before feeding it to the SAG Mill. The current set up requires double handling and is not efficient or cost effective.

The modular primary crusher plant (refer Figure 2-46) at the Reefton Mine has ample capacity to meet demand and, as such, will be relocated to Waihi. The crusher plant will be installed inside a new fully enclosed building at the current location of the ore bin in order to minimise potential noise and dust emissions.

The crusher plant will be approximately 9 m in height.

Figure 2-46: Reefton Modular Primary Crusher Plant

Mill Upgrade

The existing SAG Mill is planned to be converted into a Ball Mill to supplement existing ball milling capacity. To meet future SAG milling demand, additional SAG milling capacity is required. OGNZL proposes to replace the existing mill with the newer SAG Mill from the Reefton Mine (Figure 2-47).

The SAG Mill will be installed in the location of the existing pebble crusher. The SAG Mill will be approximately 9 m above ground level.

Figure 2-47: Reefton SAG Mill

The new circuit will also require additional ball milling capacity which will be upgraded by installing a new approximately 4MW Ball Mill (refer to Figure 2-48).

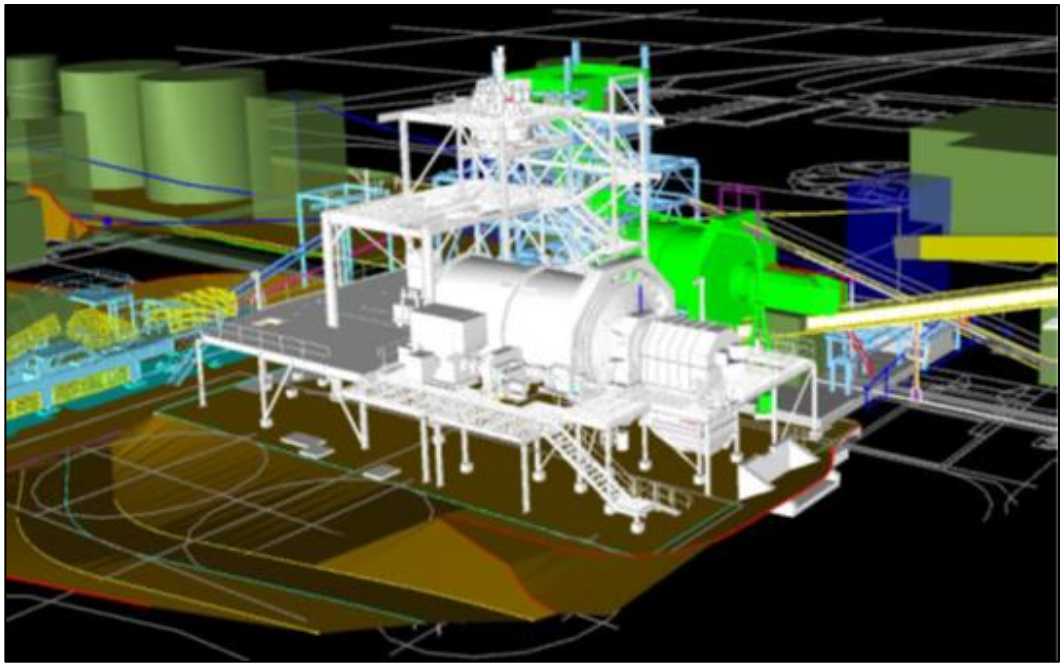


Figure 2-48: New Ball Mill Plant 3-D Model

Leaching Circuit

The existing 17 m diameter thickener will be replaced by a 26 m diameter thickener, located adjacent to the existing thickener. An additional three 1,500 m^3 leach tanks (approximately 14.3 m high x 12.2 m diameter) will also be installed close to the existing leach tanks (refer Figure 2-49).

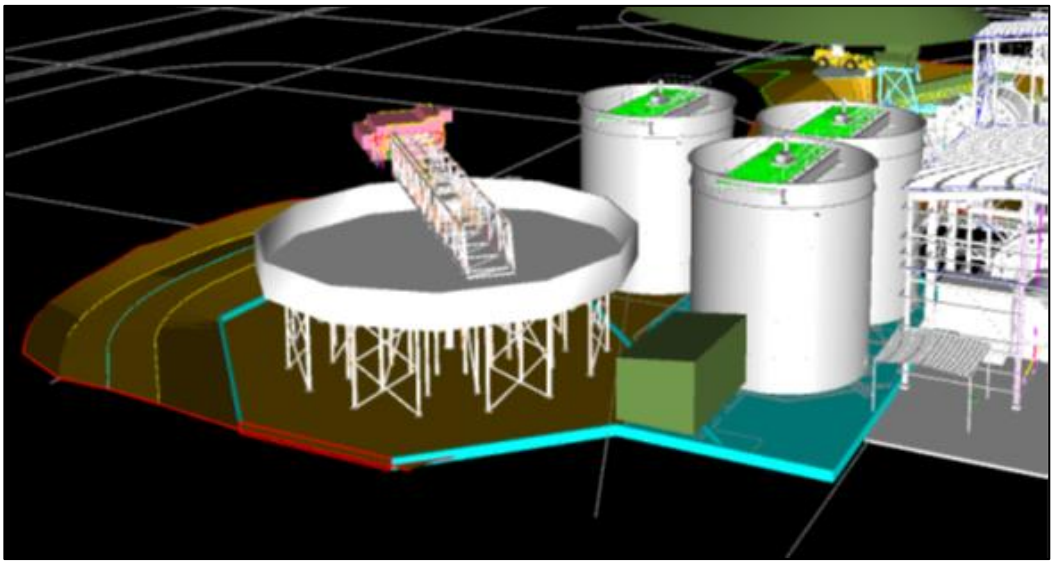


Figure 2-49: Leaching Circuit Upgrade 3-D Model

Mercury Retort Ovens

Based on geological and metallurgical analysis completed to date, ore from the GOP is expected to contain higher mercury concentrations than other ore being processed by the Processing Plant. During GOP ore processing, most of the mercury in the ore will stay in the tailings. However, some mercury is expected to report to the gold and furnace rooms in the Processing Plant, therefore a mercury retort oven and vapour analyser will be installed in the gold and furnace rooms to capture mercury in circuit. A typical mercury retort oven is shown in Figure 2-50.

Figure 2-50: Typical Mercury Retort Oven

Temporary Facilities

Several temporary project facilities, such as project offices, vehicle parking and equipment laydown yards, will be required during the construction of the upgrades to the Processing Plant. These facilities will be built within the current footprint of the Processing Plant and will be removed once the upgrade work is complete.

Lighting

Lighting will be installed along the existing conveyor, at the crusher and at the SAG Mill. It will be installed and located such that the level of lighting measured at the boundary of any site not owned by OGNZL (or property not subject to an agreement with OGNZL) is no greater than 8.0 Lux.[25]

[25] Note this is consistent with the lighting requirements at OGNZL's existing mining operations. Refer to Section 3.2 of the report for a description of the existing mining activities.

Electrical Infrastructure

A new mine substation will be installed at the Processing Plant at the location illustrated in Figure 2-51. The substation will include two x 33kV/11kV transformers and associated switchgear.

Electricity to the existing plant switch room will be supplied from a new switch room installed near the new mine substation.

The proposed mine substation will displace the existing LPG tanks which will be moved to the east of the Processing Plant across the Ohinemuri River (Area 6).

Figure 2-51: Proposed New Mine Substation

2.10.3.2 Elution Water Take

The source of elution water will continue to be the Ohinemuri River in accordance with the existing WRC resource consent (WRC Consent 114554).

2.10.4 Water Treatment Plant Upgrades

The WNP will utilise the existing WTP to treat water from mining operations. The WNP will not result in any different types of water requiring treatment and water being pumped to the WTP for treatment will continue to come from across the Waihi Epithermal District.

The existing WTP discharge permit (AUTH971318.01.13) provides adequate capacity for the WNP, however, the project life will extend beyond the 13 October 2034 expiry date. It is therefore proposed to renew the WTP discharge permit to cover the full duration of the WNP including an appropriate closure period.

The existing conditions of the WTP discharge permit remain suitable for the WNP, however discharges from the WTP will occur from four outlets rather than the existing two. However, with multiple mine sites operational as part of the wider WNP, the required volume for water treatment is expected to increase by at least 50% and as a result, three new parallel streams are required to treat the additional mine water. Similarly, the required volume of cyanide treatment is expected to increase by at least 50%, resulting in one additional parallel stream to treat the cyanide water. The proposed WTP flow sheet arising from these additions is shown in Figure 2-52.

Further details of the treatment process for water directed to the WTP are provided in GHD (2025c), a copy of which is provided in **Part B** of these application documents.

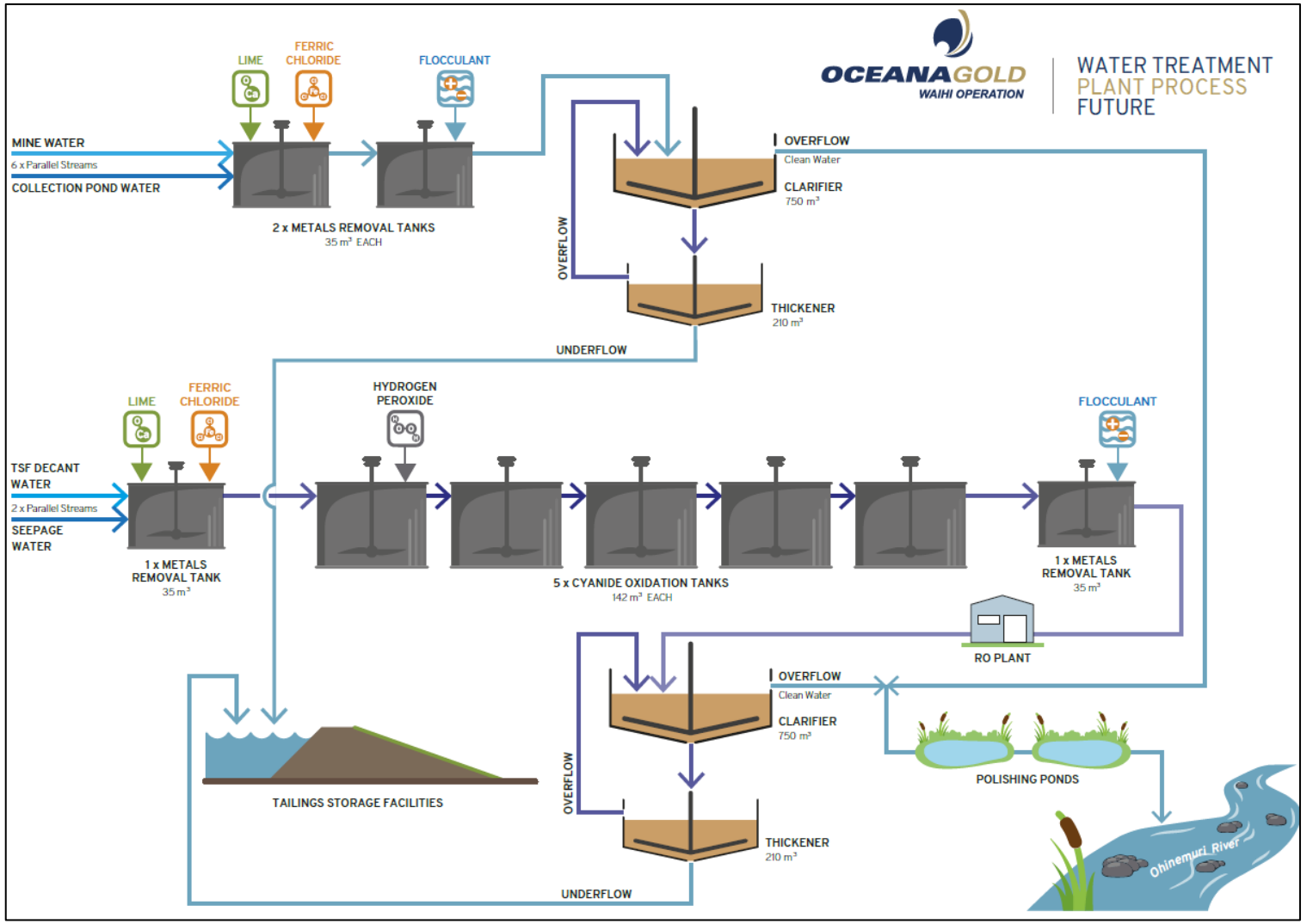


Figure 2-52: Proposed WTP Flow Sheet

As with the WTP discharge permit, the land use consents for the existing discharge outfall structures (AUTH971319.01.12 and AUTH971320.01.12) also expire on 13 October 2034 and it is proposed to renew these for a term to align with the proposed discharge.

To provide for the increased WTP outputs, two additional discharge outfalls are required. These will be established immediately downstream of each of the respective discharge outfalls currently provided for by AUTH971319.01.12 and AUTH971320.01.12. A concept design for each of the proposed diffusers is provided in Figure 2-53. Each diffuser will connect to the WTP via a new buried discharge line installed in general accordance with the alignment depicted in Figure 2-54.

It is also proposed to relocate a section of the existing discharge line away from the footprint of the proposed Southern Stockpile, as depicted in Figure 2-54.

Trenching for the new and relocated discharge lines will employ erosion and sediment control measures in accordance with the frameworks set out in Section 2.10.1.2.

The proposed WTP upgrades will occur early in the sequencing of the WNP activities (see Table 2-1).

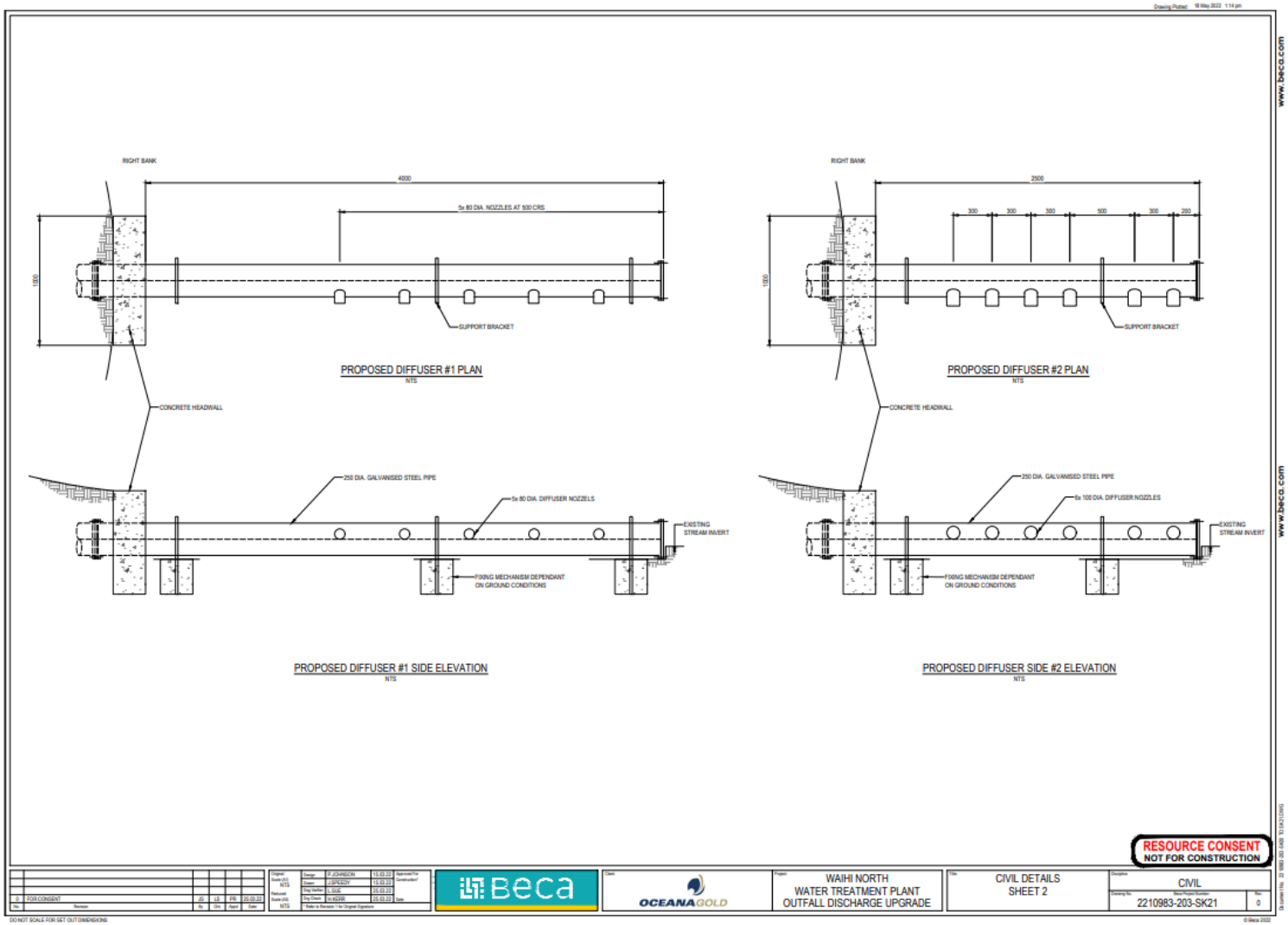


Figure 253: Proposed Design for the Additional Discharge Outfalls to be Placed within the Ohinemuri River-

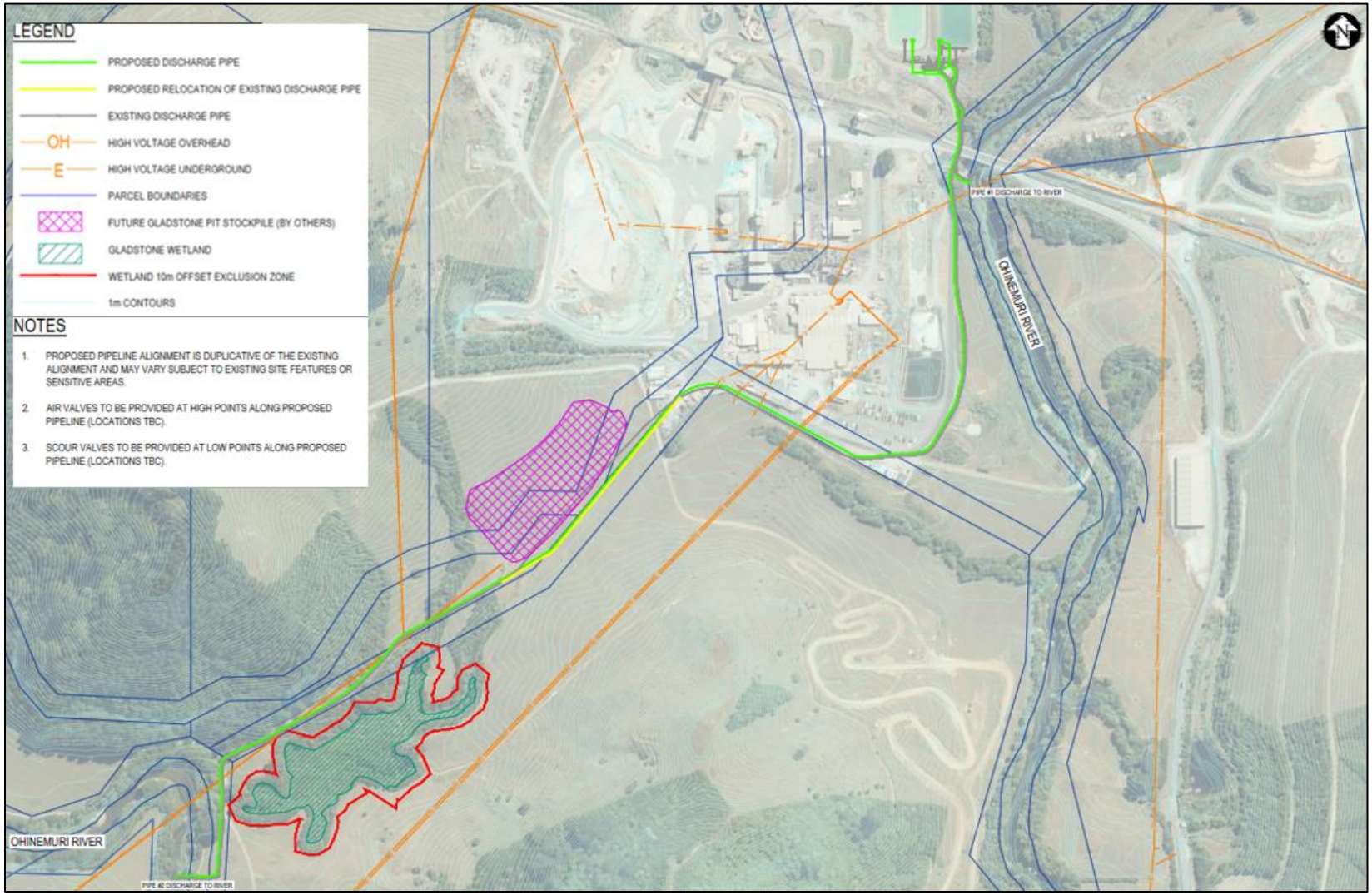


Figure 2-54: Proposed Alignment of the Pipelines for the Additional Discharge Outfalls

2.10.5 Storage and Use of Hazardous Substances

Table 2-7 sets out the existing and proposed hazardous substances quantities associated with the Processing Plant and WTP located within Area 5. With the exception of mercury recovered from retort ovens, no new hazardous substances will be used in the proposed upgrades to the Processing Plant or WTP, however, some of the quantities stored will increase to achieve the proposed increased throughput capacity.

Table 2-7: Hazardous Substance Volumes and Classifications in Area 5

Substance	State	Hazard Classification Post-2021	Proposed maximum volume	Storage location
High calcium hydrated limestones	Liquid	Skin corrosion Category 1C Serious eye damage Category 1 Hazardous to the aquatic environment chronic Category 4	306,000 L	Three tanks (102,000 L each) at the north of the WTP.
High calcium quicklime	Solid	Skin corrosion Category 1C, Serious eye damage Category 1 Hazardous to the aquatic environment chronic Category 4	70,000 kg	Silo west of the Processing Plant.
Caustic soda (Sodium hydroxide)	Liquid	Acute oral, dermal toxicity Category 4 Aspiration hazard Category 1 Corrosive to metals Category 1 Skin corrosion Category 1B Serious eye damage Category 1 Hazardous to the aquatic environment chronic Category 4	24,000 L	Tanks on the western side of the electrowinning area.
Hydrochloric Acid (>25%)	Liquid	Acute oral toxicity Category 2 Corrosive to metals Category 1 Skin corrosion Category 1B Serious eye damage Category 1 Hazardous to the aquatic environment chronic Category 4 Hazardous to terrestrial vertebrates.	24,000 L	Tanks on the western side of the electrowinning area.
Oxygen gas	Gas	Oxidising gas Category 1	30,000 L	Cryogenic pressure vessel, east of the Processing Plant.

Substance	State	Hazard Classification Post-2021	Proposed maximum volume	Storage location
Carbon Dioxide	Gas	Compressed non-hazardous gas	40,000 kg/L	Two cryogenic pressure vessels in the WTP.
Diesel	Liquid	Flammable liquids Category 4, Aspiration hazard Category 1, See Note 1. Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2.	200,000 L	Various units: Self-bunded isotainers (20,000 L) or portable tanks (<6,000 L).
Workshop Maintenance oils and greases*	Liquid	Acute dermal toxicity Category 4 Aspiration hazard Category 1 Skin irritation Category 2 Serious eye damage Category 1 Skin sensitisation Category 1 Specific target organ toxicity – single or repeated exposure Category 2 Specific target organ toxicity – single exposure Category 3 narcotic effects Hazardous to the aquatic environment chronic Category 2 or 3	8,000 L	Various units (tank, IBC or 205 L drum) located at the workshop.
Cyanide (Liquid 30%)	Liquid	Acute oral, inhalation toxicity Category 2 Acute dermal toxicity Category 3 Skin sensitisation Category 1 Reproductive toxicity Category 2 Specific target organ toxicity – single or repeat exposure Category 1 Corrosive to metals Category 1 Skin corrosion Category 1B Serious eye damage Category 1 Hazardous to the aquatic environment acute or chronic Category 1 Hazardous to soil organisms Hazardous to terrestrial vertebrates Hazardous to terrestrial invertebrates	112,000 L	Tank within the Processing Plant. Located on the eastern side of the reagent storage.

Substance	State	Hazard Classification Post-2021	Proposed maximum volume	Storage location
Cyanide (solid)	Solid	Acute oral, inhalation toxicity Category 2 Acute dermal toxicity Category 3 See Note 1. Eye irritation Category 2 Skin sensitisation Category 1 Reproductive toxicity Category 2 Specific target organ toxicity – repeated or chronic exposure Category 1 Corrosive to metals Category 1 Hazardous to the aquatic environment acute Category 1 Hazardous to the aquatic environment chronic Category 1 Hazardous to soil organisms Hazardous to terrestrial vertebrates Hazardous to terrestrial invertebrates	77,180 kg	Boxed storage within the Processing Plant. Located on the eastern side of the reagent storage.
Ferric chloride	Liquid	Acute oral/dermal/inhalation toxicity Category 1 Corrosive to metals Category 1 Skin corrosion Category 1C Serious eye damage Category 1 Hazardous to terrestrial vertebrates	30,000 L	Two tanks (20,000 L and 10,000 L) in the WTP.
Hydrogen peroxide	Liquid	Oxidising liquids Category 2 Acute oral toxicity Category 4 Skin corrosion Category 1B Serious eye damage Category 1 Specific target organ toxicity – single or repeated exposure Category 2 Hazardous to the aquatic environment chronic Category 4 Hazardous to terrestrial vertebrates	35,000 L	Two tanks (17,500 L each) in the WTP.

Substance	State	Hazard Classification Post-2021	Proposed maximum volume	Storage location
Mercury	Liquid	Acute oral, inhalation toxicity Category 2 Skin sensitisation Category 1 Reproductive toxicity Category 1 Specific target organ toxicity – repeated exposure Category 1 Corrosive to metals Category 1 Hazardous to the aquatic environment acute and chronic Category 1	10 kg	Recovered at the condenser in the Gold Room (Electrowinning Building) through the retort processes.
Transformer oil	Liquid	Aspiration hazard Category 1	8,640 L	Stored within the bunded transformer units: two 3,500 L transformers and one 1,740 L transformer.

2.10.6 Use of Mill Bridge, Laydown Area, and Ohinemuri River Heavy Vehicle Crossing

The existing Mill Bridge, the adjacent laydown area, and the Ohinemuri River heavy vehicle crossing form part of OGNZL's existing mining activities at Waihi, and are proposed to be used for the WNP. Whilst these features are not within Area 5, they are immediately adjacent the area's eastern boundary.

The road approach and footings of the Mill Bridge, the entire laydown area, and the approach to the heavy vehicle crossing are located on public conservation land (being the marginal strip of the Ohinemuri River as shown in Figure 2-55). Easements are typically required for activities which occur on public conservation land, but as the features were established before the Conservation Act was enacted, no such approval is held by OGNZL, however approval was obtained by OGNZL under the RMA for works in the laydown area.[26] The Mill Bridge pre-dates the RMA, and was authorised under the original Mining Licence for the

[26] RC 971294.

Martha Mine.[27] Therefore, OGNZL is seeking to obtain approval for the continued use of these features, including their use in relation to the WNP under an access arrangement.

The Mill Bridge is used for all light vehicle access to the Processing Plant and the WTP from Baxter Road. The bridge also conveys water, tailings and waste rock over the Ohinemuri River via pipelines (for the water and tailings), and via a conveyor belt (for the waste rock). Only the road approach and footings of the Mill Bridge, on the eastern side of the river are situated within public conservation land (as shown in Figure 2-56).

The laydown area (shown in Figure 2-57) is located adjacent to the Mill Bridge and is used to store equipment from OGNZL's processing and tailings storage facilities.

The heavy vehicle crossing is used for transporting vehicles which are too large to cross the two light vehicle bridges that provide access to the Waihi SFA. OGNZL holds a resource consent with the WRC to operate and maintain this heavy vehicle crossing.[28] The heavy vehicle crossing includes a gravel track over public conservation land on the eastern side of the river, as shown in Figure 2-58. Maintenance of the heavy vehicle crossing involves the relocation of rocks and boulders on the track to maintain a suitable approach angle for heavy vehicles. Use of this crossing is sporadic, and generally only occurs when new underground vehicles are being transported to site, or when construction activities at the TSFs are commencing or finishing. It is proposed that the heavy vehicle crossing will be the main heavy vehicle access to the Waihi SFA for WNP construction vehicles.

Use of these three areas does not prevent public access along the banks of the Ohinemuri River.

[27] ML 32 2388.

[28] RC 103820.

Figure 2-55: Locations of the Mill Bridge, Heavy Vehicle Crossing, and Laydown Area within the Marginal Strip of the Ohinemuri River

Figure 2-56: Mill Bridge, showing footings and road approach located on public conservation land (looking from the northeast of the bridge)

Figure 2-57: Laydown located on public conservation land, adjacent to the Mill Bridge

Figure 2-58: Approach to the Ohinemuri River heavy vehicle crossing, located on public conservation land

2.10.7 Carparking

An additional 320 carparking spaces are required at Baxter Road for the WNP across the four areas illustrated in Figure 2-59.

The additional carparks at Baxter Road will be partially located within Area 5 to the southeast of the existing Processing Plant carpark but some small carpark areas will also be established adjacent to the relocated Waste Disposal Area Workshop (Area 6) and adjacent to the proposed TSF3 Collection Ponds (Area 7). The additions will result in a total of 350 carparks accessible from Baxter Road.

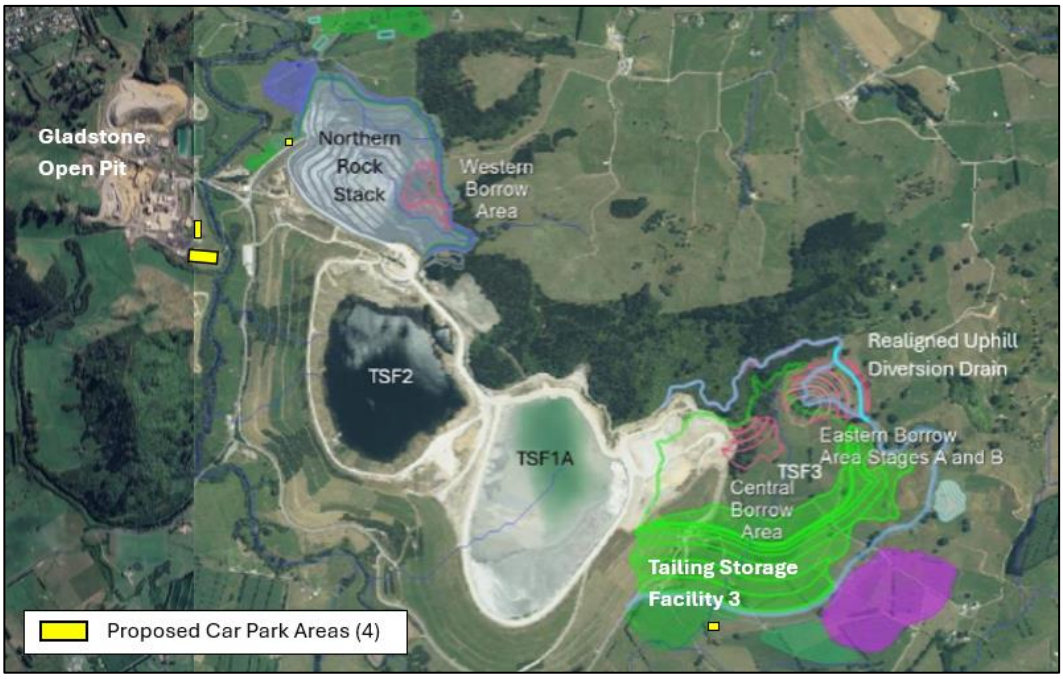


Figure 2-59: Approximate Location of Proposed Parking Areas Accessed from Baxter Road

2.10.8 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting within, and in locations close to, Area 5, as illustrated in Figure 2.60. Planting within and in close proximity to Area 5 will occur on public conservation land within the marginal strip of the Ohinemuri River, as shown in Figure 2.61.

Planting methods and maintenance will occur in a manner similar to that detailed in Section 2.7.3.

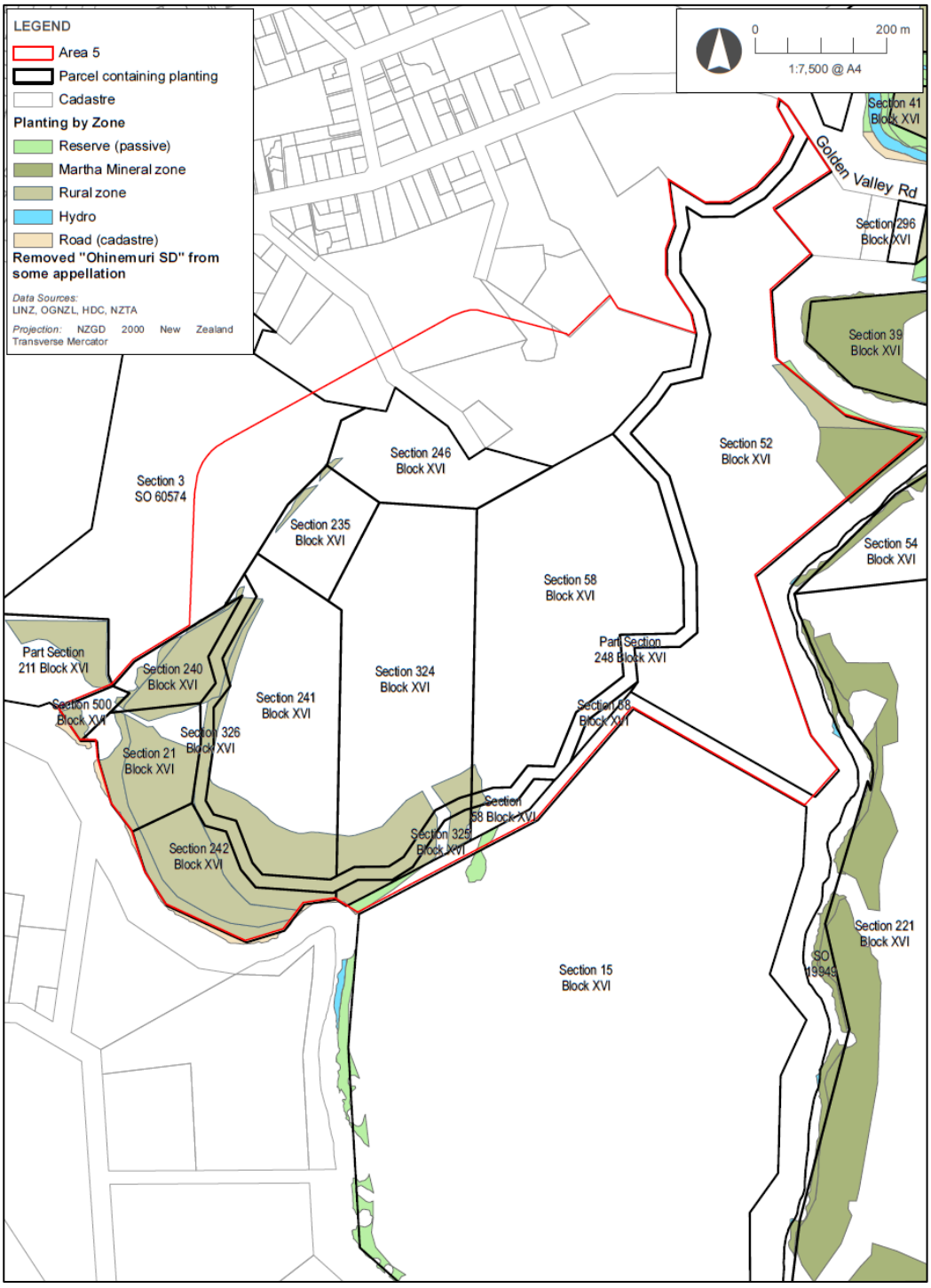


Figure 2-60: Proposed Planting Within and in Close Proximity to Area 5

Figure 2-61: Proposed Planting on Public Conservation Land in Close Proximity to Area 5

This planting will comprise both replacement planting and offset planting, including 11.2 ha of native revegetation.

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), and in the ELMP-WA provided within **Part H** to these application documents.

2.10.9 Handling, Salvage and Translocation of Native Fauna on Private Land

Surveys of Areas 5 – 7 have identified a variety of skink species both within the WNP work areas and in surrounding areas. To manage potential effects on these species, OGNZL will implement a Lizard Management Plan (which forms part of both the ELMP-WA and ELMP-WUG, provided in **Part H** of these application documents) that sets out how native lizards will be captured and relocated prior to, and during, vegetation clearance at the Willows SFA, the GOP, the NRS and TSF3.

Salvage of lizards will involve the use of artificial retreats, pitfall and funnel traps, systematic searches (day and night), and a machine-assisted clearance.

Lizards will be captured and handled by a suitably qualified herpetologist. All lizards will be placed in a temporary containment box, which will be filled with vegetation and leaf litter misted with water. Lizards will be held temporarily for the period of the active searches or trap inspections (i.e. < 2 hr), after which they will be released. Lizards will not be held in captivity.

All salvaged lizards will be relocated into the proposed lizard habitat enhancement area, a 4.04 ha area of regenerating native vegetation with pine canopy and surrounding grassland and stone deposits, as shown in Figure 2-62. This area will be enhanced through additional refuges, targeted lizard habitat planting, and will become part of a larger area of protected vegetation, contiguous with SNA 166. The proposed relocation site will therefore provide protective benefits for lizards.

If lizards are salvaged, OGNZL will undertake annual post release population monitoring for the first five years, and then five-yearly until the closure of the WUG. Population monitoring will include standard techniques such as the use of artificial refuges, live traps and active searches.

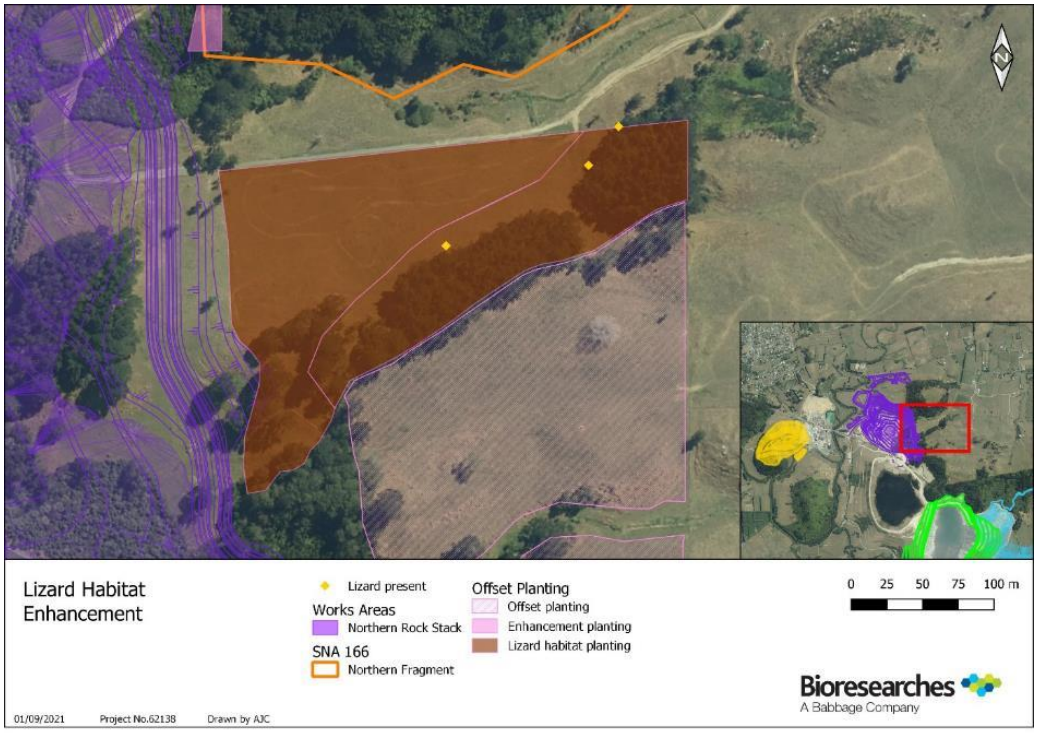


Figure 2-62: Plan of the proposed lizard relocation area within the wider landscape surrounding the WNP

2.10.10 Waihi Surface Facilities Area Closure and Rehabilitation

Following completion of mining, the Processing Plant, WTP, and other features within the Waihi SFA will be closed, dismantled and equipment removed as per the existing Rehabilitation and Closure Plan for the Waihi site, unless infrastructure can be utilised for other purposes.

The Water Treatment Plant for the WNP will be used / remain in place post-closure until such time that an appropriate water discharge quality criterion from the WTP is met.

2.10.11 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.1.1 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within close proximity to Area 5 of the WNP (as well as within other project areas of the WNP).

As set out in Section 2.6.4 of this report OGNZL proposes to obtain an Authority for any works that could impact pre-1900 subsurface remains, and to undertake archaeological investigation and recording of any remains affected and uncovered during the proposed works.

2.10.12 Future Road-Stopping

Whilst not proposed within this application, it is noted that OGNZL and HDC have signed an agreement relating to the road-stopping of Domain Road (refer to Figure 2-63). This agreement utilises the Public Works Act 1981 process for road-stopping.

Figure 2-63: Proposed Domain Road Road-Stopping (in red)

2.11 AREA 6

The key features of the WNP within project Area 6 will include:

- The NRS and an adjoining borrow area ("**the Western Borrow Area**");
- Terrestrial and riparian restoration and enhancement planting;
- The salvage and translocation of freshwater fish, kōura and mussels;
- The undertaking of works in areas with recognised heritage and / or archaeological values; and
- Closure and remediation activities at the completion of the mining of the WUG.

2.11.1 Northern Rock Stack

Non-ore-bearing rock from the GOP (Area 5) will be used to construct and rehabilitate the GOP TSF, and backfill underground mine workings. While there may be some additional capacity in existing stockpiles, there will be a surplus of rock that requires storage in a

separate rock stack. As such, a new rock repository, being the NRS, is proposed to accommodate surplus rock associated with the WNP. The NRS will accommodate rock predominantly from the GOP but may include some development rock from the WUG.

The size of the NRS may fluctuate over time as temporarily stored rock is taken and reused, but at its maximum extent the NRS is designed to a nominal elevation of 173 m RL and to accommodate up to 7.5 Mm^3 of rock. At its maximum extent, the NRS footprint will encompass the existing Northern Stockpile area and adjacent land as shown in Figure 2-64.

Material / waste rock will be borrowed from an area within the NRS (the Western Borrow Area) for the construction of the TSF3 embankment. The borrowing of material will involve blasting and earthmoving activities in accordance with the following standards:

- Level of vibration for all blasts must be monitored and the peak level of vibration at any non-company owned residence comply at the 95th percentile with 5 mm/s between the hours of 7am to 6pm, Monday to Saturday, excluding public holidays;
- The 95th percentile with 1 mm/s will apply for all blasts at all other times; and
- The percentile calculation is based upon all recorded vibration data that exceeds the pre-set threshold level set in the Vibration Management Plan provided in **Part H** to these application documents.

Once the GOP construction activities commence, the Western Borrow Area will be filled with rock from the GOP, in accordance with the NRS processes outlined above. In the instance that any PAF material is to be placed within the Western Borrow Area, a low permeability liner will be established within the area.

The Western Borrow Area will operate within the following parameters:

- Maximum Volume of 0.13 Mm^3;
- Floor level: 115 mRL;
- Maximum level of excavation: 135 mRL; and
- Height: 20 m.

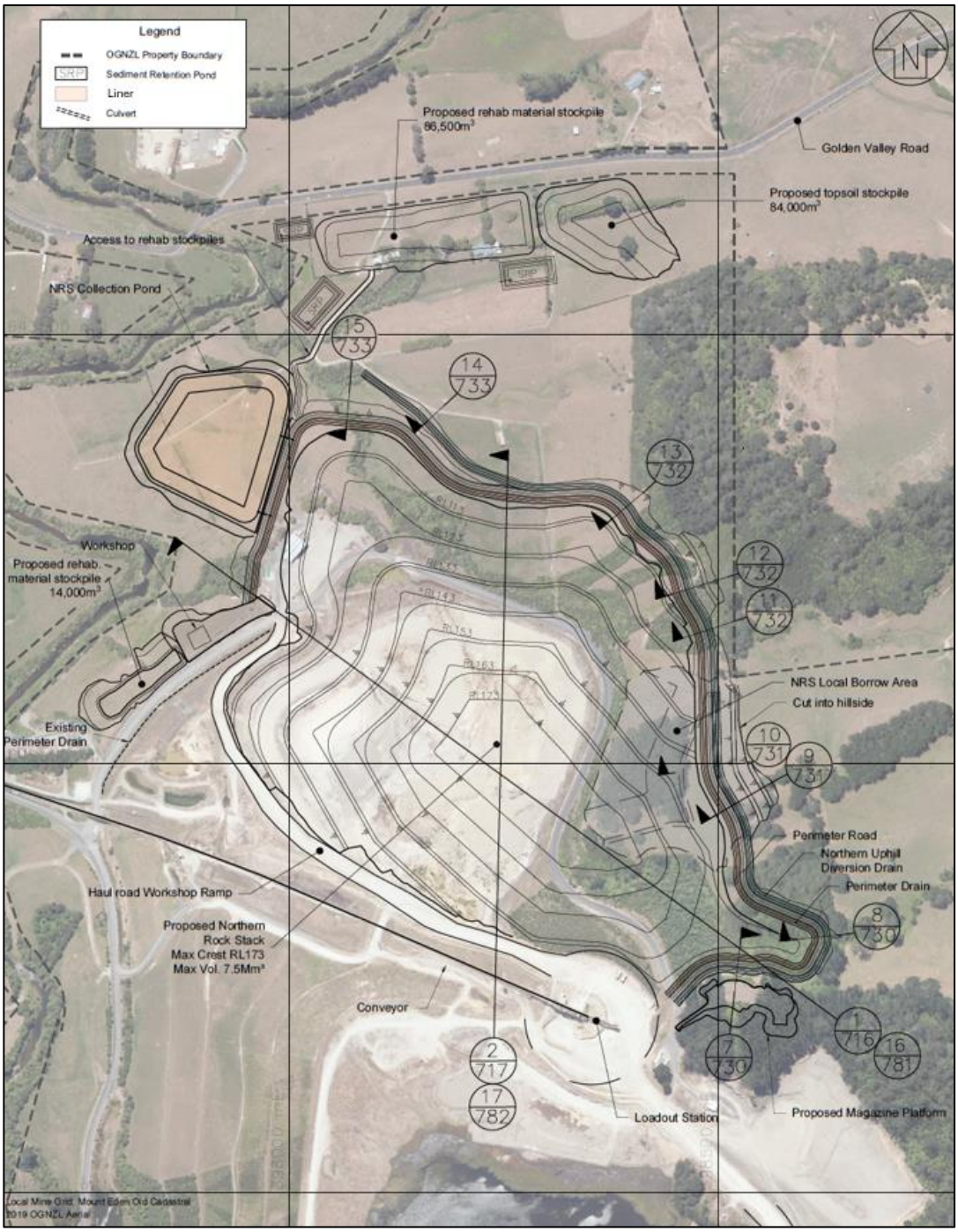


Figure 2-64: The NRS Location and Footprint (EGL (2025d))

2.11.1.1 Preparatory Works

Topsoil Stripping and Stockpiling

The maximum footprint of the NRS will require approximately 24 ha of topsoil to be progressively stripped, including from the stream bed of TB1 (detailed further in Section

3.6.2.5) which OGNZL is proposing to permanently divert. Stripped topsoil will be held in stockpiles as depicted in Figure 2-65.

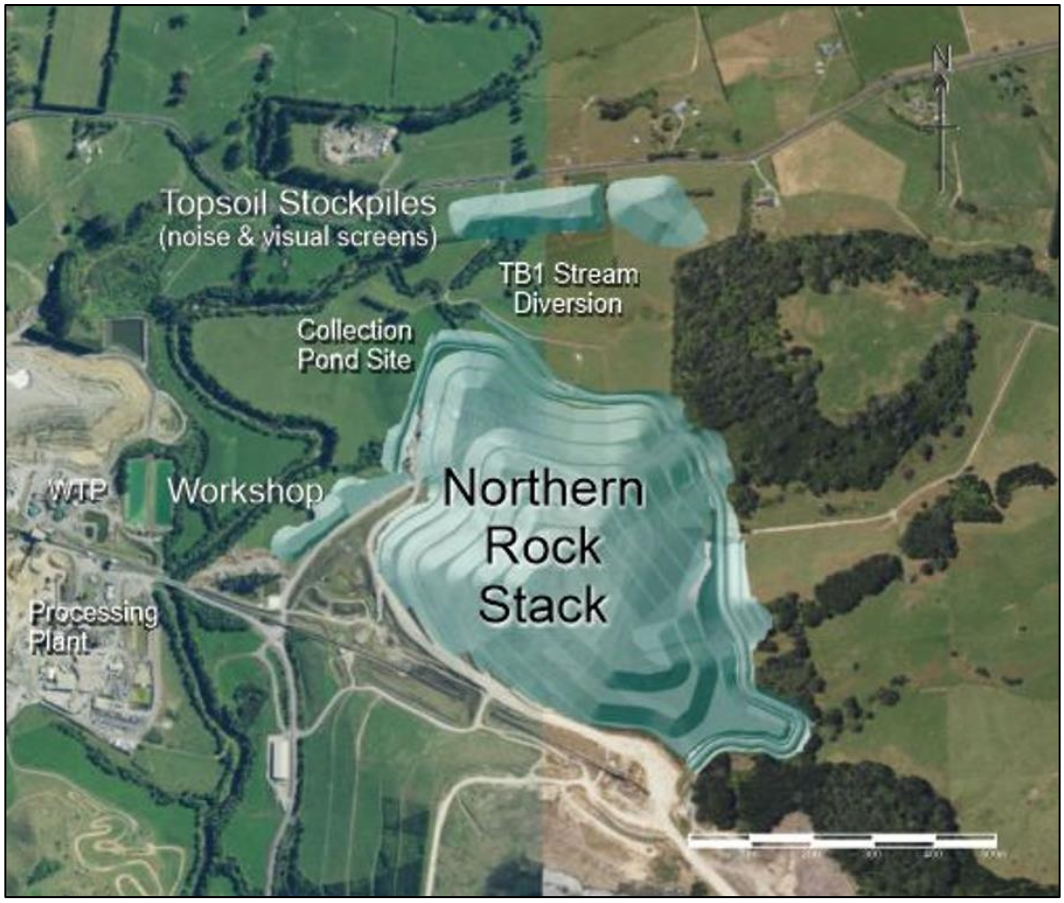


Figure 2-65: Location of Proposed Topsoil Stripping and Topsoil Stockpiles

The two proposed northern topsoil stockpiles will together contain up to 170,500 m^3 of material and will be constructed to a nominal height of 10 m above ground. The northern toe of the topsoil stockpiles will be defined by the northern property boundary adjacent to Golden Valley Road. The eastern stockpile has been designed to act as a noise barrier between the NRS and properties to the north.

The stockpile to the west of the NRS will contain up to 14,000 m^3 of material and will be constructed to a nominal height of 10 m above ground.

Erosion and sediment control measures will be adopted during the work in accordance with the details provided below.

Relocation of Buildings

An existing single storey dwelling at 699 Golden Valley Road (owned by OGNZL) will be removed to accommodate the northern topsoil stockpiles.

The existing workshop structure, fuel bowser, and grease storage facilities adjacent to the existing Northern Stockpile will also be relocated approximately 160 m to the southwest of their current location (see Figure 2-65 above). Any potentially hydrocarbon contaminated soils underlying and surrounding the structure may need to be removed and disposed of within the embankment of the NRS.

Part of the proposed workshop area falls within the 100 year ARI flood zone for the Ohinemuri River and may require some filling and flood protection.

Relocation of Overhead Powerlines

The existing overhead powerline that runs from the Processing Plant to the existing TSFs around the Northern Stockpile will be relocated along the existing conveyor alignment as part of the preparatory works for the NRS (see Figure 2-66). This line is owned by OGNZL.

Figure 2-66: Proposed Powerline Relocation

Drains and Collection Ponds

An uphill clean water diversion drain ("**Northern Uphill Diversion Drain**") will be constructed upstream of the NRS for the collection of natural ground runoff and stream flows. Water collected in the Northern Uphill Diversion Drain will discharge directly to the Ohinemuri River. The Northern Uphill Diversion Drain will be sized for a minimum requirement of 1 in 50 year ARI storm event.

The clean water Northern Uphill Diversion Drain will not encroach into Significant Natural Area ("**SNA**") 166 identified in the HDP.

The design of the diversion channel is planned to replicate aquatic habitat attributes with a range of suitable stable microhabitats for fish and invertebrates, including the creation of stable pool habitats, the inclusion of gravel and cobble riffle habitats, and provide for the passage of climbing fish, especially eels.

A perimeter drain will be installed around the NRS for the collection of surface runoff from the NRS and conveyance to a collection pond to the north-west ("**the NRS Collection Pond**"). The drain will be sized for a 100 year ARI flow.

The perimeter drain will be separated from the Northern Uphill Diversion Drain by a 6 m wide perimeter road.

The NRS Collection Pond located to the north-west of the NRS will be sized to manage runoff from a 10 year return period, 72 hour rain event without discharge. Water in the NRS Collection Pond will be pumped to the WTP for treatment (when water quality requirements dictate) before discharging to the Ohinemuri River.

Erosion and Sediment Control

Southern Skies (2025) describes the erosion and sediment control measures that will be implemented for these works. A copy of Southern Skies (2025) is provided in **Part B** of these application documents.

By way of summary, the erosion and sediment control measures for Area 6 will include:

- Installation of silt fences on steep slopes where possible;
- Construction of temporary clean and dirty water diversion drains;
- Construction of sediment retention ponds; and
- Use of flocculants.

2.11.1.2 Northern Rock Stack Construction

The NRS will be constructed to nominally 173 m RL with 7.5 M m^3 capacity and will not impact on the current positioning of the conveyor corridor and loadout station.

The NRS will incorporate similar design features as the existing TSF embankments to restrict the potential for the generation of acid leachate, and for leachate to enter groundwater. These features include:

- A low permeability, earthfill liner beneath the rock stack;
- Sub-surface seepage drains to intercept any seepage;
- Leachate collection drains; and
- Capping to minimise oxygen ingress.

The construction of the NRS will likely be undertaken in stages as the requirement for rock storage volume develops.

Initially the working areas of the NRS will consist of converting the existing NAF Northern Stockpile into a potentially acid forming PAF stockpile. This will require constructing a Zone A[29] liner and leachate drains and utilising the existing Northern Collection Pond and Northern Stockpile Silt Pond. The northern part of the site beyond the Northern Stockpile will then be developed along with the NRS Collection Pond. The perimeter infrastructure (road, surface water drain and seepage collection system) and Northern Uphill Diversion Drain will also be constructed. The perimeter drain will direct surface runoff to the NRS Collection Pond; and a seepage and leachate collection system will comprise manholes, pumps and a pipeline to the existing WTP.

During construction, any PAF working surfaces will be regularly tested and limed as required, and extensive geochemistry and water quality monitoring will continue to be undertaken. The cover design for the NRS will be consistent with the existing TSF embankments, including progressive and final rehabilitation of outer surfaces with layers which limit oxygen and water ingress.

Some externally sourced aggregate and other construction materials will be required to supplement the construction of the NRS. This includes materials such as drainage metal, sand, roading metal, rockfill lining, concrete, drains, sumps, piping, and culverts. This

[29] Zone A: Low permeability zone (earth liner) that restricts seepage from mine overburden material into underlying ground.

material will be transported to the site via Baxter Road, and it is estimated that approximately 35 to 40 truck and 900 to 1100 truck and trailer loads will be required.

Further details of the proposed NRS construction are provided in EGL (2025d).

Earthmoving Equipment

The construction of the NRS will require a range of earthmoving equipment during its operating life. This includes:

- 50 to 110 tonne excavators
- Compactors
- Bulldozers
- Front end loaders
- 50 to 80 tonne trucks
- Graders
- Service vehicles
- Water trucks
- Light vehicles

Various smaller equipment will also be used intermittently such as small excavators, articulated dump trucks, tyre handlers, yard cranes and forklifts.

The number of units will vary over the life of the NRS activity.

2.11.2 Storage and Use of Hazardous Substances

A series of secure Class 1 explosives magazines conforming to the Health and Safety at Work (Hazardous Substances) Regulations 2017 will be established (Waste Disposal Area Magazine) to support the mining of the GOP. The magazine may also be used to store explosives used in any of OGNZL's consented underground mines.

The Class 1 storage facilities will hold high explosives (ammonium nitrate fuel oil, booster and packaged explosives) in a cumulative quantity of up to 6,400 kg. Up to 12 kg of initiative explosive (detonator devices) will also be stored at this location.

The location and holding capacity of the magazines has been selected to ensure the required offsets are achieved from private property, and publicly accessible lands and structures.

Table 2-8 details the composition of all substances stored within the magazine area and lists the other hazardous substances to be used and stored in Area 6. It is noted that the existing storage of LPG at the Processing Plant (Area 5) will be displaced by the new Processing Plant substation. These tanks will be relocated to the western side of the Ohinemuri River approximately 130 m southeast of the Baxter Road bridge.

Table 2-8: Hazardous substance volumes and classifications in Area 6

Substance (UN number)	Hazard Classification (Post-2021)	Proposed maximum volume	Proposed Location
ANFO (UN 0082)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) (See Note 1) Eye irritation Category 2 Carcinogenicity Category 2 Hazardous to the aquatic environment chronic Category 4	6,400 kg NEQ	Surface magazines – Split between 5 magazines
Booster (UN 0042)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 3 (oral, dermal and inhalation route) Specific target organ toxicity – single exposure Category 2 Hazardous to the aquatic environment chronic Category 2		
Packaged explosive (UN 0241)	1.1D - Substances and articles that have a mass explosion hazard Acute toxicity Category 4 (oral route) Skin irritant Category 1 Eye irritation Category 2 Reproductive toxicant Category 3 Specific target organ toxicity – repeated exposure Category 1 Hazardous to the aquatic environment Category 1 Harmful to terrestrial vertebrates		
Detonators (UN 0030 / UN 0456 / UN 0360)	1.1B - Substances and articles that have a mass explosion hazard	12,000 units (12 kg NEQ)	In one magazine
LPG	Flammable gas Category 1	80,000 L	Two pressure vessels (40,000 L each), east of the Processing Plant (across the Ohinemuri River), adjacent to Baxter Road.

Substance (UN number)	Hazard Classification (Post-2021)	Proposed maximum volume	Proposed Location
Diesel	Flammable liquids Category 4, Aspiration hazard Category 1, See Note 1. Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2	40,000 L	Various units: Self-bunded isotainers (20,000 L) or portable tanks (<6,000 L)
Oils and greases	Flammable liquids Category 4, Aspiration hazard Category 1, See Note 1. Carcinogenicity Category 2, Hazardous to the aquatic environment chronic Category 2	8000 L	Various units (tank, IBC or 205 L drum) located at the workshop

2.11.3 Conveyor Upgrades

As noted in Section 2.10.1.1, transportation of backfill material from the NRS to its designated location (i.e. as backfill within the GOP or WUG) will be achieved by installing a temporary rock stack within Area 6 adjacent to the NRS, reversing the direction of the existing conveyor, and installing a transfer chute and new conveyor within Area 5 to accept rock from the existing conveyor and to transfer it to the Polishing Pond Stockpile. Rock from the Polishing Pond Stockpile will then be transported to its designated location within the NRS by haul trucks. As noted previously, as part of these works the existing lime silo within Area 6 will be relocated to a location within Area 5.

Technical drawings that illustrate the proposed changes and additions to the conveyor system are included in **Part C** of these application documents.

2.11.4 Carparking

As noted in Section 2.10.7, additional carparking spaces are proposed within Area 6 for the WNP, comprising a small carpark area adjacent to the relocated Waste Disposal Area (refer to Figure 2-59.

Refer to Section 2.10.7 for further details of the proposed carparking within Area 6.

2.11.5 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting within, and in locations close to, Area 6, as illustrated in Figure 2-67.

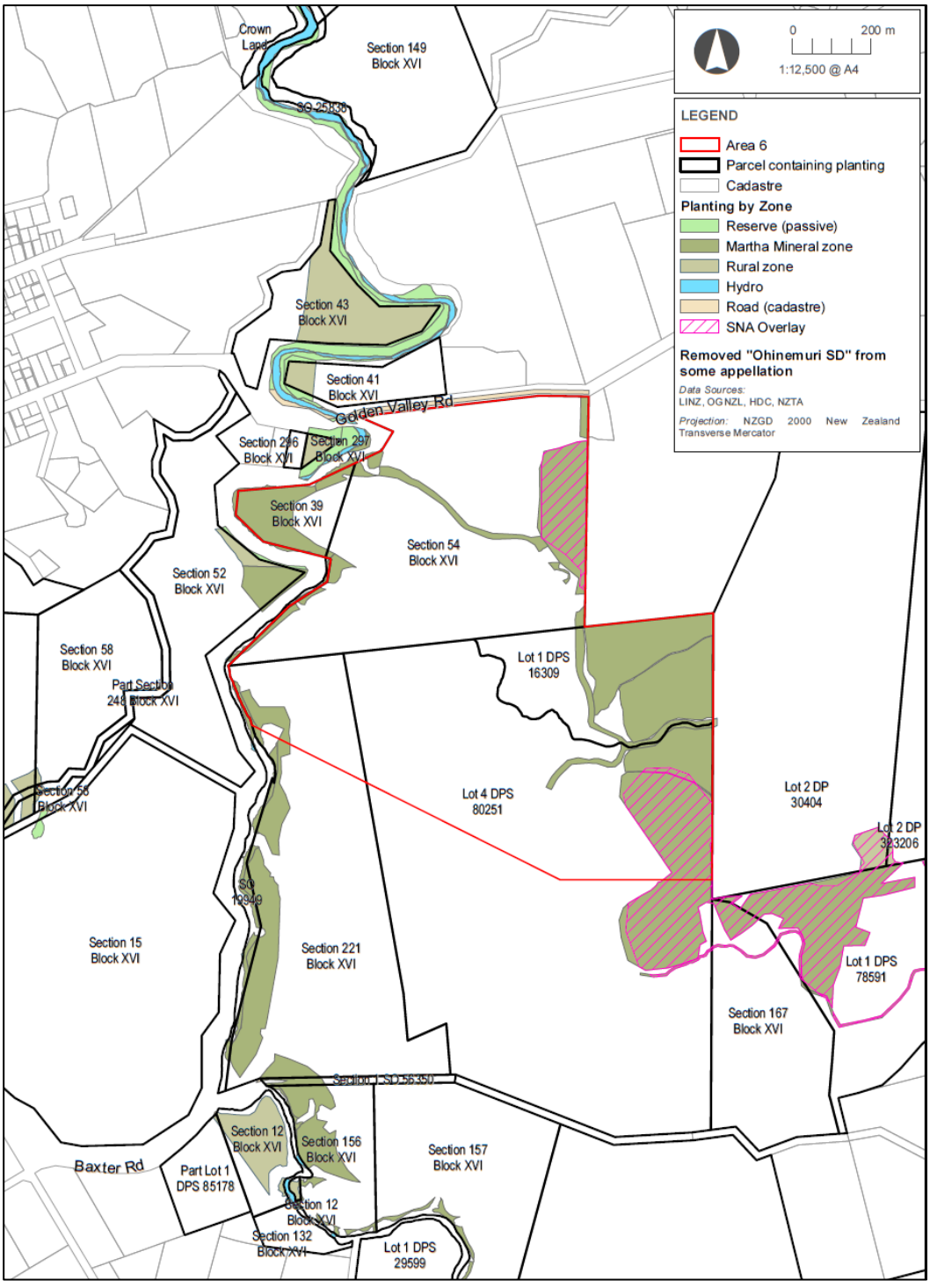


Figure 2-67: Proposed Planting Within and in Close Proximity to Area 6

This planting will comprise replacement planting, offset planting, and planting for enhancing moko skink habitat. Planting methods and maintenance will occur in a manner similar to that detailed in Section 2.7.3.

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), and in the ELMP-WA provided within **Part H** to these application documents.

2.11.6 Handling, Salvage and Translocation of Native Fauna on Private Land

To manage potential effects on skinks, OGNZL will implement a Lizard Management Plan (which forms part of the ELMP-WA, provided in **Part H** of these application documents) that sets out how native lizards will be captured and relocated prior to, and during, vegetation clearance at the NRS. Within Area 6, the Lizard Management Plan will be implemented in accordance with the provisions set out in Section 2.10.9 in relation to Area 5, above.

2.11.7 Lighting

Lighting will be established around the NRS to provide for activities outside of daylight hours. The lighting around the NRS will be relocated as required and as the establishment of the rock stack progresses. Mobile lighting plant will be operated in accordance with OGNZL's *Standard Operating Procedure for Towing and Setting up Lighting Plants*. This procedure includes a requirement to "*not shine towards a public road or buildings*".

All lighting will be designed, located and directed so that the level of artificial lighting measured at the boundary of any privately owned property (or property not subject to an agreement with OGNZL) is no greater than 8.0 Lux.[30]

2.11.8 Hours of Work

Activities may occur within Area 6 on a 24 hour / seven days per week basis subject to meeting specified noise limits. Those noise limits are likely to mean only low noise generating activities (being those activities which meet the night time noise standard) can be undertaken on Sundays and between 2200 and 0700 on Monday to Saturday.

2.11.9 Closure and Rehabilitation

At closure, up to approximately 4.0 Mm^3 of surplus rock may be left at the NRS. The final NRS footprint will be graded to achieve gentle slope and rehabilitated with a compacted sealing layer, topsoil cover and grass. While it is anticipated that the topsoil stockpiles constructed around the NRS will be fully recovered for rehabilitation works, should any surplus topsoil remain, this will be planted in accordance with the Rehabilitation and Closure Plan.

The indicative closure profile for the NRS is shown in Figure 2-68.

[30] Note this is consistent with the lighting requirements at OGNZL's existing mining operations.

2.11.10 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within close proximity to Area 6 of the WNP (as well as within other project areas of the WNP).

As set out in Section 2.6.4 of this report OGNZL proposes to obtain an Authority for any works that could impact pre-1900 subsurface remains, and to undertake archaeological investigation and recording of any remains affected and uncovered during the proposed works.

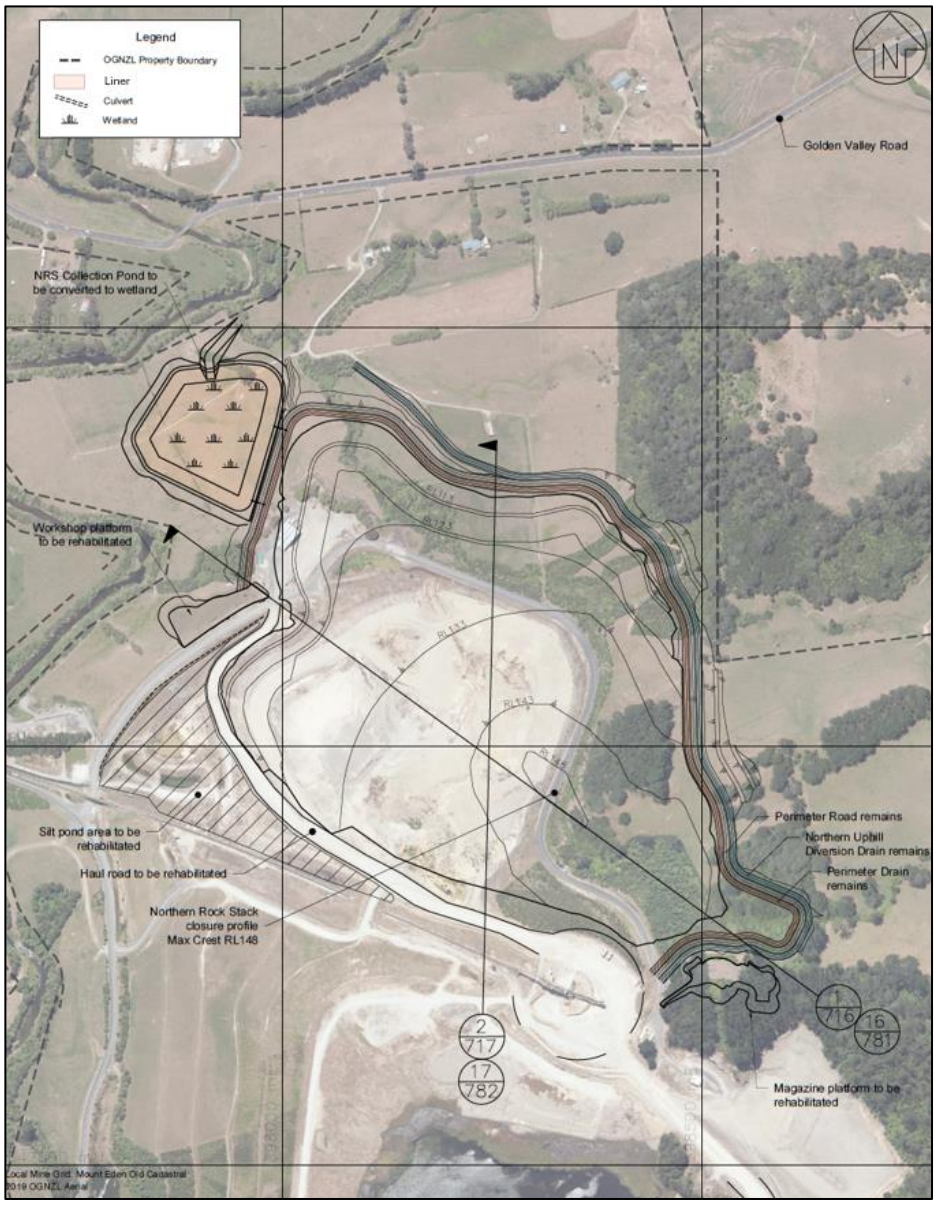


Figure 2-68: Indicative NRS Closure Plan (EGL (2025d))

2.12 AREA 7

The key features of the WNP within project Area 7 will include:

> TSF3 and adjoining borrow areas ("**the Central Borrow Area**" and "**Eastern Borrow Area Stages A and B**");

> Terrestrial and riparian restoration and enhancement planting;

> The salvage and translocation of freshwater fish, kōura and mussels;

> The undertaking of works in areas with recognised heritage and / or archaeological values; and

> Closure and remediation activities at the completion of the mining of the WUG.

2.12.1 Tailings Storage Facility 3

It is proposed to construct TSF3 to the east of existing TSF1A to accommodate additional tailings volume from the processing of ore from the WNP and other mining activities to be undertaken by OGNZL. Figure 2-69 provides a site overview for the proposed TSF3 works and associated infrastructure, and Figure 2-70 provides a more detailed indicative layout plan for TSF3 and associated infrastructure.

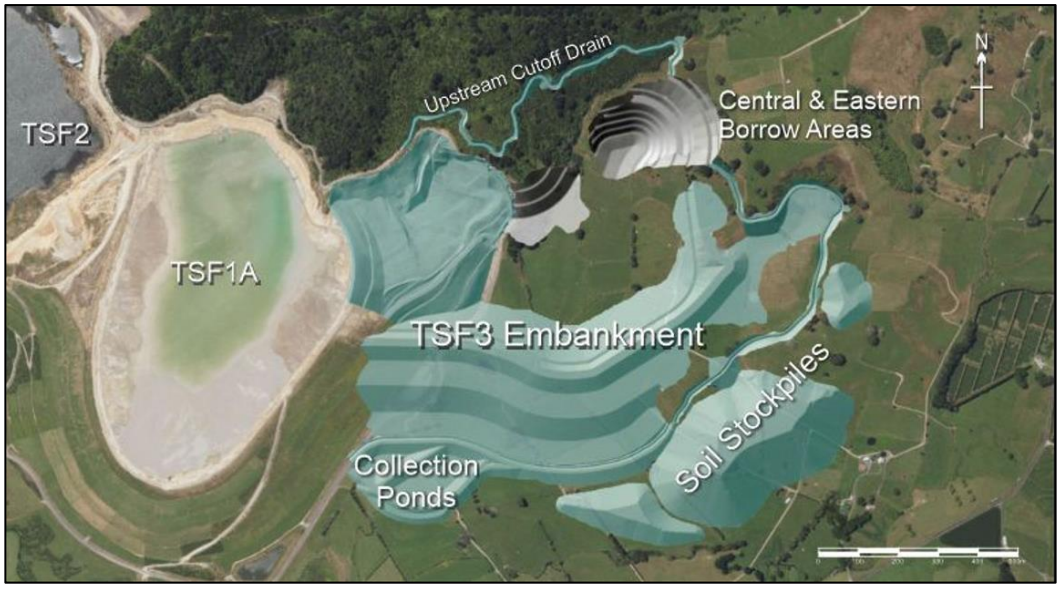


Figure 2-69: TSF3 Site Overview

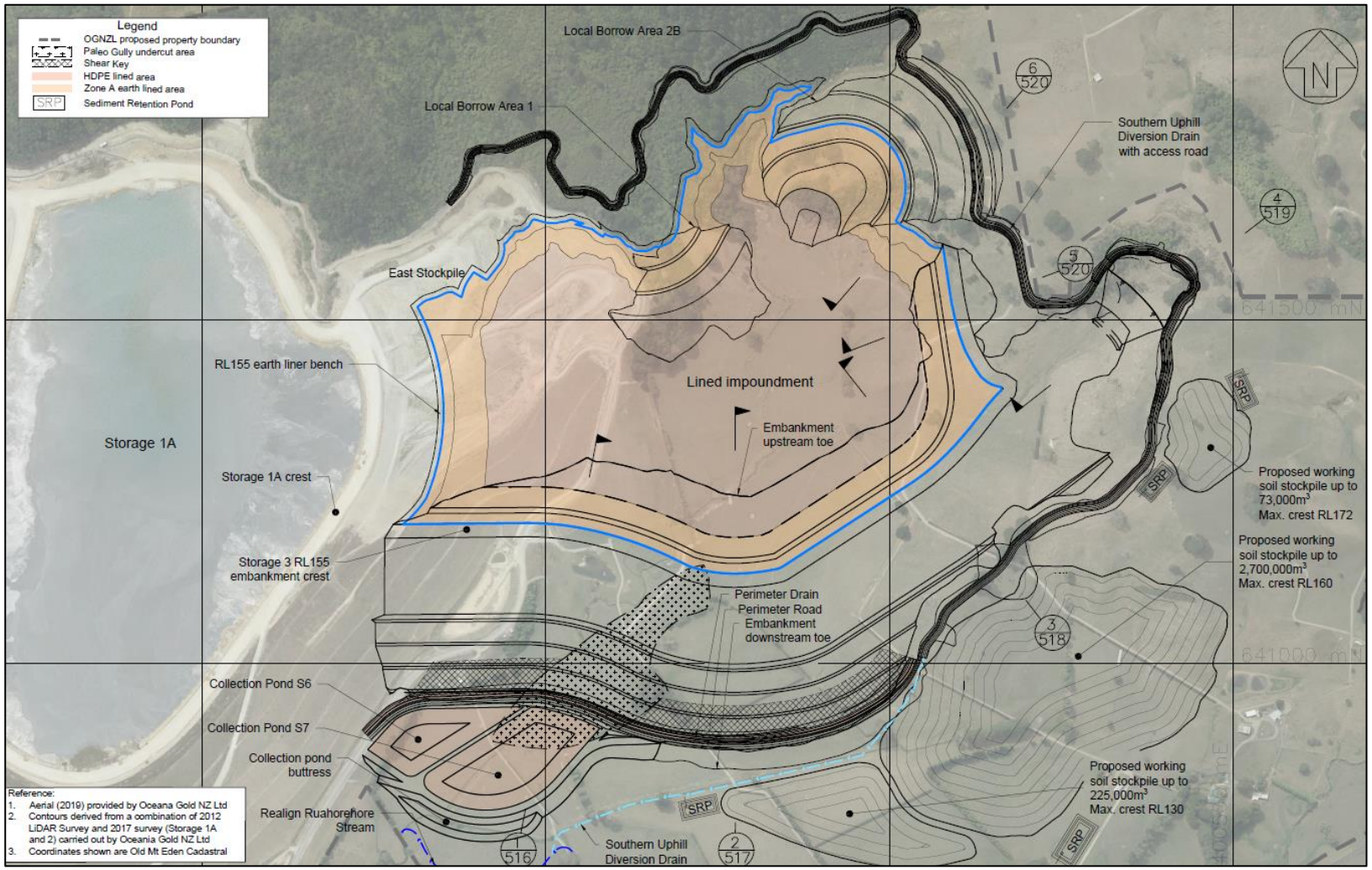


Figure 2-70: Indicative TSF3 Layout Plan (EGL (2025c))

Detailed design plans and a detailed construction methodology for TSF3 are provided in EGL (2025c). A typical cross section is provided in Figure 2-71. TSF3 will be approximately 46 m in height and have a crest height of 155 m RL.

The proposed 155 m RL crest height provides a total storage volume of approximately 8,100,000 m^3. Allowing for freeboard requirements to store a Probable Maximum Precipitation ("**PMP**") inflow design flood with 1.0 m freeboard, the volume available for tailings storage is estimated at approximately 6,700,000 m^3.

The proposed embankment and impoundment design for TSF3 is similar to the existing TSF2 and TSF1A, except it includes a synthetic geomembrane liner to provide enhanced containment of tailings seepage to the height of the starter embankment (135 m RL). It takes into consideration:

- Compliance with the New Zealand Society on Large Dams ("**NZSOLD**") Dam Safety Guidelines;
- Geotechnical conditions, including weak gully infill materials and volcanic ash soils of varying strength and permeability overlying rhyolitic rock at varying depths;
- The need to restrict seepage from the tailings, including the use of a low permeability geomembrane liner across the base of the impoundment, and to collect any seepage that does form for pumping to treatment;
- The scheduling and delivery of rock and the availability of different rock types to meet the low permeability fill zones, NAF sealing layers and long-term stability and closure requirements;
- The need to encapsulate PAF rock with low permeability NAF rock to minimise the potential for sulphide oxidation and the generation of acid leachate, and to collect and contain any leachate that forms for pumping to treatment;
- The need to add crushed limestones to any PAF material within the TSF3 embankment to delay acid generation during construction until the capping layers are in place;[31]
- The diversion of clean runoff from the hills above TSF3, around the facility, directly to the Ruahorehore Stream; and
- The diversion of run off from within work areas and directing it to the collection ponds, before being treated at the WTP.

[31] As has occurred previously, this will be added via a silo on the conveyor which transports this material to TSF3 and as required, will be spread by tractor.

It is noted that the upstream toe position of the 155 m RL embankment is set to allow sufficient space downstream to raise the facility in the future using a downstream embankment profile to 177 m RL should it be required for future mining activities. Any increase in height above 155 m RL will be subject to a separate application for additional or varied approvals.

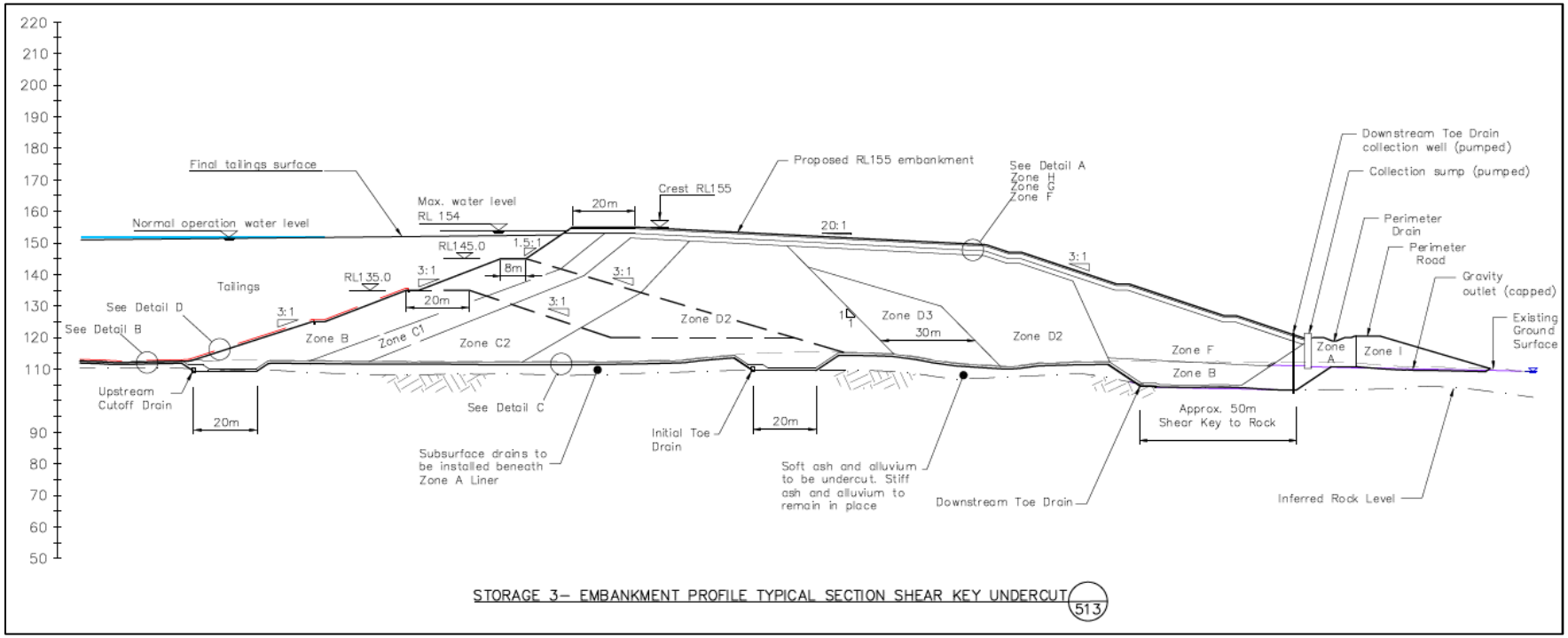


Figure 2-71: Typical Cross Section of TSF3 (EGL (2025c))

Material / waste rock will be borrowed from areas within TSF3 (the Central Borrow Area and Eastern Borrow Area Stages A and B) for the construction of the TSF3 embankment. The borrowing of material will involve blasting and earthmoving activities in accordance with the standards set out in Section 2.11.1 of this report.

The Central Borrow Area and Eastern Borrow Area Stages A and B will be lined and filled with tailings, in accordance with the TSF3 processes outlined above.

The Central Borrow Area and Eastern Borrow Area Stages A and B will operate within the following parameters:

> Volume: 1.5 to 2.5 Mm^3;

> Floor level: 125 mRL;

> Maximum level of excavation: 200 mRL; and

> Height: 75 m.

2.12.1.1 Preparatory Works

The preparatory works for TSF3 will include:

> Establishment of erosion and sediment controls;

> Clearing the site of fences and farm services;

> Relocating electricity supply ready for reestablishment;

> Establishing a haul road down the Eastern Stockpile to the TSF3 site;

> Sheeting of access roads;

> Progressive mulching and burning (if required) of vegetation;

> Progressive vegetation stripping and topsoil stripping and stockpiling;

> Cutting of additional farm drains as required to drain the surficial soils;

> Construction of the extended Southern Uphill Diversion Drain behind TSF3 site; and

> The realignment of the Ruahorehore Stream.

2.12.1.2 Site Access

The main site entrance to TSF3 will be via the existing Baxter Road Gate and the perimeter road around TSF1A and TSF2.

A new haul road will be established through the Eastern Stockpile. This will extend the existing haul route behind TSF1A and 2, linking those areas to the existing stockpiles and conveyor loadout.

Light vehicles and trucks will access the site from the perimeter road around the toe of TSF1A and TSF2 as can occur currently.

2.12.1.3 Topsoil and Subsoil Stripping

The total footprint of TSF3, including the extent of the stockpiles and Southern Uphill Diversion Drain, is approximately 120 ha. 20 ha of this area is already part of the existing footprint of TSF1A and the Eastern Stockpile.[32] The additional footprint is therefore 100 ha.

Approximately 80 ha of topsoil and subsoil will be progressively stripped from the footprint of TSF3, which includes several unnamed stream beds and drains. This includes 5 ha on the existing TSF1A embankment. Erosion and sediment control measures will be adopted during the work in accordance with Section 2.12.1.7 below.

Compressible soils will be excavated from the TSF3 impoundment area and the embankment footprint. Under the embankment, any compressible soils will be replaced with suitable structural fill material mined from the GOP. The impoundment area will be formed to provide a suitable surface for placement and anchoring of the geomembrane.

Up to 2 Mm^3 of material that is unsuitable for use in the foundation may need to be removed from the impoundment area and embankment footprint to facilitate construction of the key cut, upstream cut off and toe drains. Some of this material will be stockpiled in the TSF3 Stockpiles and some will be worked into the embankment. None of this material will be removed off-site unless contamination levels warrant off-site disposal in accordance with the Site Management Plan. It is noted that the Preliminary Site Investigation report has not identified any soils within the impoundment area that are likely to require removal off-site.

Sufficient area for up to 3.0 Mm^3 of stockpile volume will be provided outside the embankment and impoundment footprint. Stockpiles will vary in height between 16 m and 47 m. Stockpiled material will be used in rehabilitation to the extent possible and necessary. It is likely that this material can be used for the rehabilitation layers or clay liners with the appropriate mixing and conditioning.

Any material from the footprint of the foundations that is not utilised for rehabilitation purposes will be recontoured into the surrounding landform within the site and grassed.

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[32] Refer to Section 3.2 of the report for a description of the existing consents.

2.12.1.4 Servicing

Electricity to the leachate and underdrainage pumping systems (refer below to the discussion regarding TSF3 subsurface drains) will be extended from existing infrastructure at the toe of TSF1A.

The existing tailings delivery lines, water return pipes and electricity for the decant return pumps will be extended along the northern boundary of TSF1A and TSF3. This will require installation of HDPE piping in a pipe trench (similar to the existing) along the existing access roads for TSF1A and Eastern Stockpile.

The existing overhead powerline to TSF1A will be extended to service TSF3 by installing new power poles and powerline along the new access road to TSF3.

2.12.1.5 Vegetation Clearance in a Significant Natural Area

The footprint of works required for TSF3 encroaches on 8.3 ha of the southern fragment of SNA 166. Establishing TSF3 and the associated Southern Uphill Diversion Drain will require all vegetation within the encroachment to be cleared (see Figure 2-72 below).

The vegetation will be stripped, mulched on-site, and stockpiled in the smaller of the TSF3 stockpiles.

Measures proposed to mitigate and offset for the removal of SNA are discussed further in Sections 6.6.1 and 7 of this report.

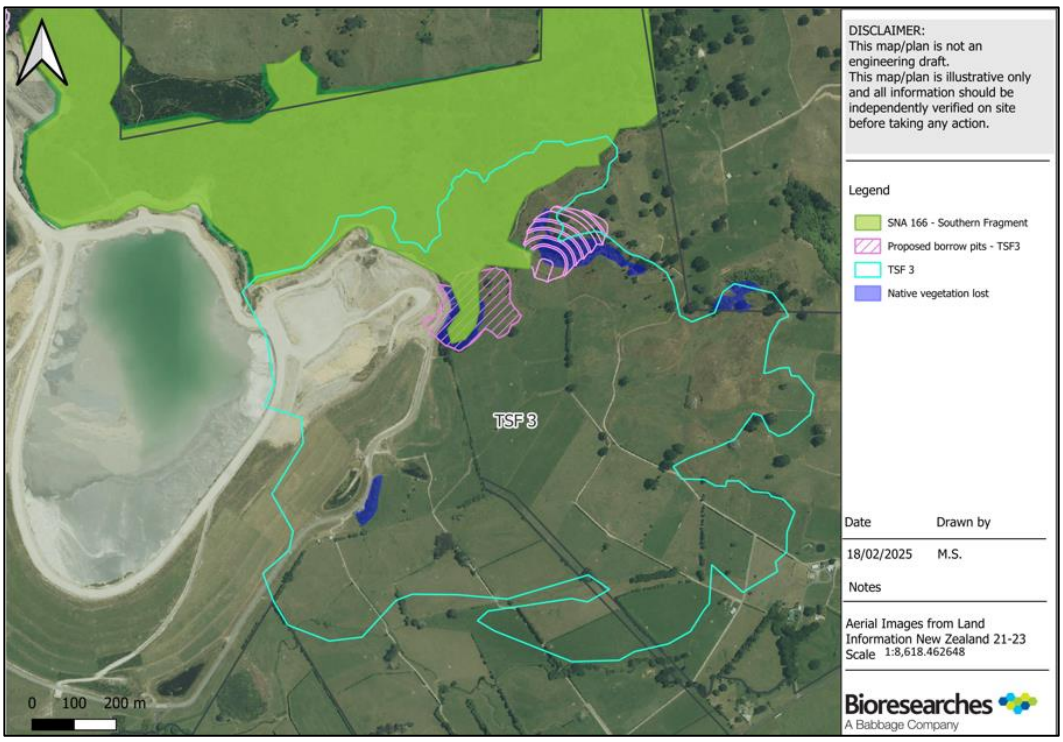

Figure 2-72: Vegetation Clearance Within and Surrounding SNA 166 (Bioresearches (2025a))

2.12.1.6 Drains and Collection Ponds

New water management infrastructure associated with TSF3 will include:

> Southern Uphill Diversion Channel Extension;

> Subsurface Drains; and

> TSF3 Perimeter Drain and Collection Ponds.

Each is shown in Figure 2-73 and described below.

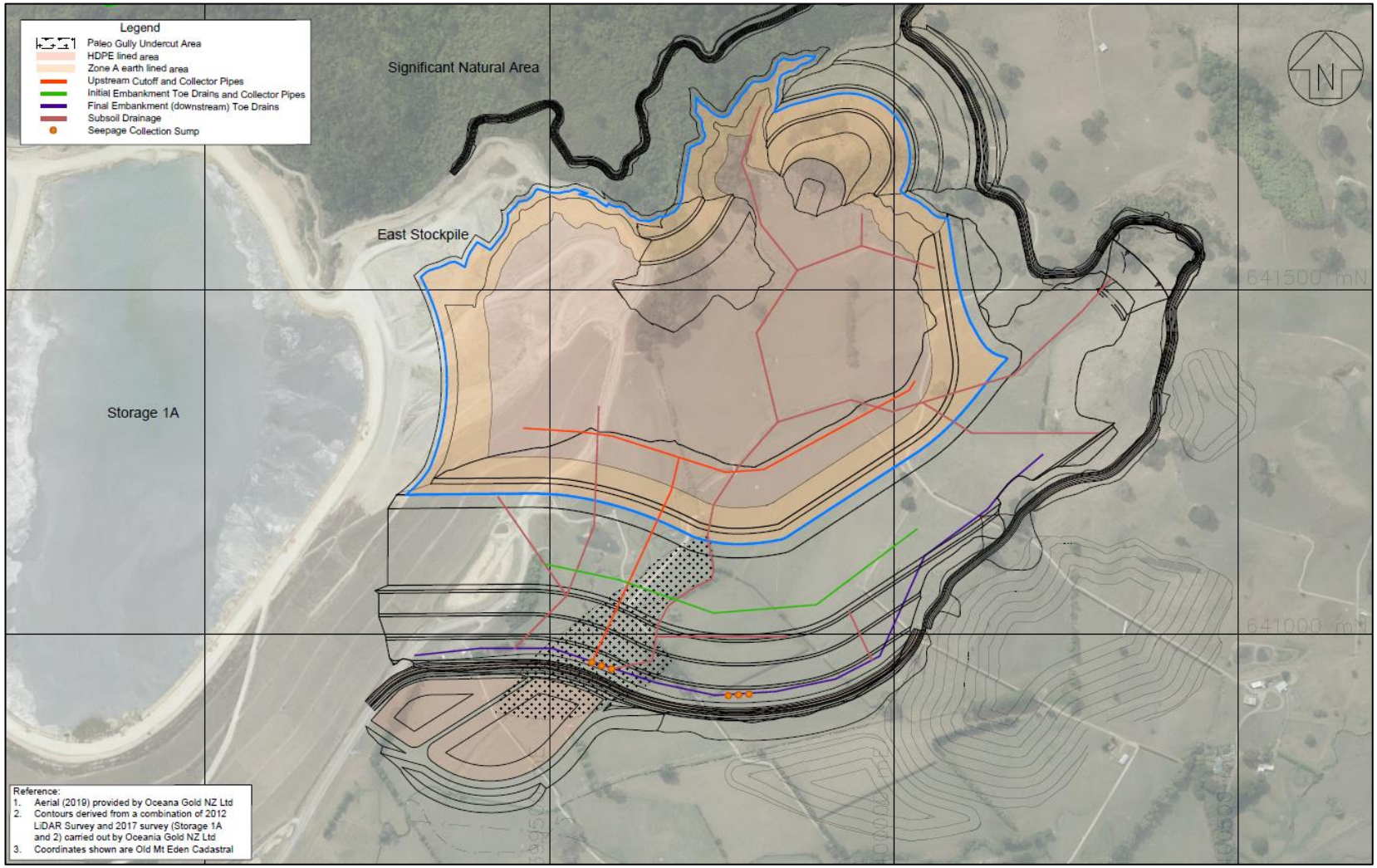

Figure 2-73: TSF3 Drainage Diversion Works (Source: EGL (2025c))

Southern Uphill Diversion Channel Extension

A diversion channel will divert surface water from the forested catchment above TSF3, including an unnamed tributary of the Ruahorehore Stream, around TSF3 and will reconnect to the Ruahorehore Stream. This diversion will be an extension to the existing Southern Uphill Diversion Drain which currently starts behind TSF1A and runs behind the Eastern Stockpile. This drain is set at a level which allows for future potential raising of TSF3 to a crest of 177 m RL. The length of the new section of Southern Uphill Diversion Drain is approximately 2,750 m.

The Southern Uphill Diversion Drain will replicate aquatic habitat attributes with a range of suitable stable microhabitats for fish and invertebrates, including the creation of stable pool habitats, the inclusion of gravel and cobble riffle habitats, and provide for the passage of climbing fish, especially eels.

The Southern Uphill Diversion Drain will be sized for a minimum requirement of a 10 year ARI flow, equal to existing consent conditions for clean water diversions (RC971307, RC971309, Condition 4).

Tailings Storage Facility 3 Subsurface Drains

Groundwater beneath TSF3 will be collected beneath the base geomembrane and earth liner of the impoundment and the embankment through a series of subsurface drains. Leachate from the material within the embankment, i.e. above the Zone A[33] low permeability liner, will be collected via a series of leachate drains. Groundwater and leachate collected in the drains will be directed to a network of manholes and pumped back to the WTP or the Processing Plant via the perimeter ring main system around TSF1A and 2. Electricity to the leachate and underdrainage pumping systems will be extended from existing infrastructure at the toe of TSF1A.

Tailings Storage Facility 3 Perimeter Drain and Collection Ponds

A HDPE lined surface water perimeter drain will direct dirty water runoff to the collection ponds.

The existing Collection Pond S5, which holds surface water from the northeast part of TSF1A and the Eastern Stockpile, will be buried by TSF3. Collection Pond S5 will be replaced by a new Collection Pond S6 at the intersection of the downstream toe of TSF1A and TSF3. Collection Pond S5 currently spills excess water to the TSF1A Perimeter Drain which flows to

[33] Zone A: Low permeability zone (earth liner) that restricts seepage from mine overburden material into underlying ground

Collection Pond S4. Collection Pond S4 has a spillway for excess flow to the Ruahorehore Stream. To separate the discharges to allow for more efficient management of surface water as rehabilitation is completed, Collection Pond S6 will have its own spillway to the Ruahorehore Stream, rather than spilling to Collection Pond S4. The discharge of water from Collection Ponds S4 and S5 to surface water will occur during high flow events.

A new Collection Pond S7 will be constructed to manage the additional embankment runoff area from TSF3. Its proposed location is immediately adjacent to Collection Pond S6 at the low-lying area at the toe of the TSF3 embankment which is the natural drainage path for water on the site.

The realignment of a 341 m long section of the Ruahorehore Stream (at the location identified in Figure 2-74) is required to make room for Collection Pond S7 and temporary sediment retention ponds.[34]

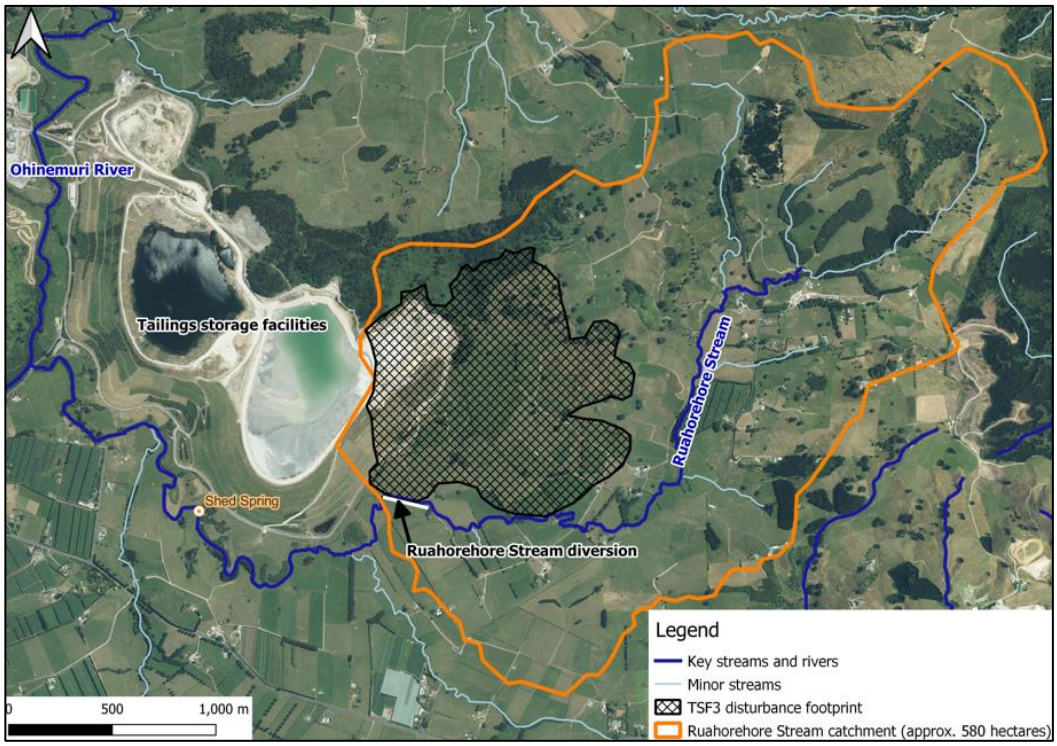

Figure 2-74: Ruahorehore Stream Catchment and Proposed Stream Diversion (GHD 2025d)

Collection Ponds S6 and S7 will both constructed from materials which provide for secure long term containment of water and are lined with a 1.5 mm HDPE geomembrane liner to a

[34] Refer to EGL (2025c), Plans 511-513.

height of 1.5m from the base. A forebay and causeway into the main pond will be features of the ponds that will aid in maintenance, as is used in the existing collection ponds.

The collection ponds will have sufficient capacity to limit discharge over a spillway to the Ruahorehore Stream only in high flow events (10 year ARI, 24 hour storm) when dilution is effective. In all other situations, the water will be pumped back to the WTP before being discharged to the Ohinemuri River for use in the Processing Plant until the water quality improves sufficiently to allow direct discharge into adjacent waterways.

Further details of the treatment process for water directed to the WTP are provided in GHD (2025c), a copy of which is provided in **Part B** of these application documents. It is considered that the WTP has sufficient capacity to deal with anticipated / modelled inflow conditions associated with the WNP, with contingency storage options available should they be required.

2.12.1.7 Erosion and Sediment Control

Southern Skies (2025) describes the erosion and sediment control measures that will be implemented for the proposed Area 7 works. A copy of Southern Skies (2025) is provided in **Part B** of these application documents.

By way of summary, the erosion and sediment control measures for Area 7 will include:

- Installation of silt fences on steep slopes where possible;
- Construction of temporary clean and dirty water diversion drains;
- Construction of earth detention bunds;
- Construction of sediment retention ponds; and
- Use of flocculants.

2.12.1.8 Tailings Storage Facility 3 Construction

A detailed construction methodology for TSF3 is provided in EGL (2025c), a copy of which is provided in **Part B** of these application documents.

The TSF3 embankment will be raised in stages utilising material sourced from:

- The Western Borrow Area located within the NRS;
- The Central Borrow Area and Eastern Borrow Area Stages A and B located within TSF3; and
- The GOP (i.e. mined overburden).

TSF3 will provide for the storage of tailings as necessary from the WNP and any of OGNZL's other consented mining activities.

The proposed starter embankment is 135 m RL (Figure 2-75). A 1.5 mm HDPE geomembrane liner is proposed within the tailings impoundment up to the starter embankment height (135 m RL). From this height onwards an earth liner is proposed.

Benches will be constructed to anchor the geomembrane liner on the slopes as constructed. Tailings underdrains could be installed on top of this liner; however they will not be opened until a suitable thickness of tails has covered the drains.

The starter impoundment will provide approximately 6,700,000 m^3 of tails storage allowing for the PMP with 1 m freeboard.

The initial toe drain and key cut to rock is set for a 145 m RL embankment geometry shown in Figure 2-76. This provides for faster construction of crest height without a large proportion of material having to be placed over the full extent of the final 155 m RL embankment footprint.

From the 145 m RL profile to 155 m RL profile, the fill material will need to be placed to buttress the downstream slope out to the final downstream toe position (set for a potential 177 m RL embankment). This results in an overall flatter profile in the embankment downstream slope profile. This profile allows for management of a range of material strengths within the embankment profile.

The TSF3 embankment will be constructed with low permeability liners and capping to limit oxygen and water ingress to any PAF materials used in the embankment construction. Limestones may also be placed in the embankment to minimise any acid generation potential during constriction, as has been successfully implemented at TSF1A and TSF2.

Some externally sourced aggregate and other construction materials will be required to supplement the construction of TSF3. This includes materials such as drainage metal, sand, roading metal, rockfill lining, concrete, drains, sumps, piping, and geomembrane. This material will be transported to the site via Baxter Road.

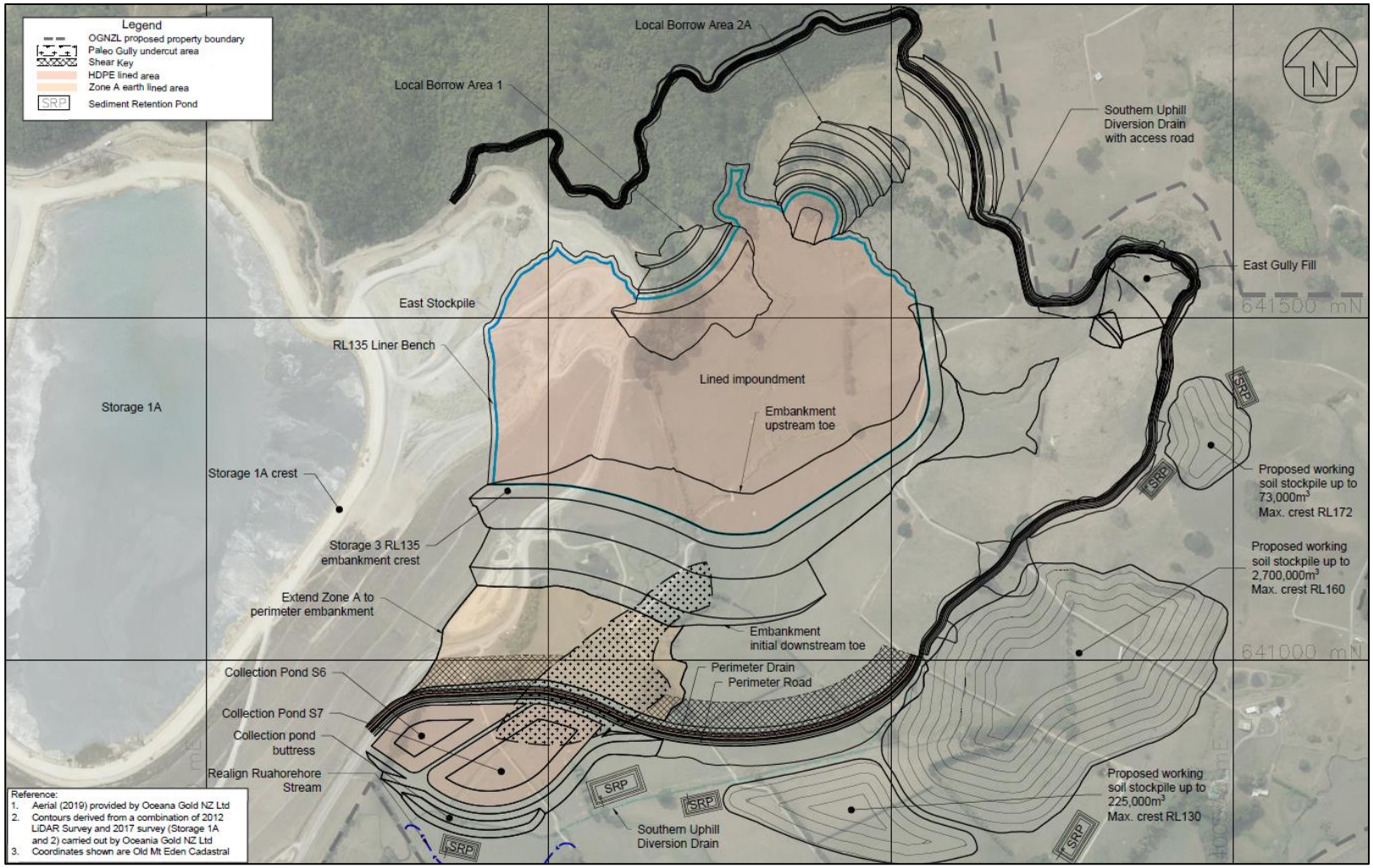

Figure 2-75: Concept Plan of TSF3 Starter Embankment to 135 m RL (EGL (2025c)

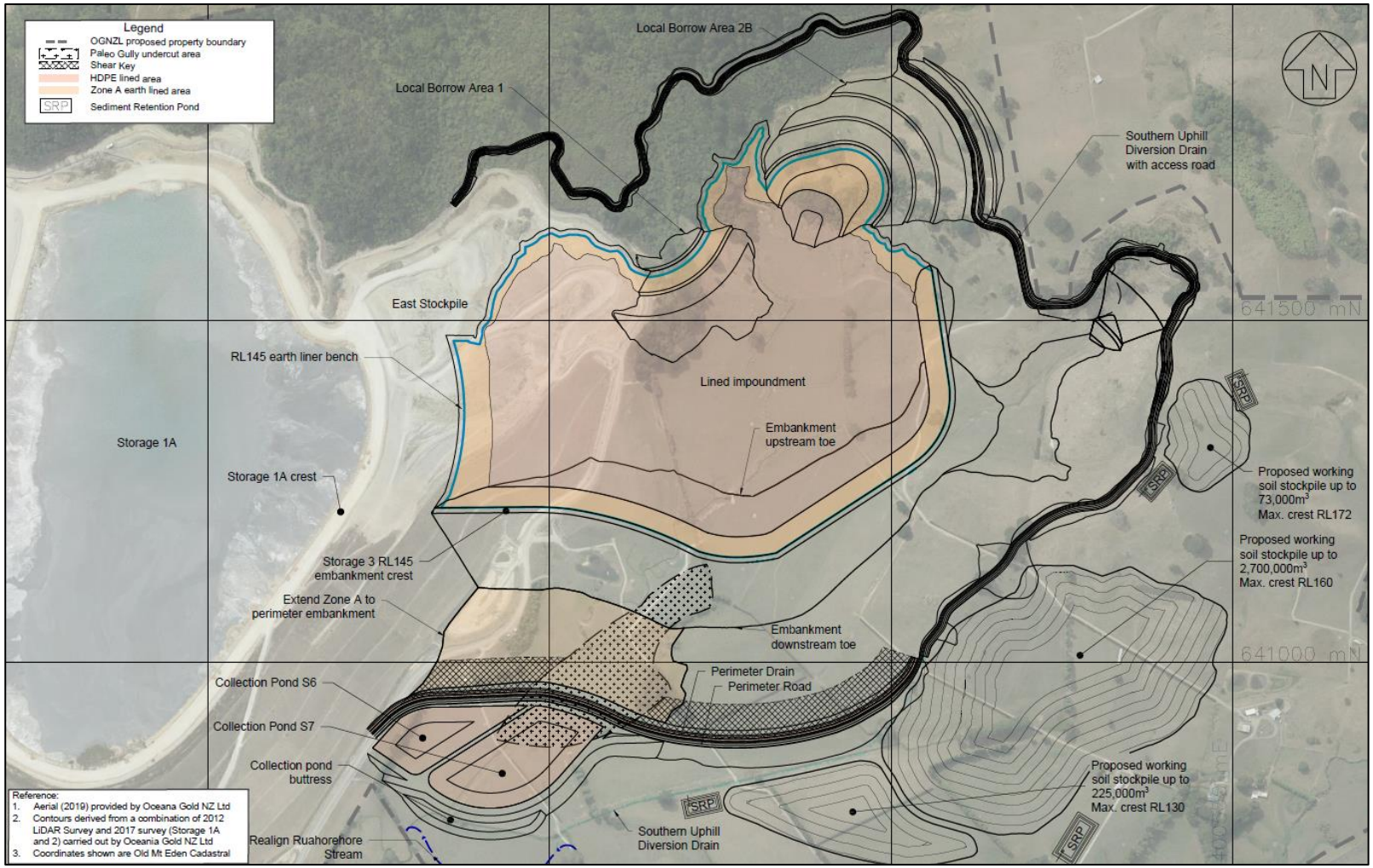

Figure 2-76: Concept Plan of TSF3 Interim Embankment to 145 m RL (EGL (2025c)

The final position of the toe of the TSF3 embankment will be subject to geotechnical investigation to determine the extent and depth of low strength soils.

Earthmoving Equipment

The construction of TSF3 will require a range of earthmoving equipment during its operating life. This includes:

- Excavators
- Compactors
- Bulldozers
- Front end loaders
- Trucks
- Graders
- Service vehicles
- Light vehicles
- Water truck

Various smaller equipment will also be used intermittently such as small excavators, articulated dump trucks, tyre handlers, yard cranes and forklifts.

The number of units will vary over the life of the TSF3 activities.

2.12.2 Closure and Rehabilitation

The Closure Plan for TSF3 includes:

- A partial dry capping of the perimeter of the impoundment as has been done at TSF2;
- A wet capping of the tailings in the centre of the impoundment not covered by the dry capping;
- Redirection of the Western and Central section of the Southern Uphill Diversion Drain into the impoundment; and
- Spillway to discharge clean water from the impoundment to the Ruahorehore Stream.

These items in concept are shown in Figure 2-77.

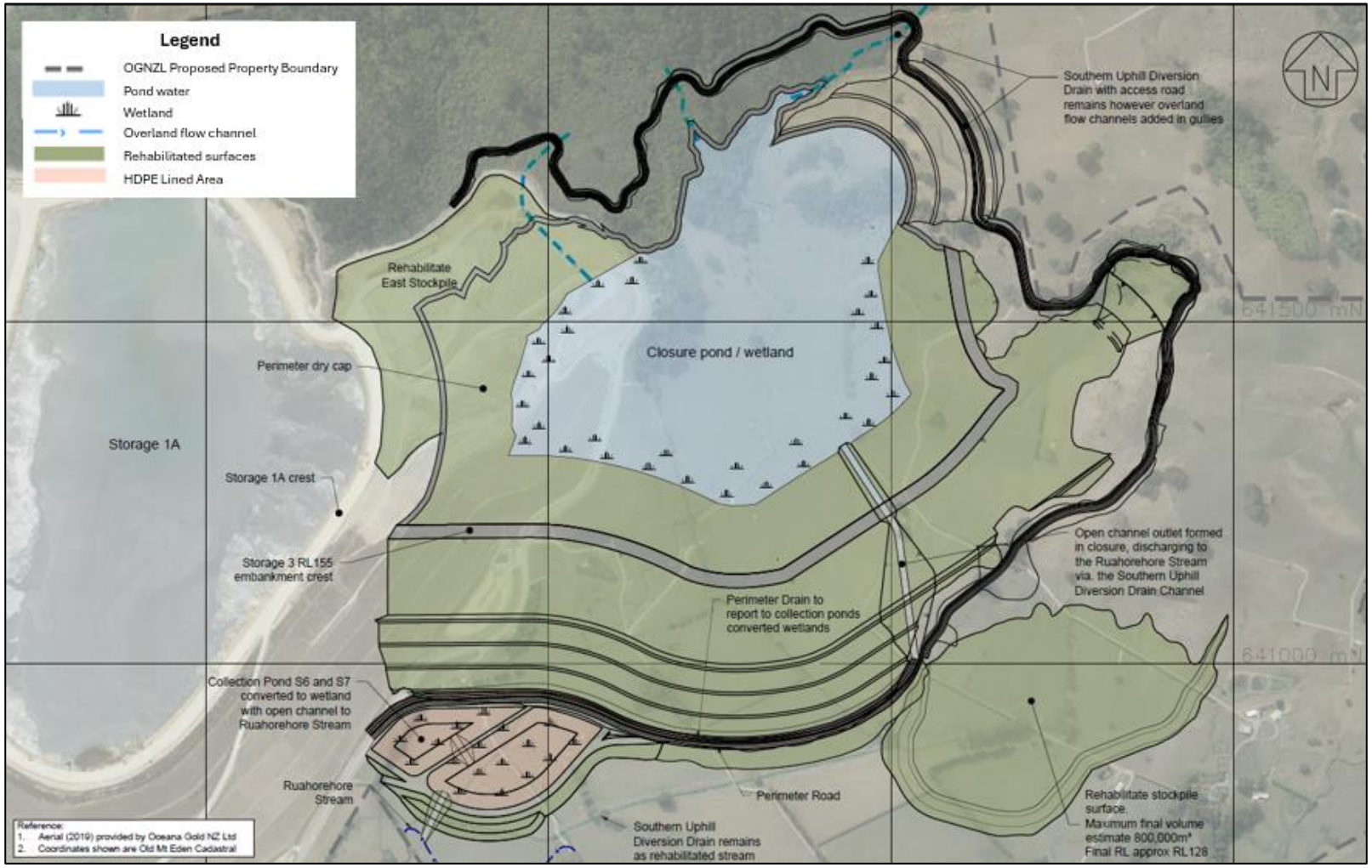

Figure 2-77: TSF3 RL 155 Closure Layout (EGL (2025c))

Post-mining water treatment will continue to take place at TSF3 for up to 2.5 years following the final deposition of tailings occurring, as detailed further in the Water Balance Modelling provided in GHD (2025c).

2.12.3 Hours of Work

Construction / establishment activities may occur within Area 7 on a 24 hour / seven days per week basis subject to meeting specified noise limits. Those noise limits are likely to mean only low noise generating activities (being those activities which meet the night time noise standard) can be undertaken on Sundays and between 2200 and 0700 on Monday to Saturday.

Once constructed, tailings disposal and maintenance activities at TSF3 will occur 24 hours per day, seven days per week.

2.12.4 Lighting

Permanent lighting is not expected to be required at TSF3. Some localised lighting may be required on occasion. Mobile lighting plant will be operated in accordance with OGNZL's *Standard Operating Procedure for Towing and Setting up Lighting Plants*. This procedure includes a requirement to "*not shine towards a public road or buildings*".

Any lighting will be designed, located and directed so that the level of artificial lighting measured at the boundary of any privately owned property (or property not subject to an agreement with OGNZL) is no greater than 8.0 Lux.[35]

2.12.5 Carparking

As noted in Section 2.10.7, additional carparking spaces are proposed within Area 7 for the WNP, comprising a small carpark area to the proposed TSF3 Collection Ponds (refer to Figure 2-59).

Refer to Section 2.10.7 for further details of the proposed carparking within Area 7.

2.12.6 Future Road-Stopping

Whilst not proposed within this application, it is noted that OGNZL has lodged a request with HDC for the stopping of a length of Baxter Road partially located within Area 7, and its supplementary transfer to OGNZL (refer to Figure 2-78).

[35] Note this is consistent with the lighting requirements at OGNZL's existing mining operations. Refer to **Part E** of these application documents for a description of the existing mining activities.

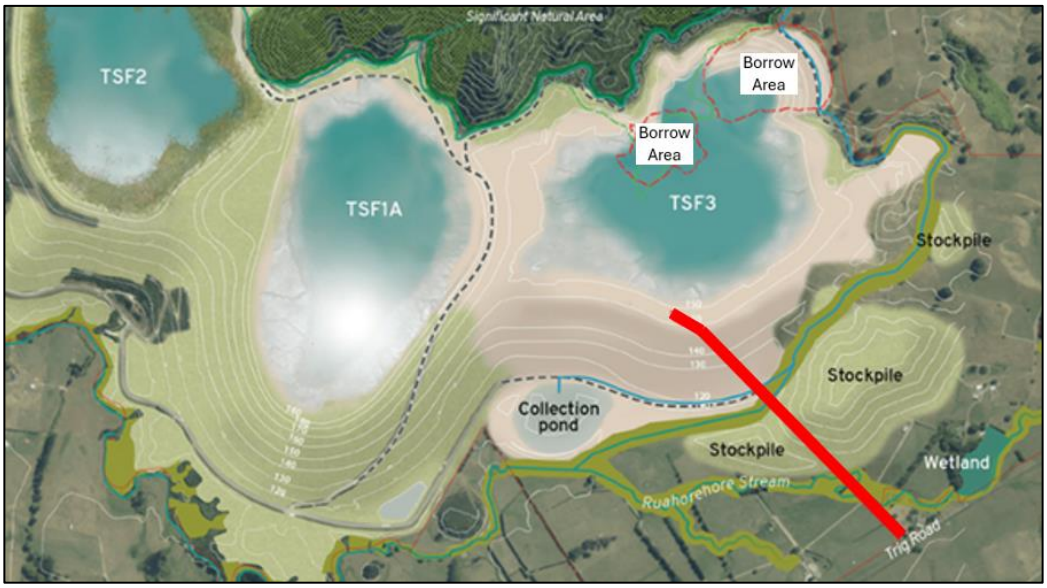

Figure 2-78: Proposed Baxter Road Road-Stopping (in red)

2.12.7 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within close proximity to Area 7 of the WNP (as well as within other project areas of the WNP).

As set out in Section 2.6.4 of this report OGNZL proposes to obtain an Authority for any works that could impact pre-1900 subsurface remains, and to undertake archaeological investigation and recording of any remains affected and uncovered during the proposed works.

2.12.8 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting within, and in locations close to, Area 7, as illustrated in Figure 2-79.

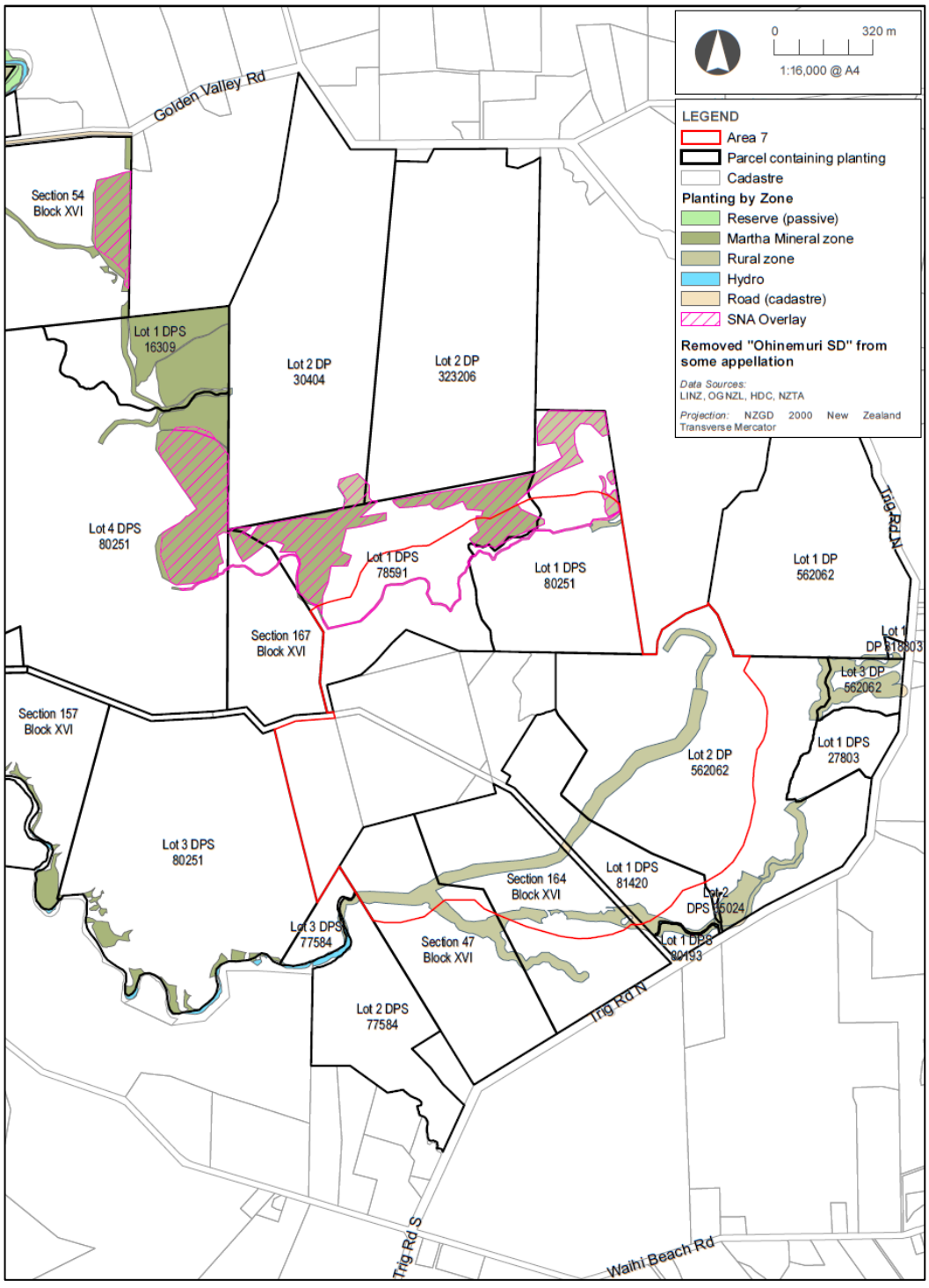

Figure 2-79: Proposed Planting Within and in Close Proximity to Area 7

This planting will include riparian enhancement, native terrestrial enhancement planting, and wetland edge planting. Planting methods and maintenance will occur in a manner similar to that detailed in Section 2.7.3.

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), and in the ELMP-WA provided within **Part H** to these application documents.

2.12.9 Handling, Salvage and Translocation of Native Fauna on Private Land

To manage potential effects on skinks, OGNZL will implement a Lizard Management Plan (which forms part of the ELMP-WA, provided in **Part H** of these application documents) that sets out how native lizards will be captured and relocated prior to, and during, vegetation clearance at TSF3. Within Area 7, the Lizard Management Plan will be implemented in accordance with the provisions set out in Section 2.10.9 in relation to Area 5, above.

2.13 ACTIVITIES OUTSIDE AREAS 1 - 7

In locations outside of the boundaries of Areas 1 – 7, OGNZL proposes to:

- Operate the existing conveyor in the reverse direction;
- Undertake terrestrial and riparian restoration and enhancement planting, including on public conservation land;
- Establish carparking at Kenny Street, Waihi;
- Undertake works in areas with recognised heritage and / or archaeological values; and
- Implement the Waihi North Biodiversity Project (refer to Section 2.14 below).

The Mill Bridge, Laydown Area, and Ohinemuri River Heavy Vehicle Crossing are also outside Areas 1 – 7. However, they are immediately adjacent Area 5, therefore are addressed in Section 2.10.6, above.

2.13.1 Reverse Operating of the Existing Conveyor

As noted in Section 2.10.1.1 of this report, OGNZL proposes to operate the existing conveyor in a reverse direction to transfer material from the NRS back to the Polishing Pond Stockpile.

That part of the conveyor to the west of Area 5 (i.e. outside of Area 5) will also be operating in a reverse direction, but with no material on it.

Further details of this aspect of the proposal are covered in Section 2.10.1.1 of this report.

The Records of Title associated with the existing conveyor are provided in **Part J** of these application documents.

2.13.2 Restoration and Enhancement Planting

OGNZL proposes to undertake restoration and enhancement planting in locations close to, but outside of Areas 2 – 7. This includes planting on public conservation land.

Details of this proposed planting have been outlined in the 'Restoration and Enhancement Planting' sub-sections of the respective areas for which the works are proposed in close proximity to (refer to Sections 2.7.3, 2.8.2, 2.9.2, 2.10.8, 2.11.5, 2.12.8, and 2.13.2).

Further details of the proposed restoration and enhancement planting are provided in Bioresearches (2025a), Boffa Miskell (2025e) and in the ELMP-WA and ELMP-WUG provided in **Part H** of these application documents.

The Records of Title associated with each of the properties on which the planting is proposed are provided in **Part J** of these application documents.

2.13.3 Carparking at Kenny Street, Waihi

The establishment of an additional 150 car parking spaces are proposed on a site located adjacent to the Martha Mine, and accessed off Kenny Street, Waihi, as illustrated in Figure 2-80.

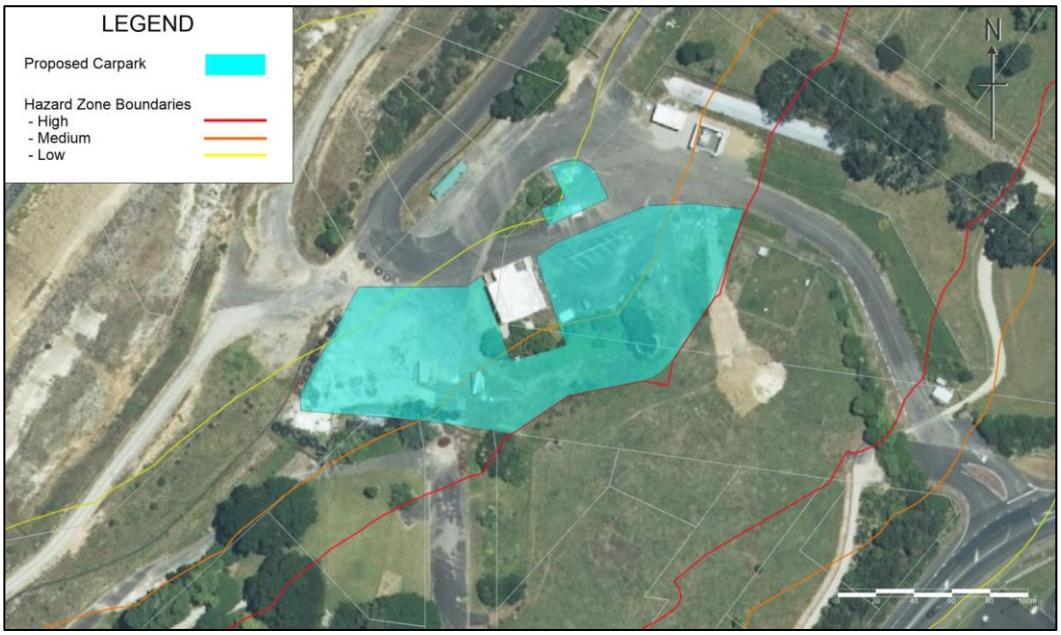

Figure 2-80: Proposed Car Parking at Kenny Street

These parking spaces are intended to be used as part of a park and ride facility (which will limit traffic on Willows Road).

The proposed parking area is located on land owned by OGNZL, and on areas of HDC administered road. OGNZL has commenced discussions with HDC regarding the obtaining of a Licence to Occupy ("**LTO**") the road areas for car parking purposes. Updates and further information on this matter can be provided by OGNZL as / if necessary.

The proposed parking area is located within an area that has undergone recent subsidence hazard analysis by HDC. As illustrated in Figure 2-80, OGNZL proposes to establish the parking area outside of the high hazard zone, but within areas of the medium and low hazard zone.

The car park would be utilised by OGNZL staff for limited periods of time, with a bus service operating between the area and the Willows SFA site. The bus stop itself would be located within the low hazard zone adjacent to the White House, shown centrally on Figure 2-80 above.

OGNZL proposes to continue to undertake ground monitoring in this area (in accordance with a proposed Kenny Street Carpark Subsidence Hazard Zone Management Plan) to detect any ground movement in the car parking or surrounding area and will accept and manage any risks presented to its employees as a result of the utilisation of this site for car parking purposes.

The general public will not have access to the car parking area, with access controlled remotely via the existing gatehouse.

There is ample cleared hardstand already evident to accommodate this activity at the proposed site however, limited earthworks will be required to extend the hardstand area.

2.13.4 Works in Areas with Recognised Heritage and / or Archaeological Values

As noted in Section 3.11 of this report, and in Clough (2025) provided in **Part B** to these application documents, there are recognised heritage and / or archaeological values located within close proximity to those proposed works of the WNP located outside of Areas 1 - 7 (as well as within the project areas of the WNP).

As set out in Section 2.6.4 of this report OGNZL proposes to obtain an Authority for any works that could impact pre-1900 subsurface remains, and to undertake archaeological investigation and recording of any remains affected and uncovered during the proposed works.

2.14 WAIHI NORTH BIODIVERSITY PROJECT

OGNZL has a corporate philosophy of leaving a positive legacy in the areas in which it operates. Accordingly, OGNZL proposes to fund and facilitate the Waihi North Biodiversity

Project within an area of up to 18,870 ha of the southern Coromandel Forest Park (refer to Figure 2-81) over a minimum 10 year term. The details of the Waihi North Biodiversity Project are documented in OGNZL (2025b) which is provided in **Part B** to these application documents.

This proposal is additional to those measures necessary to mitigate, offset or compensate the adverse impacts associated with the WNP's proposed mining activities and seeks to achieve long-term (inter-generational) positive ecological outcomes for the area.

Broadly, the Waihi North Biodiversity Project will involve control of stoats, possums, feral cats, goats and deer over an area of up to 18,870ha located on public conservation land immediately north of Waihi. Within the management area a more intensively controlled "core area" is proposed comprising approximately 1300 ha which will include all of the Otahu Ecological Area (c. 655 ha) and immediately surrounding areas. Within the core area the species listed above will be controlled as well as rats, hedgehogs, pigs and perhaps mice.

The Waihi North Biodiversity Project is large enough that a variety of biodiversity benefits will accrue for a range of species and habitats typical of the Waihi Ecological District and southern Coromandel generally.

It is intended that the Waihi North Biodiversity Project will be developed and implemented in partnership with tangata whenua, who have also been engaged in the initial design. This facilitates the integration of cultural perspectives and knowledge, as well as the exercise of kaitiakitanga in both establishing the Waihi North Biodiversity Project's objectives and in implementing the programme.

In order to secure this commitment, OGNZL has proffered a set of conditions provided in **Part D** of these application documents, which are intended to be imposed on any approval granted for the WNP. These conditions require funding, commit OGNZL to a process to collaboratively develop the detail of the Waihi North Biodiversity Project with tangata whenua, and then commit OGNZL to executing the resulting project. The delivery of the resulting project will require the obtaining of further approvals which will be applied for at a later date once the project design has been confirmed.

For clarity, and with regard to the Schedule 4 provisions of the Act, it is noted that the approvals sought as part of this application do not of themselves seek to authorise activities within any land described in Schedule 4, and therefore no non-mining activities are being applied for on ineligible land.

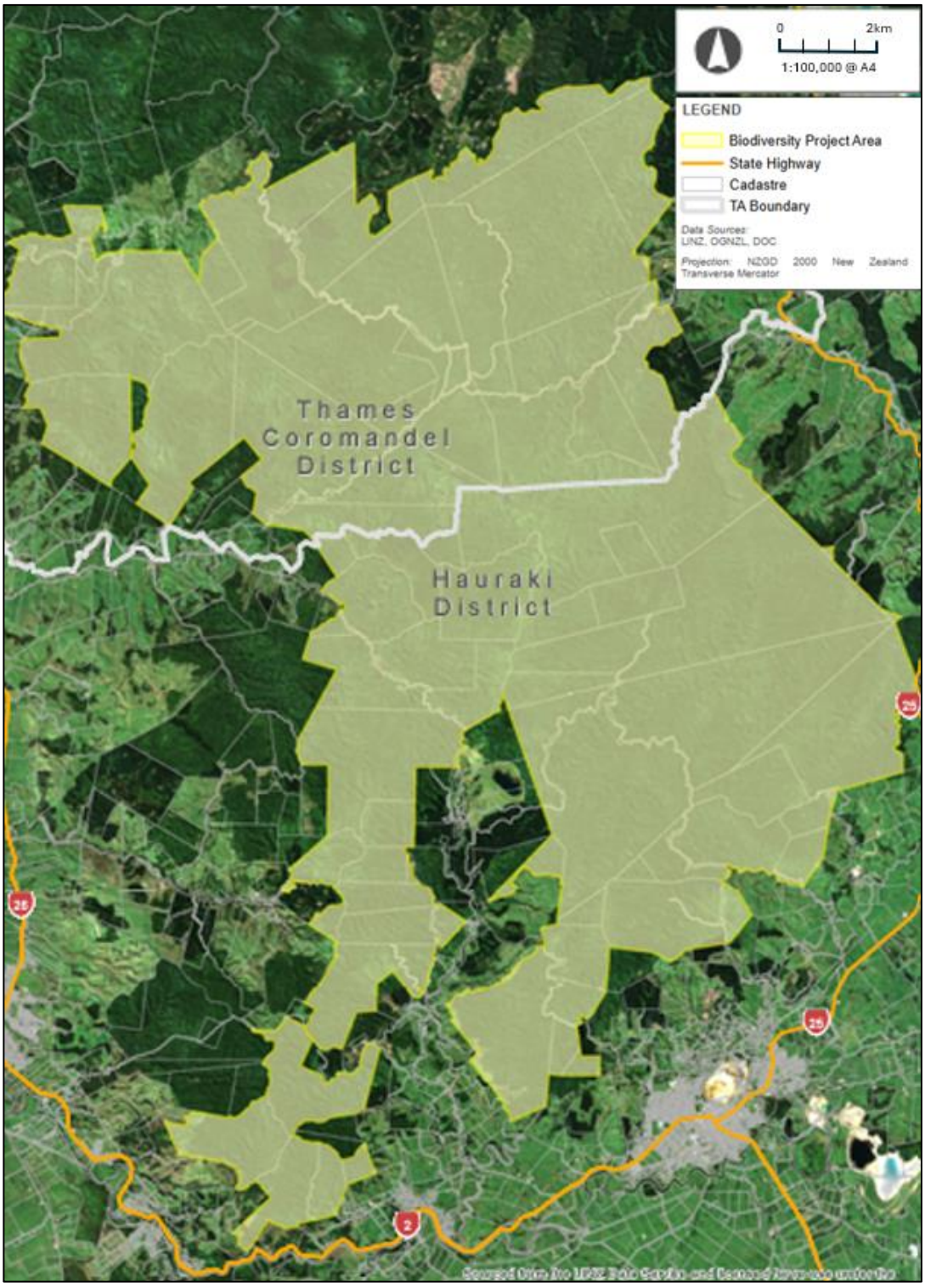

Figure 2-81: The Area within which the Waihi North Biodiversity Project will be Established