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Environmental Consultants



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Barrytown South Mineral Sand Project Native Fish Capture and Relocation Plan

Submitted to:
Tāiko Critical Minerals Limited



water



fauna



flora



land

Quality Assurance

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1.0 Introduction

1.1 Background

Tāiko Critical Minerals Ltd (TCM) holds resource consents from the Grey District and West Coast Regional Councils for mineral sand mining at the 'Central Block' (CB) within Mining Permit MP 60785. The 'Southern Block' (SB) is approximately 408 ha in extent and located south of the already consented area, between Canoe Creek and Fagan Creek. Mining activity would occur on 280 ha within the SB according to the indicative mine path (Figure 1) which is known as the 'mining disturbance area'. Earthworks may be undertaken within up to 72 ha of the SB outside the mining disturbance area to assist with recontouring and rehabilitation within the mining disturbance area. The affected land is owned by Moir Farms Maimai Limited, Barrytown Farms Ltd, Nikau Deer Farm and Cargill Road Barrytown Limited. Grey District Council also owns a small piece of road reserve which would be affected.

Resource consents are being sought under Schedule 5 of the Fast Track Approvals Act 2024 to undertake mineral sand mining using a floating dredge to obtain ilmenite, garnet and other minerals. Wildlife approvals are also being sought under Schedule 7 for management of lizards and avifauna. It has been assessed that no complex fisheries approvals are required under Schedule 9. TCM's application to seek resource consents to mine within the SB was scheduled in the Fast Track legislation as a Schedule 2 project in October 2024

This Native Fish Capture and Relocation Plan (NFCRP) for the Site outlines how native fish will be captured and relocated from creeks and artificial drains within the Site (at the locations shown in Figure 2) prior to and during works and identifies responsibilities, relocation sites and reporting requirements.

The objective of this NFCRP is to avoid, remedy, mitigate or otherwise minimise adverse effects on native fish present within the project area.

1.2 Fish Fauna at the Site

There are no records in the New Zealand Freshwater Fish Database (NZFFD) for watercourses within the site (Figure 3). There are NZFFD records of longfin eel (*Anguilla dieffenbachii*), banded kōkopu (*Galaxias fasciatus*), kōaro (*Galaxias brevipinnis*) and shortjaw kōkopu (*Galaxias postvectis*) in the mid-upper reaches of Granite Creek to the east of SH6 during surveys by the Department of Conservation in 1998 and 2022. These three native species are diadromous and migrate between the sea and freshwater to complete their life cycles so would have migrated up the highly modified lower reaches of Granite Creek to reach this habitat. These records also indicate there are no substantial barriers within the site for these species with 'good to excellent' climbing ability.

Additional fish species listed in the NZFFD from Canoe Creek to the immediate north of the SB and Fagan Creek to the immediate south of the SB include shortfin eel (*Anguilla australis*), torrentfish (*Cheimarrichthys fosteri*), common bully (*Gobiomorphus cotidianus*), bluegill bully (*Gobiomorphus hubbsi*), redfin bully (*Gobiomorphus huttoni*) and the introduced brown trout (*Salmo trutta*). Mining is to be set back at least 20 m from both of these creeks.

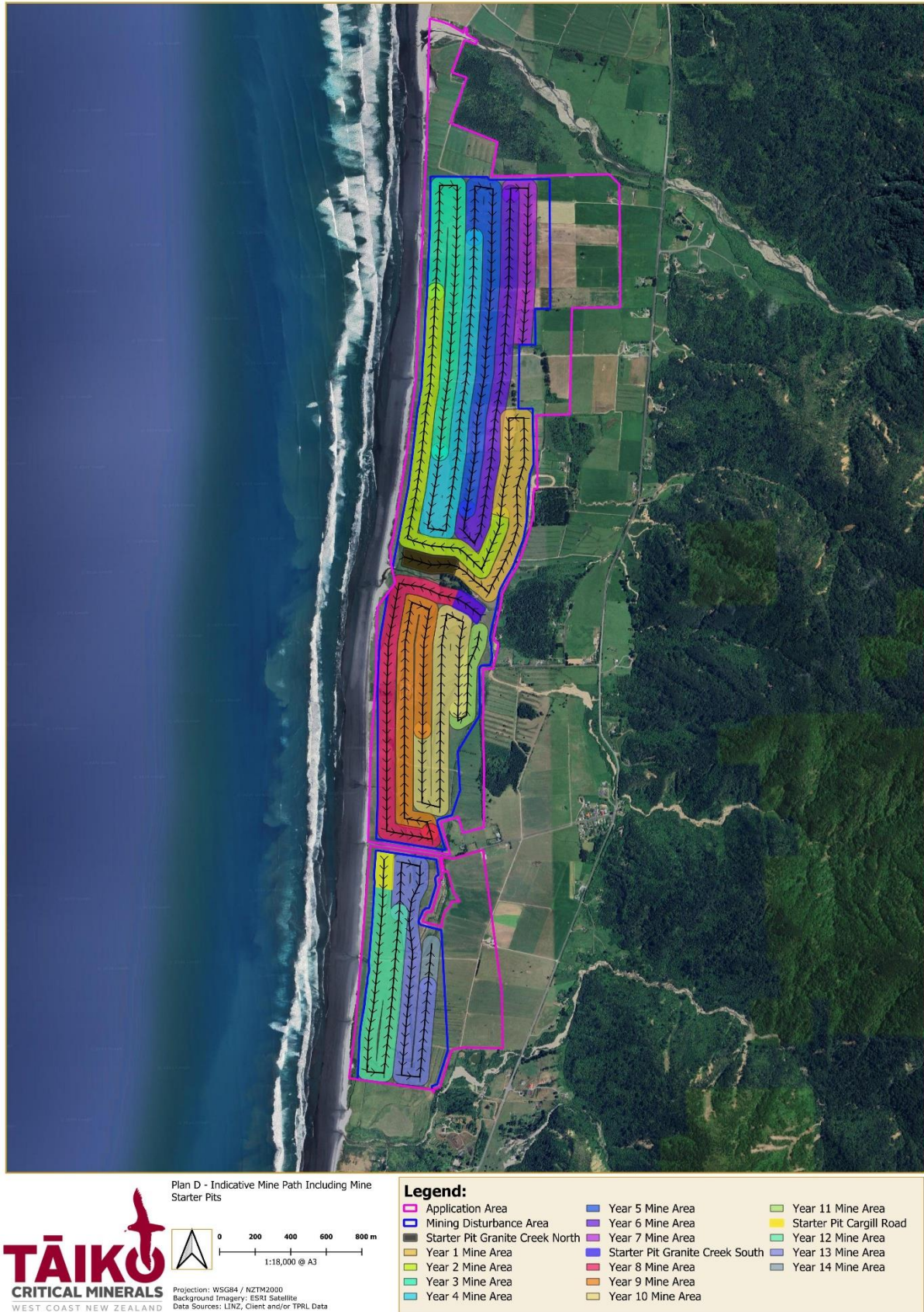


Figure 1: Staging Plan.



Figure 2: Creeks and drains within the SB.

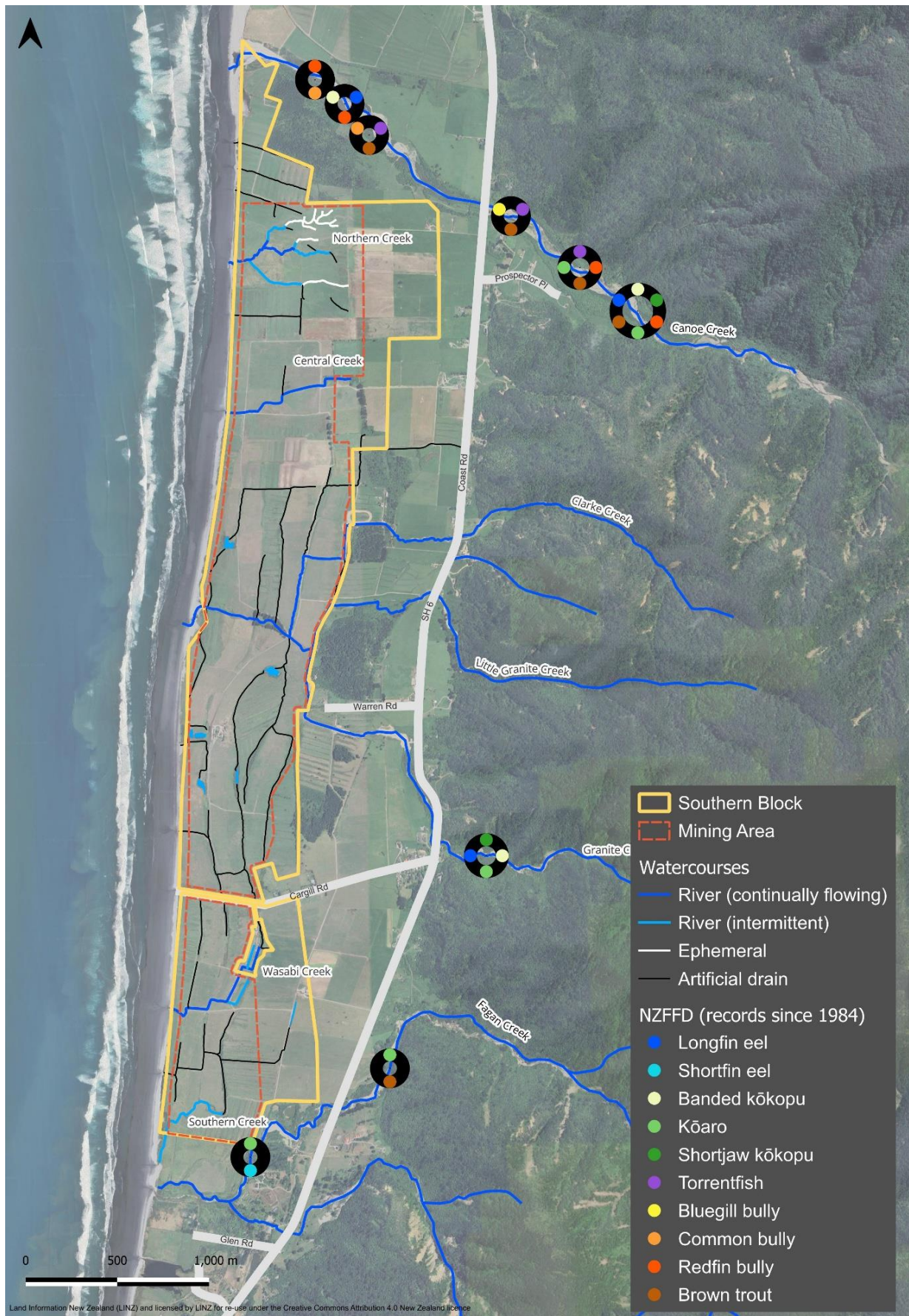


Figure 3: New Zealand Freshwater Fish Database records near the SB since 1985.

2.0 Native Fish Capture and Relocation

2.1 Responsibilities

The responsibilities related to this NFCRP are outlined below:

- Fish relocations are to be carried out by experienced freshwater ecologists who are responsible for implementing all aspects of the NFCRP including the installation and maintenance of temporary exclusion nets along the drain.
- The consent holder is responsible for ensuring the NFCRP is implemented and that all results are reported to the appropriate entities (e.g., West Coast Regional Council).
- The Construction Site Manager is responsible for earthworks, construction, diversion, dewatering and reclamation/infilling. These responsibilities also include the management of environmental impacts and their own personal health and safety.

2.2 Permits

Fish relocations are to be carried out under the relevant permits including:

- A special permit from the Ministry of Primary Industries to capture fish using methods outside of amateur fishing regulations.
- An approval to transfer aquatic life under either section 26ZM(2) or 26ZM(3) of the Conservation Act 1987. Section 26ZM(2) is administered by the Ministry of Primary Industries in situations where a species is being translocated to locations where it already occurs while Section 26ZM(3) is administered by the Department of Conservation in situations where a species is being translocated to locations where that species is absent.

Ecological Solutions Limited already hold the relevant permits to implement this plan.

2.3 Staging and Timing of Mining Activities

Mining will occur over a 14-year period commencing in the northern part of the site and progressing south and from west to east. Over the period of the project five creeks within the site will require diversions. These are:

- Northern Creek.
- Central Creek.
- Clarke Creek.
- Wasabi Creek.
- Southern Creek.

2.4 Diversion Methodology

2.4.1 Approach

The diversion methodology will differ for each watercourse (including artificial drains) depending on their orientation (north south or east west), future purpose for the adjoining land and sequence of mining activity.

2.4.2 North South Diversions

North–south oriented creeks and drains will be diverted into a previously mined area before mining reaches them (except where mining is adjacent to the coastal setback boundary). An example of the approach is shown in Figure 4. This may require adjustments (widening or narrowing) of the mine path to facilitate this diversion. Following mining, a permanent reconstructed channel will be built in advance of diversion to this new channel as part of the rehabilitation of the mined land. The flow will be redirected into the final channel in a single ‘livening’ event.

2.4.3 East West Diversions

East–west oriented creeks and drains will be diverted into previously mined areas (behind the mining void) and into the adjacent mine path (to the east as mining moves inland), prior to mining progressing through the existing alignment. This requires a temporary diversion of the creek or drain around the active mining area as shown schematically in Figure 5. Once mining has advanced beyond the temporary alignment, a permanent reconstructed channel can be constructed and the creek or drain reinstated at its final location. These waterbodies could need to be disturbed several times throughout their reach, with temporary diversions occurring each time the active mining area intersects the watercourse, potentially once per year for up to three months at a time per waterbody. Diverting the watercourse around two sections of mine path at a time as proposed reduces the number of diversions required.

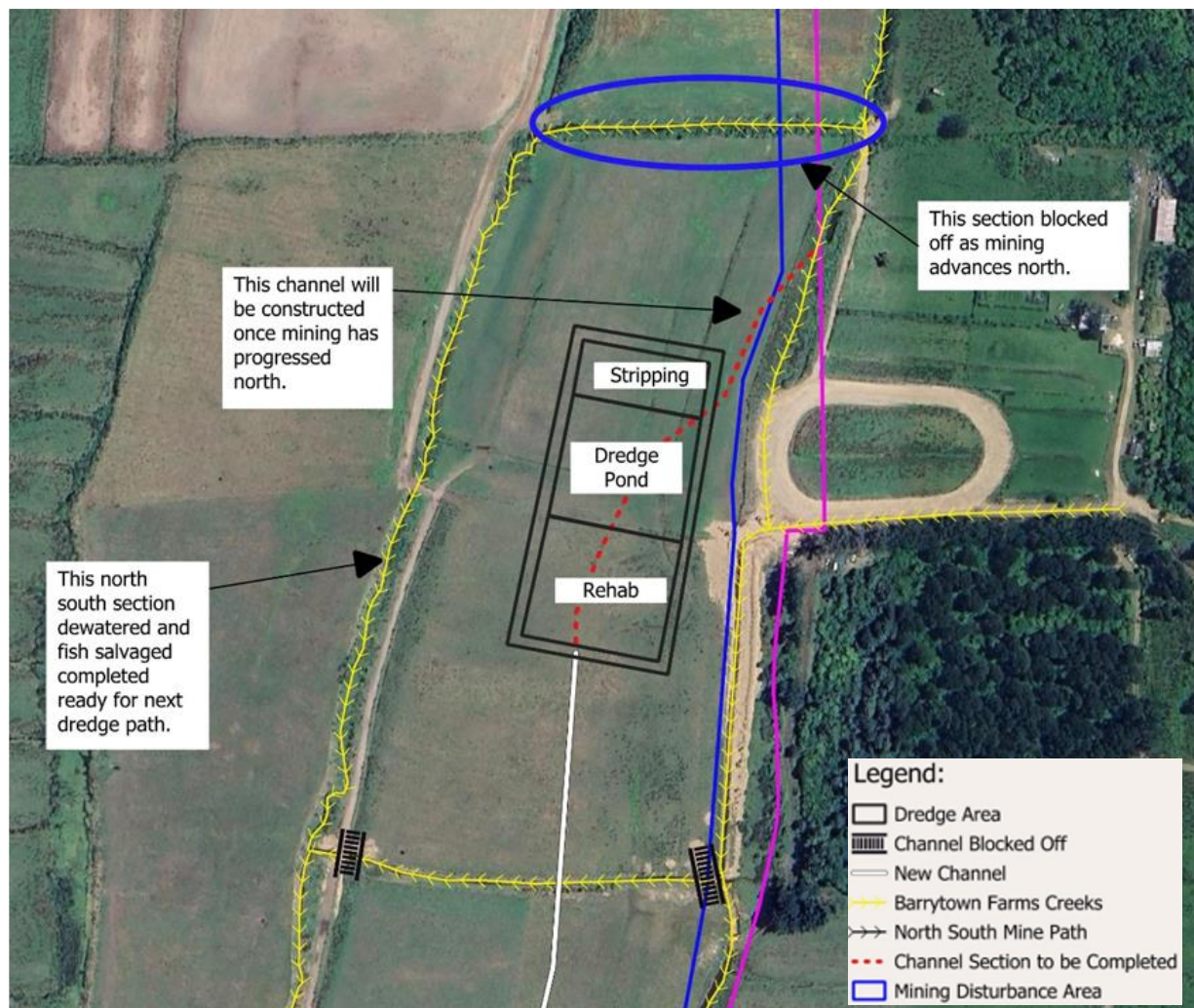
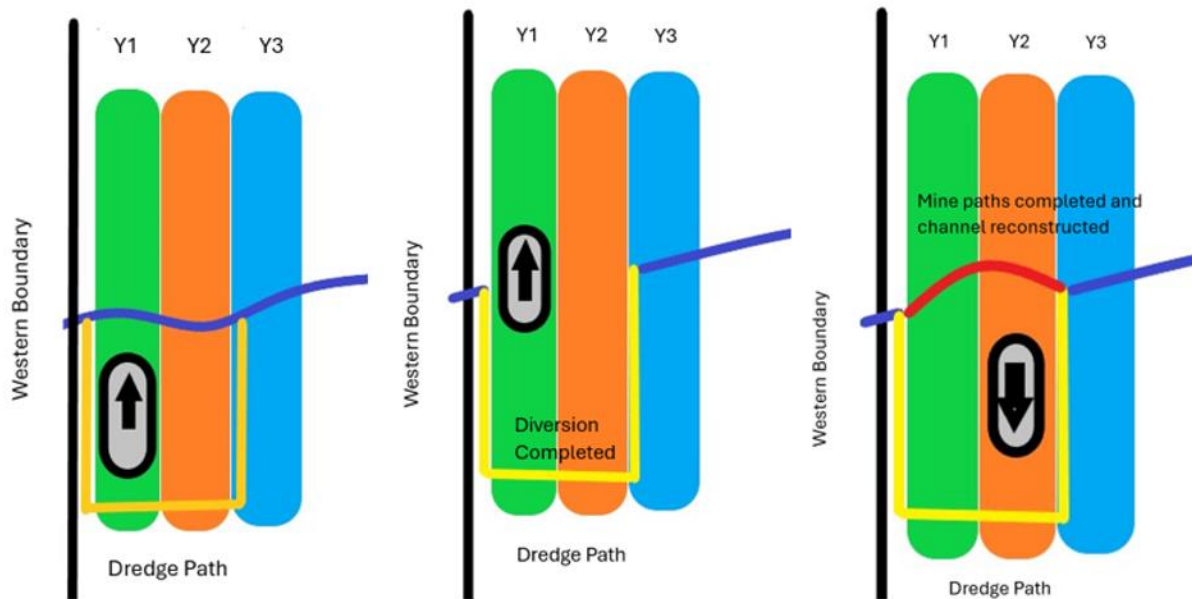


Figure 4: Diversion methodology for north – south watercourses.



As the dredge approaches the creek or drain, a temporary diversion (shown in yellow) is constructed behind the mining void.

The creek or drain is then diverted into this temporary channel, allowing the dredge to continue along its planned path.

Once the mining void has progressed beyond the proposed reconstructed alignment, the diversion is redirected into the newly rehabilitated channel (shown in red).

Figure 5: Diversion methodology for east – west watercourses.

2.5 Fish Relocation

2.5.1 Introduction

Mining will occur in stages over approximately 14 years, which will allow fish salvage and relocations to be undertaken in shorter manageable sections within the Site's extensive network of creeks and drains. The approaches to fish relocations are discussed in the following sections.

2.5.2 Stage 1 - Pre-Diversion.

Prior to the creation of the stream diversion reaches, a fine mesh exclusion net will be installed across the creek or drain at the upstream and downstream extents of the reach to be diverted in order to prevent any fish moving into the affected section. Fish exclusion nets will be left in place until the fished section has been diverted and banded (preventing fish entry) or until watercourses have been dewatered and fish removed. Regular maintenance of exclusion nets will be required to ensure they are functioning as intended, especially after high flow events.

Fyke Netting

Where practicable (i.e., where depth and in-stream vegetation allows), pre-works trapping will be carried out in each reach using fine mesh fyke nets set at appropriate intervals. Nets will be baited, set overnight and cleared the following morning. Nets will be deployed with an air gap if dissolved oxygen levels are low to ensure fish can gulp air from the surface.

Netting will continue over consecutive nights for a minimum of three nights and until the mean catch rate within a salvage site falls to less than 0.25 fish/ trap/ night. Any fish captured will be handled as per protocols set out in the Fish Capture and Handling section below.

If fyke nets cannot be deployed, then the electric-fishing method will be used ensuring multiple passes and all instream habitat is surveyed.

Electric Fishing

On the day that trapping and/or netting in the impact section has reached the target catch rate, the section will be electric fished as a final check that fish have been removed. Electric fishing will involve multiple passes carried out in short sections to maximise fishing effort and to ensure as many fish as possible are captured prior to diversion.

After the ecologist is satisfied that electric fishing has captured as many fish as possible, the fished reach can be isolated (e.g., banded) and diverted into temporary diversion channels and / or completed and stabilised.

2.5.3 Stage 2 - Dewatering Relocations

Fish, particularly eels, are likely to remain in streams even after netting/trapping and intensive electric fishing. It is proposed that any remaining fish will be salvaged during the dewatering stage when water is diverted into temporary diversion channels and the impact section isolated.

Any fish observed moving within the channel during the dewatering stage when water levels are lowered will be captured using hand-held nets and/or an electric fishing machine if it is safe to do so. Any fish observed will be captured using hand-held nets and handled as per protocols set out in the Fish Capture and Handling section below.

2.5.4 Stage 3 - Excavation Relocations

After dewatering, there is still potential for eels to be present within the channel as they can burrow into streambanks or the soft-bottomed silt/mud bed.

During the excavation stage, any material removed from the channel and deposited into designated holding areas will be inspected by the ecologist or contractor under the direction of the ecologist. Any fish observed will be captured using hand-held nets and handled as per protocols set out in the Fish Capture and Handling section below.

2.5.5 Stage 4 - Post Diversion Relocations

Following the completion of mining and the construction and rehabilitation of the reinstated channel, exclusion nets will be installed at both ends of the diversion reach and fish will be salvaged using the methodology described in Sections 2.5.2 and 2.5.3.

2.6 Fish Capture and Handling

The following procedures will be followed for the transfer of native fish or pest fish.

- All fish captured will be immediately transferred into a clean bucket or fish bin of water from the existing habitat and placed in a well-shaded location. Water may be collected from the release site to ensure it is cool and of good quality.
- Multiple fish bins will be used if there are large numbers of fish captured to reduce stress on captured fish.
- Battery powered aquarium pumps will be used to maintain dissolved oxygen in fish bins if required.
- Fish will be checked to ensure that all aquatic plant material is removed prior to transfer into the bucket/fish bin.

- Native fish will be monitored and released within two hours of capture if water quality is poor and fish are displaying signs of stress.
- Pest fish or diseased fish will be humanely euthanised.

If large numbers of eels are collected, immediately prior to release, eels will be transferred from fish bins into catch bags, to enable safer transport (i.e., carrying by hand) from the vehicle to the release site.

2.7 Fish Release Locations

Best practice during fish relocations is to ensure that the fish are returned to watercourses within the catchment of origin and to sites appropriate for their required habitat type (Table 1 and Table 2). Furthermore, the majority of fish species present at the site have a diadromous lifecycle, so wherever the fish are relocated, the site characteristics must not impede migrations to and from the ocean.

The location of the SB is somewhat unique in that it is located adjacent to the ocean and all the watercourses within the site are fed by low order streams originating in small catchments, so the relocation sites are restricted by these factors.

There is also a temporal consideration in that creeks that will be reconstructed after mining has passed through a watercourse system for the final time and rehabilitated fully, may also provide opportunities as relocation sites.

In some cases, fish may need to be moved multiple times to account for the complexities of the staging and life of the operation. The proposed fish release points are shown in Figure 6. These sites are considered most suitable given the constraints and habitat requirements, and the ultimate location(s) used for a particular transfer should be chosen based the final scheduling and diversion plans and the requirements of the fish species recovered.

Table 1: Habitat considerations at release sites.

Species	Threat Status*	Habitat
Shortfin eel	Not threatened	Streams, wetlands and drains. Boulders, logs, undercuts in stream banks.
Longfin eel	At risk - declining	Streams, wetlands and drains. Boulders, logs, undercuts in stream banks.
Torrentfish	Naturally uncommon	Fast flowing rapds of rivers and streams.
Redfin bully	Naturally uncommon	Runs and pools of bouldery streams.
Bluegill bully	Naturally uncommon	Swift broken water in open rivers and streams.
Common bully	Not threatened	Low velocity streams, wetlands and lake margins.
Banded kōkopu	Naturally uncommon	Small pools, small streams with pools and riffles andwith rocky substrates.
Kōaro	Naturally uncommon	Fast flowing streams in native forest catchments.
Giant kōkopu	Naturally uncommon	Slow flowing, overgrown boggy streams and swamps and lake margin.
Brown trout	Introduced and naturalised	Cool lakes, rivers and streams.

Note: Species records are based on NZFFDB, eDNA and electric-fishing surveys (Ecological Solutions 2026). *(Dunn et al 2025).

Table 2: Location of potential release sites.

Site code	Location	NZTM 2000	
		Northing	Easting
CC1 (During mining - diversions)	Clarke Creek	5323546	1462063
CC2 (Post mining option)	Central Creek	5324278	1461087
NC1 (Post mining option)	Northern Creek	5325131	1461034
GC1 (During mining - diversions)	Granite Creek	5321854	1461948
LG1 (During mining - diversions)	Little Granite Creek	5323235	1461943
LG2 (Post mining option)	Little Granite Creek	5323115	1460870

3.0 Reporting

Ecological Solutions Limited will report the results of the fish relocation work to the consent holder and West Coast Regional Council within one month of completing each stage. Results will include the following information:

- Fish species caught.
- Number caught.
- Health / condition.
- Location of capture.
- Location of release.

Results from a given year will also be incorporated into the annual environmental monitoring report.

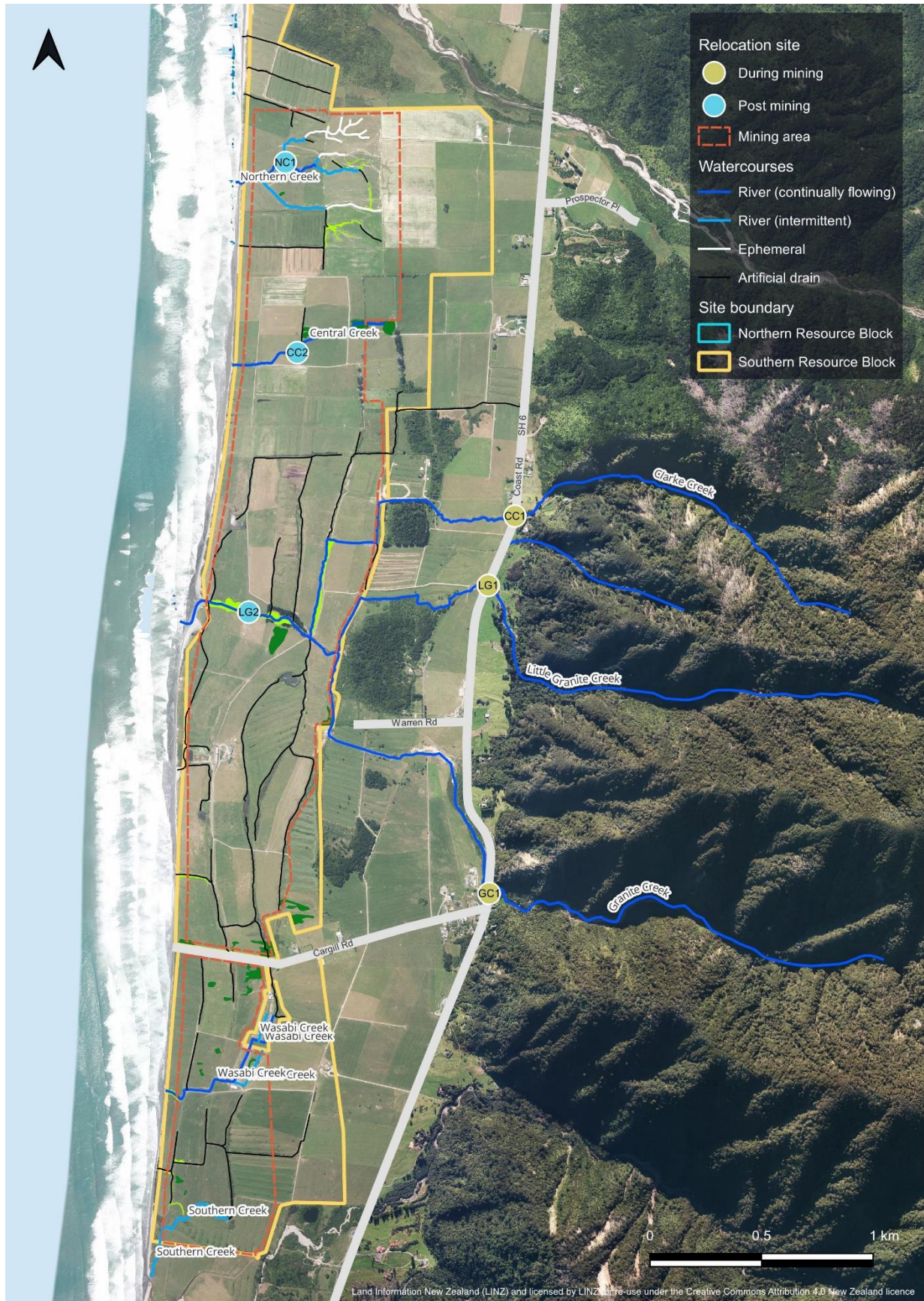


Figure 6: Fish relocation sites.

4.0 References

Dunn, N.R., Allibone, R.M., Closs, G.P., Crow, S.K., David, B.O., Goodman, J.M., Griffiths, M., Jack, D.C., Ling, N., Waters, J.M. and Rolfe, J.R. 2025. Conservation status of New Zealand freshwater fishes, 2017. New Zealand Threat Classification Series 24. Department of Conservation, Wellington. 11 p.