February 2025

OceanaGold NZ Ltd
Waihi North Project
Recreation and Tourism Assessment

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TECHNICAL REPORT
WAIHI NORTH PROJECT – RECREATION & TOURISM ASSESSMENT
GENERAL AREA 000

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OceanaGold NZ Ltd
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Prepared for OceanaGold NZ Ltd

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1 Executive Summary

The current Waihi life of mine plan, owned and operated by OceanaGold (New Zealand) Ltd (OGNZL), including Project Martha, is to complete production by the end of 2030. Study work conducted between 2016 and 2024 identified opportunities to expand the Waihi operation to beyond 2040 within the Waihi North Project, with:

- A new underground mine at Wharekirauponga (under Coromandel Forest Park), with associated surface infrastructure to be located on farmland (owned by OGNZL) at Willows Road, underground access to dual tunnels extending to the Wharekirauponga orebody, and a connecting tunnel from the dual tunnels to the existing Processing Plant at Waihi;
- A new open pit, the Gladstone Open Pit (GOP), located to the west of the existing Waihi operation's Processing Plant, with associated works to afford conversion to a tailings storage facility on completion of mining;
- A temporary rock stack at Willows Road (the Willows Rock Stack) for the Wharekirauponga Underground Mine and a Northern Rock Stack (NRS) located near the existing Tailings Storage Facilities (TSFs) and Processing Plant;
- A new Tailings Storage Facility 3 (TSF3) located to the east of the existing tailings storage facilities, with waste rock to construct the TSF3 embankment to be initially sourced from material borrowed from within the TSF3 footprint and on the eastern side of the NRS;
- An upgrade of the existing Processing Plant;
- An upgrade of the existing Water Treatment Plant (WTP) to double its current treatment capacity; and
- Reconsenting of the existing treated water discharge consents and duplicating the existing diffusers within the bed of the Ohinemuri River.

The Boffa Miskell Pest Animal Management Plan proposes removal of pigs and goats from a 632 ha ungulate control area in the southern part of the Coromandel Forest Park, encompassing the project area.

Work is planned to be completed over three stages as follows:

Stage One

- Establishment of the Willows Access Tunnel decline;
- Establishment of infrastructure associated with the Willows Access Tunnel;
- Upgrades to the existing WTP; and
- Resource investigation and exploration progression at Wharekirauponga.

Stage Two

- Wider mining development and production associated activities.

Stage Three

- Mine closure and remediation activities.

Stage One activities relevant to this assessment are the upgrades to the WTP and an increase in exploration activity. All other relevant activities are associated with mine development in Stage Two including the development of the GOP, Willows Rock Stack, NRS, TSF3, and the installation of vent raises in the Coromandel Forest Park, with additional exploration work. Stage Three is mine closure and remediation.

This report assesses the effects on recreation and tourism[1] of relevant components of the three stages, specifically:

- Effects on water contact recreation and fishing from treated water discharge into the Ohinemuri River;
- Effects on recreation – specifically walking the Wharekirauponga Track and tramping and pig hunting within the Coromandel Forest Park – from increased exploration activities, drilling, the location of drilling camps and helicopter movements;
- Effects on recreation of vent raises associated with the Wharekirauponga Underground Mine (WUG) within the Coromandel Forest Park, and surface vibration effects from underground blasts, and on pig hunting from proposed pest management activities;
- The effects of the construction and operation of the GOP, NRS and TSF3 on publicly accessible reserve land nearby – mostly noise and landscape effects; and
- Mine closure.

There are no effects of relevance to recreation from the formation on private land of the Willows Rock Stack and surface facilities (including one vent raise), and upgrade of the Processing Plant, and these elements of the project are not discussed further in this report. Other effects of these activities are assessed in separate technical reports (the Marshall Day Noise Assessment, Boffa Miskell Landscape Assessment and the Boffa Miskell Ecology Assessment).

1.1 Ohinemuri treated wastewater discharge (in Stage One)

OGNZL is proposing to reconsent the discharge of treated water from the WTP to the Ohinemuri River on the same terms as existing discharge consents.

The Ohinemuri River is defined by Auckland/Waikato Fish & Game as a regionally significant trout fishery with rural values. However, angling activity has steadily declined from 2,600 angler days recorded on the River in the 2001/02 season to almost 300 in 2021/22. Water quality for swimming is monitored by the Waikato Regional Council at only Karangahake Gorge just upstream of Mackaytown, with, between 2018 and 2023, 81% of records suitable for swimming (‘good’ or ‘excellent’ contact recreation grades). Kayaking is popular in the Karangahake Gorge, with walking and cycling on the River’s banks.

Most water contact recreation and angling occurs downstream of the top of the Karangahake Gorge, which is more than 13 km downstream of the discharge points. Dry fly angling occurs mostly upstream of the discharge.

Boffa Miskell’s Ecology Assessment finds that there is no evidence that the water quality of the Ohinemuri River has caused any detrimental effects to the ecological values of the River, and the ecological values have been upheld as anticipated by the criteria as set out in OGNZL’s consent conditions. Also that the required receiving water quality standards are achieving the desired outcome for the River and the requirements of the National Policy Statement for Freshwater Management. Accordingly, re-consenting the WTP with the same receiving water quality standards will not result in detrimental effects on the ecological values of the Ohinemuri River. It is therefore taken that the recreation values of the Ohinemuri River – considering its trout angling, contact recreation and terrestrial recreation values – will be sustained within the current consented operating regime for the discharge.

Two diffusers are located in the bed of the Ohinemuri River. Diffuser 1 is located away from any areas of public access and has no effect on recreation amenity. Diffuser 2 is located adjacent to a

[1] The terms ‘recreation’ and ‘tourism’ have similar meanings in terms of potential effects on the values of the study area, considering that the two activities differ only by tourists having spent at least one night away from home.

walkway beside the Ohinemuri River upstream of the Ngāti Koi Domain. A short path leads from the walkway to the diffuser which has been constructed to allow access to it for testing and maintenance. The short path is not a recreation route. The effect of diffuser 2 on recreation amenity is considered minor due to the low level of recreational use of the site and the low scale of effect.

1.2 Increased exploration (in Stages One and Two)

OGNZL proposes an increase in the number of exploration drill shafts from ten to 18 (four additional in Stage 1 and four additional in Stage 2) and four associated additional camps and messing facilities (two in Stage 1 and two in Stage 2), with a correlated increase in helicopter access. Additional water metering equipment (piezometers) are proposed to be installed in multiple river locations. Three drill sites are proposed to be located west and north-west of the western end of Wharekirauponga Track.

Over the period, 3,209 walkers were recorded heading south (uphill) on the Wharekirauponga Track, and 2,943 heading north to the Parakiwai carpark – a daily average of 7.3 walkers heading south and 8.1 heading north, and maximums of 93 and 107 respectively on the 2nd of January 2023 (Boxing Day). There are no data to describe the level of use of tramping routes in the southern end of the Coromandel Forest Park, but interviewees indicate very low levels of activity, dominated by pig hunting (the Boffa Miskell Pest Animal Management Plan found no evidence of deer in their study area) and trampers using the largely unformed Wharekirauponga to Golden Cross Track.

The tunnel raise area extends into areas within the Coromandel Forest Park defined by DOC as recreation 'remote' zones, where the location of infrastructure is normally minimised and confined to limited facilities to support recreation – such as basic low-use tracks, marked routes and huts. Since 2018 access to the Wharekirauponga to Golden Cross Track has been temporarily closed for kauri-die back management, and the majority of the Wharekirauponga Track has been closed since September 2024 beyond its first 700m (allowing access to local swimming holes near eastern end of the track).

Since 2018 access to the Wharekirauponga to Golden Cross Track has been temporarily closed for kauri-die back management, and the majority of the Wharekirauponga Track has been closed since September 2024 beyond its first 700m (allowing access to local swimming holes near eastern end of the track).

Noise effects are largely limited to the temporary audibility of drilling activity near the Wharekirauponga Track. Time limits for drilling and helicopter activity are proposed to limit the scale of this effect:

- Ensure drilling activity and helicopter activity to service drill sites within 400 m of the Wharekirauponga Track cease from 1 December to 28 February inclusive when the track is open.

Operational vent noise will be relatively slight and only locally audible. Although part of the setting is within a recreation remote zone (as defined by DOC) where low levels of aircraft noise would be preferred, the impacts of additional helicopter movements on recreation values will be low by virtue of very low levels of visitor activity.

Although part of the setting affected by the proposed activity is within a recreation remote zone (as defined by DOC) where low levels of aircraft noise would be preferred, the reality will be very low impacts on recreation values, by virtue of very low levels of visitor activity (with or without the kauri die-back exclusion in place).[2] Drill, camp and mess sites will be located away from tracks but may be encountered by pig hunters, although this will be less likely while proposed pest control measures are in place. Overall, adverse effects on recreation will be minor.

1.3 Wharekirauponga Underground Mine (in Stage Two)

The potential recreation effects of the operation of the four raises would be on trampers using the largely unformed Wharekirauponga to Golden Cross Track and on pig hunters (if they are aware of the location of a raise), walkers on the Wharekirauponga Track (if they could hear vent noise). There will be few pig hunters in the locale considering the proposed pest management programme. The tunnel raise area extends into areas defined by DOC as recreation 'remote' zones, where the location of infrastructure is normally minimised and confined to limited facilities to support recreation – such as basic low-use tracks, marked routes and huts.

The location of the proposed four raises within the Coromandel Forest Park is likely to have very little effect on tramping and pig hunting generally in the Park (and less-so for pig hunting due to proposed pest control measures). However, the location of built structures within recreation remote zones is generally incompatible with the expectations of visitors within such settings, although the raises will avoid tramping tracks. There is therefore likely to be adverse effects on those few trampers who are traversing the Coromandel Range on the Wharekirauponga to Golden Cross Track who are aware of the raises. The net effect will remain minor considering the focus of the activities (pig hunting and crossing the Range).

The Marshall Day Acoustics Noise Assessment indicates that that noise levels from the vents will generally be only above ambient noise levels (around 40 – 45 dB) within 100 to 200 m, and unlikely to be heard at the Wharekirauponga Track, and would be barely audible at the other raises, and likely only if receivers are at the raise site itself. These noise levels are described by Marshall Day Acoustics to be at a level low enough to be considered not significant.

River piezometers are unlikely to be encountered by visitors,and are recommended to be construction from black plastic to limit their visibility.

Vibration from underground detonations will be barely perceptible.

Locating the raises to avoid historic tramway lines will minimise effects on recreation access and experiences. These tramway lines – where they exist – are the most obvious forms of track in the area and have potential for future development for improved recreation access.

The use of signs and interpretation near the raises will help make them part of the visitor experience, rather than a surprise, if they are accessible from a nearby track. Their location will be unlikely to reduce the level of visitor activity in the Coromandel Forest Park considering the motivations of those pig hunting in the area or traversing the Range.

The potential scale of effect on recreation at a regional level will be very low – considering the scale of effect on tramping in the Park generally and the eventual removal and rehabilitation of the vent sites. However, the effects on activity on the Wharekirauponga to Golden Cross Track could be considered more than minor for those few visitors who encounter them due to landscape effects and the intrusion of industrial structures in an otherwise relatively undeveloped setting. The operation of the vents is unlikely to change the level of activity on the routes since much is motivated by pig hunting and completing a traverse of the Range,and inevitably will represent a minor effect on

[2] In similar recreation assessments, a low level of recreation activity would be expected in remote zones as a positive element of the experience opportunity. In this case, low levels of use are the result of low levels of interest in the site and management controls (kauri die-back).

recreation within the Coromandel Forest Park. Coincidentally, the recommended pest animal control programme for the 632 ha area around the WUG site will see the local removal of pigs, and so reduce the dominant form of recreation demand (beyond walking the Wharekirauponga Track). There will remain a substantial pig hunting resource in the Coromandel Forest Park, but little near the proposed vent sites.

Reducing potential effects during the life of the project could include:

- Locating the raises as far away as practicable from established walking routes;
- Avoiding locating the raises on any tramway formations.

An additional necessary activity is to provide interpretation about the raises and identify them as features of interest on the routes if they are able to be easily accessed from a formed track – considering the established history of mining in the area. Setting accurate expectations about the recreation experience in any destination is an important element of recreation management generally, and leaving the vent raises as a 'surprise' element of a tramp is not recommended.

1.4 GOP, NSR and TSF3 (in Stage Two)

The GOP is proposed to be situated predominantly over Gladstone Hill and part of Winner Hill. A tailings storage facility (TSF3) is proposed to be located east of the existing OGNZL tailings facilities. A rock stack (the NRS) will be constructed to the north of existing TSF2.

The GOP will displace mountain biking from Winner Hill and affect access to the Black Hill Motor Cross Track. The NRS will affect a small section of the Full and Half Nugget annual multisport events. These opportunities rely on access over OGNZL land, and there are no agreements in place to secure tenure. OGNZL is, nonetheless, in conversation with the relevant clubs and the Hauraki District Council to support alternative development opportunities, including the potential for a new access route across OGNZL land to the Ngāti Koi Domain for the existing Black Hill motocross track.

The effects of the GOP, NRS and TSF3 on recreation are limited to:

- The inevitable displacement of several recreation activities from privately owned OGNZL land (with discussions in place to find alternative opportunities);
- Noise effects on visitors to Ngāti Koi Domain, specifically at the summit of Black Hill and on its eastern side. Marshall Day Acoustics (2024) describe these as unlikely to cause annoyance;
- Temporary track closures within the 300m GOP flyrock zone affecting Ngāti Koi Domain and the Ohinemuri Riverside track, managed according to the Blasting Management Plan; and
- Limited effects on landscape values from the summit of Black Hill.

Displacement of activity from private OGNZL land is not considered an adverse effect, in much the same manner as would the conclusion of any time-bound access agreement – although in this case, no such agreements have been made. Nonetheless, OGNZL is in discussion with recreation groups and the Haruaki District Council to seek alternatives for affected activities.

Effects of temporary track closures are potentially moderately adverse at the local level, depending on frequency and duration. However, similar closures were required for the Martha Pit and have not been identified as significant issues in the past. Landscape effects are assessed as minor, and noise effects on recreation amenity are low.

1.5 Mine closure

At mine closure, all surface infrastructure will be removed from within the Coromandel Forest Park and at the Willows Farm portal area. The portal area, GOP, NRS and TSF3 will be returned to working rural landscapes, and in the case of TSF3 with wetland settings. Further details are provided in the OceanaGold Rehabilitation and Closure Plan. Residual recreation effects are not anticipated.

2 Introduction

The current Waihi life of mine plan, including Project Martha, is to complete production by the end of 2033. Analysis conducted between 2016 and 2024 identified opportunities to expand the Waihi operation with one new open pit, Gladstone Open Pit (GOP), and one new underground development (Wharekirauponga Underground Mine or WUG).

OceanaGold New Zealand Limited (OGNZL) has engaged Rob Greenaway & Associates to prepare an assessment of effects on recreation and tourism values for the proposed Waihi North Project (WNP, the Project). This report is provided to inform the preparation of the Assessment of Environmental Effects (AEE, Mitchell Daysh 2024), which describes the Project in detail.

Work is planned to be completed over three stages as follows:

Stage One

- Establishment of the Willows Access Tunnel decline;
- Establishment of infrastructure associated with the Willows Access Tunnel;
- Upgrades to the existing WTP; and
- Resource investigation and exploration progression at Wharekirauponga.

Stage Two

- Wider mining development and production associated activities.

Stage Three

- Mine closure and remediation activities.

Stage three is beyond the scope of this assessment.

This report describes the recreation and tourism values of the publicly accessible areas potentially affected by each of these Project components, and assesses the relevant effects. Three areas which have been identified as having recreation values potentially affected by the Project are considered:

- The Ohinemuri River into which the WTP discharges treated water;
- The Coromandel Forest Park Conservation Area affected by the proposed vent raises associated with the Wharekirauponga Underground Mine; and
- The peri-urban recreation settings near Waihi potentially affected by the GOP, TSF3 and NRS.

2.1 Method

This assessment is based on:

- Site visits in 2020 and 2022.
- Literature review.
- Interviews with recreation and tourism providers in and near Waihi.
- Review of the Waihi North Project description.
- Review of parallel technical reports which define:
    - Noise effects from the WUG vent raises in the Park (Marshall Day Acoustics Noise Assessment);
    - Noise and landscape effects from the GOP, NRS and TSF3 (Marshall Day Acoustics Noise Assessment and Boffa Miskell Landscape Assessment);

- Effects of the activities on water quality and freshwater ecology values in the Ohinemuri River (Boffa Miskell Ecology Assessment); and
- The Boffa Mikell Pest Animal Management Plan in relation to the proposed control of pigs.

- Response to review of a draft report by the Department of Conservation.

3 Ohinemuri River Treated Wastewater Discharge

This report section reviews the effects of the treated water discharge from the OGNZL Processing Plant into the Ohinemuri River and the effects of the two diffusers in the bed of the River.

The existing discharge permit provides adequate capacity for the Waihi North Project; however, the project life will extend beyond the 13 October 2034 expiry date of the treated water discharge consent. It is therefore proposed to renew the WTP discharge consent for a 35-year term to cover the full duration of the Waihi North Project including an appropriate closure period. The discharge permit includes two discharge outfall diffusers located within the bed of the Ohinemuri River, and the increased discharge quantity requires the duplication of these structures.

No changes to the conditions of the WTP discharge consent is required to accommodate the Waihi North Project.

3.1 Recreation values

3.1.1 Angling

The Auckland/Waikato Sports Fish & Game Management Plan 2021-2031 (Auckland/Waikato Fish & Game 2021) describes the Ohinemuri River as the most popular angling river in the Hauraki/Coromandel area, attracting “many anglers from throughout the region”, and:

> *A medium sized regionally important river for sports fishing that had significant declines in water quality. High water temperature, a historic migration barrier and low flows presumably caused by water extraction continue to impact the Ohinemuri. Significant planting and fencing will be required to enhance the trout population to the mainstem. A large portion of the upper river is obstructed by a historic water abstraction dam. Removing or bypassing the dam could improve access to summer habitat.*

The dam referenced is located immediately downstream of the Hauraki District Council wastewater treatment plant immediately west of Waihi.

The Management Plan defines the River as regionally significant and of a rural character.

Fish & Game’s online fishing locations and access data describes the River’s angling amenity in more detail:[3]

> *The Ohinemuri is one of the most popular rivers in the region with excellent access and a good population of both rainbow and brown trout.*
>
> *The Ohinemuri arises from numerous small streams in the Waihi basin. Many of these streams hold trout and are fished by local anglers (especially the Ruahorehore, Waimata, Walmsely and Mataura) but these are very small waterways often less than two metres wide and of limited interest to most anglers. The largest of these streams is the Waimata with access from Ford Road or Crean Road. An esplanade reserve extends from Ford Road to the Ohinemuri confluence.*
>
> *Near Waihi, the Ohinemuri offers long runs with the occasional large, stable pool. During summer, trout can easily be spotted providing good dry fly or spin fishing.*
>
> *Access to the Ohinemuri River at Waihi can be obtained from Victoria Street, State Highway 2 (to Tauranga), Baxter Road, Golden Valley Road, and State Highway 25 (to Whangamata). A 20-metre wide esplanade reserve, providing public access, extends outwards from both sides of the river.*

[3] https://fishandgame.org.nz/auckland/freshwater-fishing-in-new-zealand/fishing-locations-and-access/trout-fishing-coromandel-ranges/ohinemuri-river-system/

The most popular section of the Ohinemuri, and probably the most productive, is the Karangahake Gorge between Paeroa and Waihi. Here there is a variety of water present – long deep pools, boulder runs, and extensive rapids. Convenient access is provided by State Highway 2, which runs parallel to the river. During summer, the best fishing is in the faster flowing water at the heads of pools or where there is breaking water. About equal numbers of rainbows and browns are present, the latter often of considerable size.

The location map accompanying the text is shown in Figure 1.

Figure 1: Auckland/Waikato Fish & Game Ohinemuri access map

Kent (2006), in his comprehensive guide to angling in the North Island, describes the River:

During the Waihi gold rush over a hundred years ago, this medium sized river was polluted with cyanide used in gold recovery. Despite regular monitoring of water quality, the river was again polluted quite recently from gold mining but a complete recovery seems to have taken

place. The river has been prone to severe flooding in the past but fish stocks are rapidly replenished from the parent river, the Waihou.

Above Karangahake Gorge there are pools, runs and backwaters but trout are difficult to spot in the brownish water. The best fly fishing is upstream from Waihi, where dry flies can be used in summer. Through the gorge there is a wide variety of water, with the rougher water more suitable for nymphing and spinning. Holds a good stock of browns and rainbows in the 0.5-1 kg range but fish seem to move about in this river, leaving some pools barren while others hold plenty. Late in the season, a spawning run of larger trout enters the river from the Waihou.

Below Karangahake Gorge, the river is best fished with a downstream lure, smelt fly or spinner. Mullet are present in this stretch and are easily mistaken for trout. A small headwater stream south of Waihi, the Waimata, holds fish; access is off SH 2 on Ford or Crean roads.

Unwin (2013) is a survey of relative national angling river values based on an update of the survey methodology used in the national angler surveys of the 1979/81 season (Richardson et al 1984, for example) and a pilot survey undertaken in the Otago and Nelson/Marlborough F&G regions (Unwin 2009). The survey was distributed online to a random sample of 11,923 whole-season and family licence holders for the 2011/2012 angling season. Parallel telephone surveys on non-respondents in the Southland, Wellington, and Hawkes Bay regions were completed to test for sample bias.

Respondents were asked to identify rivers they had fished over the last 3 to 5 years, to rate their enjoyment of the fishery on a scale from 1 (least enjoyable) to 5 (most enjoyable), and to identify up to three reasons, from a list of ten, why they fished each river. These were: Close to home, Close to holiday home, Easy access to river, Plenty of fishable water, Scenic beauty, Wilderness feeling, Angling challenge, Expect good catch rate, Chance to catch trophy fish, Other (including a brief description). No lakes were considered in the study.

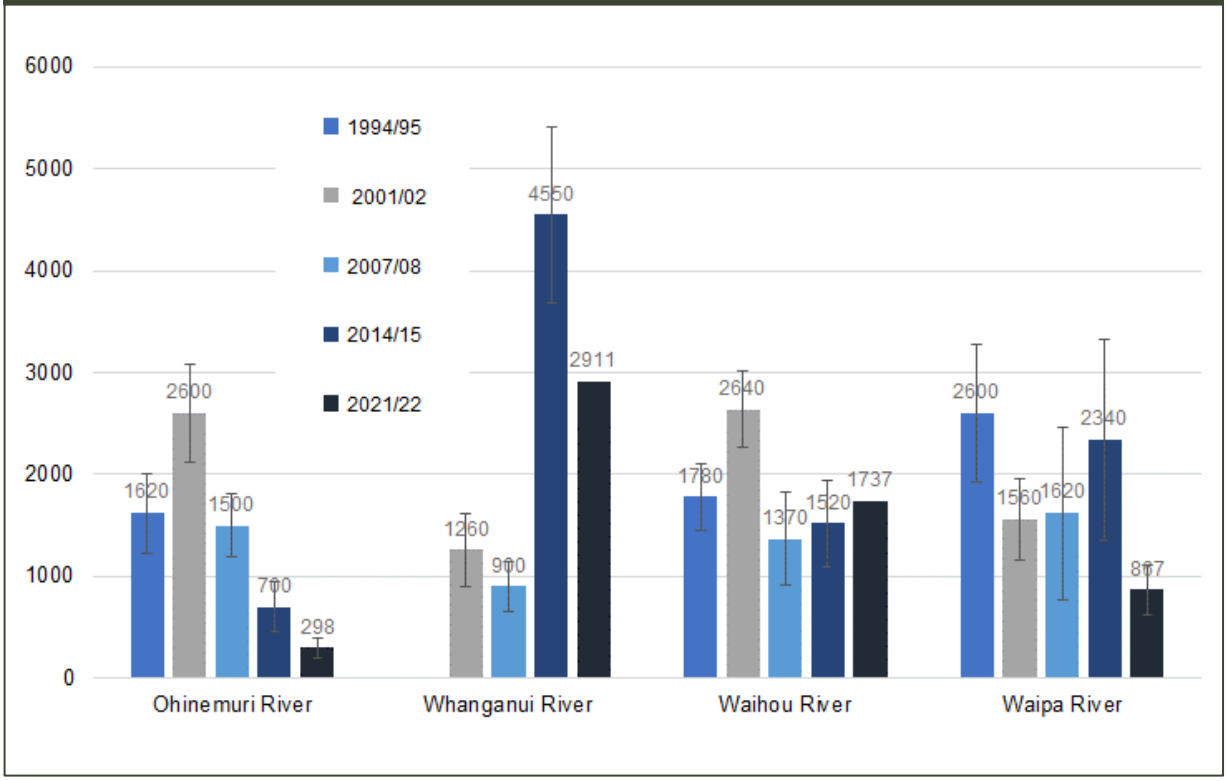
Summary scores for enjoyment level, and for nine of the ten reasons why respondents fished each river (excluding “Other”), were generated for all rivers. The enjoyment level was calculated as the numerical average of the individual 1 to 5 ratings. Scores for each reason (or attribute) were generated by expressing the number of respondents who had nominated that reason as a fraction of the total number of respondents who had fished each river, yielding an attribute score from 0 to 1.

The Ohinemuri River was ranked (out of 27 popular river reaches in the Auckland/Waikato region) (with 77 respondents):

- 5th for level of use,
- 20th for enjoyment,
- 4th for close to home,
- 5th for close to holiday home,
- 1st for ease of access,
- 8th for area fishable,
- 16th for scenic beauty,
- 23rd for wilderness feeling,
- 24th for angling challenge,
- 17th for anticipated catch rate,
- Last equal (with 15 other river reaches) for anticipate large fish.

The national angler surveys (NAS) carried out for the New Zealand Fish & Game Council by NIWA (Unwin 2016, 2009, 2003 and 1996, Stoffels & Unwin 2023) indicate the levels of angling activity on the Ohinemuri River compared with other significant angling waters in the Auckland/Waikato Fish & Game region (Figure 2)[4]. The NAS represent a significant research programme with a good level of reliability, indicating levels of fishing activity per waterbody in angler days. A 'day' could be a ten-minute or full-day fishing experience. The Ohinemuri River compares well with other waterways in the Fish & Game region and was the sixth most popular river fishery in the region in the 2014/15 season, after the Whanganui, Waikato, Whakapapa, Waipa and Waihou Rivers, but showed a much lower level of use in 2021/22.

Figure 2: Angler days on four Auckland/Waikato Fish & Game Region rivers. NAS data



3.1.2 Kayaking and boating

Charles (2013) references kayaking on the Ohinemuri River at the Karangahake Gorge:

> *Proximity to Auckland is one of the best (or worst) features about K' Gorge. Whatever the case this stretch of water has won the hearts of many, and despite its short length and limited whitewater, it remains immensely popular.*
>
> *The Ohinemuri runs through the spectacular Karangahake Gorge beside SH2 between Waihi and Paeroa. The Gorge has been popular for decades with adventure seekers from the city as they have a river to paddle and some spectacular rock climbing on the cliffs above. With its huge boulders mid river, K' Gorge is unlike many waterways in the north, providing not only interesting whitewater, but also a playground for practising eddy turns and other stuff.*
>
> *This run is worth a visit if you're passing and there's been plenty of rain in the last 48 hours. From the Owharoa put in, the first few kilometres are easy Class 1-11 water. The action begins just above the township of Karangahake with a drop into Class IV-IV+ (only in flood) bouldery rapids. This is the start of a kilometre of fun whitewater down to the take out.*

[4] There were no NAS data for the Whanganui River for the 1994/95 season.

TO GET TO THE PUT IN: Owharoa Falls is about 1 km east of the township of Waikino. Park and find the easiest way down to the water. If you don't want to paddle the top section there are many other possible put in spots as you drive down the gorge.

THE TAKE OUT is where the walkway through an old tunnel comes out on the road, about 800 metres east of Karangahake.

Egarr (1989) refers to limited kayaking options above the Gorge:

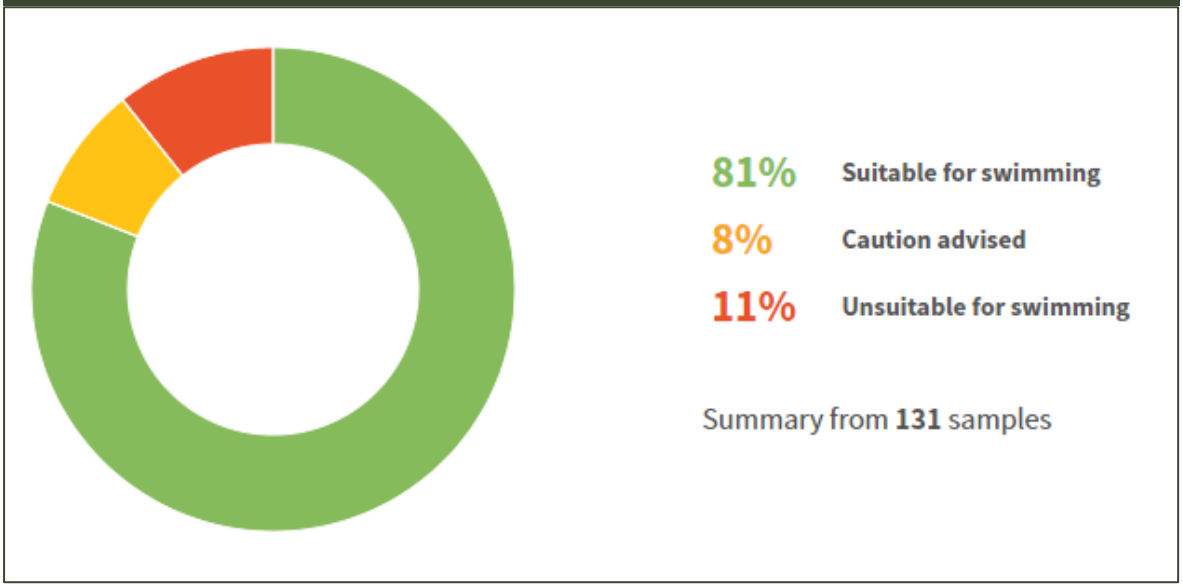
The Ohinemuri can be run from a little below Waihi, but il is a narrow stream there, without a great deal of interest to paddlers. Once it was very much choked with willows, but these have been almost completely cleared above the gorge, in the area around Waikino. As the road and rail lines follow the river through the gorge, there are a number of accessible put-in points. The rail line is now a walkway which gives fine views of the gorge. The most commonly used put-in is at a highway rest area a little less than 2km below Waikino. There are other put-ins lower down.

The paddle boat *Tamati* offers river cruises on the Waihou and Ohinemuri Rivers from the Historical Maritime Park north of Paeroa downstream of the Waihou confluence.[5]

3.1.3 Swimming

The Waikato Regional Council monitors bathing water quality on the Ohinemuri River at only Karangahake Gorge just upstream of Mackaytown. The site is monitored for only 12 weeks over the summer period (the start of December to the end of February). Summary results for data from 2018 are presented on the LAWA data portal (Figure 3).[6]

Figure 3: Waikato Regional Council bathing water quality results 2018 – 2023. Lawa data



[5] https://historicalmaritimepark.co.nz/park-services/river-cruises/
[6] https://www.lawa.org.nz/explore-data/waikato-region/swimming/ohinemuri-river-at-karangahake/swimsite

3.1.4 Terrestrial recreation

Strava heatmap data gives a good indication of the popular walking and cycling options near the Ohinemuri River. Strava is a social media application which uses GPS records from subscribers' smartphones and other devices uploaded to a central database, allowing speed and time comparisons with other cyclists, runners, walkers and trampers (for example), and the monitoring of individual activity or training targets. While the service is popular with professional athletes, its membership is dominated by casual recreation participants. Strava indicated that it had 50 million international users in early 2020 (80% outside the US) with an additional million joining per month, and in 2024 Strava reported 120 million users.[7] It is popular amongst regular cyclists and runners, but is also used by a wide variety of other pursuits, such as rowing, walking, swimming and skiing.

Comparisons between different forms of data gathering show a degree of reliability for Strava data with a range of 1% to 12% of users recorded on-site that are connected to the service; and this is growing.[8] Comparisons between track counter data and Strava records undertaken by the author of this report in Nelson show levels of Strava adoption of more than a third of mountain bikers and between 7% and 20% of pedestrians depending on location (the more remote, the higher the uptake). Such response rates would compare favourably to an on-site intercept survey of users in an outdoor setting, particularly since the Strava data are collected over all seasons and all day (an intercept survey would normally only cover relatively short time periods and be confined to specific interception points). Nevertheless, caution needs to be applied to the use of Strava data as they show participation by only Strava members. There will be an inherent bias to the more competitive and tech-savvy, and some data accumulate from users staying logged in when they are doing other activities, such as driving. Some records are also offset by tens of metres due to either poor GPS reception or map projection errors. However, most records appear in their correct locations.

Strava is therefore a little like a tag and release programme. Strava essentially tags several thousand active people in an area and monitors where and how they recreate.

Heatmaps indicate the cumulative activity of Strava subscribers in any setting. The brighter the colour, the more activity there. Figure 4 shows the heatmap for all activities (mostly pedestrian and cycling) for the Ohinemuri River from the OGNZL water treatment discharge to downstream of SH2. Access is popular around the border of Ngāti Koi domain but becomes sparse west of SH2, and upstream of the tracks associated with the Black Hill motor cross site.

Figure 5 shows the Hauraki Rail Trail running parallel to the Ohinemuri River from west of Waihi to south of Paeroa. There is a section of riverside access within Paeroa, but there is little other access from Paeroa to the River's confluence with the Waihou River.

[7] https://blog.strava.com/press/strava-milestones-50-million-athletes-and-3-billion-activity-uploads/ and https://www.bikebiz.com/cycling-insight-strava/ and https://press.strava.com/articles/strava-releases-year-in-sport-trend-report

[8] Herrero, J. 2016. *Using big data to understand trail use: three Strava tools*. TRAFx Research. And see https://medium.com/strava-metro/cdc-finds-strava-metro-data-correlates-strongly-with-census-active-commuting-data-8ab1be0fe130

Figure 4: Strava heatmap for upper Ohinemuri – all sports. 12 months of data to July 2024

Figure 5: Strava heatmap for mid-Ohinemuri – all sports. 12 months of data to July 2024

3.2 Effects of the treated water discharge on recreation

The scale of the discharge of the treated water into the Ohinemuri – which ranges between 10% and 60% of its flow at the discharge point – has been previously consented and is not considered in this assessment. No changes to the conditions of the WTP Discharge Consents are required to accommodate the Waihi North Project. This means that the existing instream water quality criteria are proposed to be retained.

Boffa Miskell (2024a) reports on the effects of the treated water discharge on the ecology of the Ohinemuri River and notes that the River is an important rainbow trout fishery, with spawning grounds in its tributaries, and is classified as a significant trout fishery. They find that the condition of the Ohinemuri River, as measured by macroinvertebrate indicators, is poor to fair. This condition occurs throughout the reach of the River in the vicinity of the OGNZL operations and has essentially remained consistent over the period of monitoring from 2009 to 2017. Periphyton levels were found to be within the parameters required to protect recreation and trout habitat and angling.

Boffa Miskell (2024a) also considers the ecological effects of all components of the Waihi North Project on tributaries of the Ohinemuri River and proposes a mitigation programme to sustain and improve freshwater ecology values in the catchment. This is a separate assessment to that of the WTP discharge and is reviewed in full in that report.

In summary, Boffa Miskell (2024a) finds that there is no evidence that the existing discharge of water from the WTP to the Ohinemuri River has caused any detrimental effects to the ecological values of the River, and the ecological values have been upheld as anticipated by the criteria as set out in OGNZL's existing consent conditions. The required receiving water quality standards are achieving the desired outcome for the River and the requirements of the National Policy Statement for Freshwater Management. Accordingly, re-consenting the WTP with the same receiving water quality standards will not result in detrimental effects on the ecological values of the Ohinemuri River.

Figure 6 shows the locations of the two diffusers in Ohinemuri River on a Strava heatmap for all activities (12 months of data to July 2024), and Figure 7 shows diffuser 2 in the bed of the River. It is proposed to duplicate these structures adjacent to the current diffusers.

Diffuser 1 is located away from any areas of public access and has no effect on recreation amenity. Diffuser 2 is located adjacent to the walkway beside the Ohinemuri River, which Figure 6 shows to be well used by pedestrians and cyclists. A short path leads from the walkway to the diffuser which has been constructed to allow access to it for testing and maintenance. The short path is not a recreation route.

Figure 8 shows the visual effect of operation of diffuser 2 within the River, with bubbles spreading on the water's surface. The effect of diffuser 2 on recreation amenity is considered minor due to the low level of recreational use of the site and the low scale of effect, and this scale of effect is likely to remain with the additional diffuser installed adjacent.

It is therefore taken that the recreation values of the Ohinemuri River – considering its trout angling, contact recreation and terrestrial recreation values – will be sustained within the current consented operating regime for the discharge, particularly considering that the majority of water contact recreational and angling use of the Ohinemuri River occurs well downstream of the discharge – 13 km approximately for the upstream end of the Karangahake Gorge, for example – and in the case of dry fly angling, upstream of the discharge.

Figure 6: Diffuser locations in Ohinemuri River on Strava heatmap

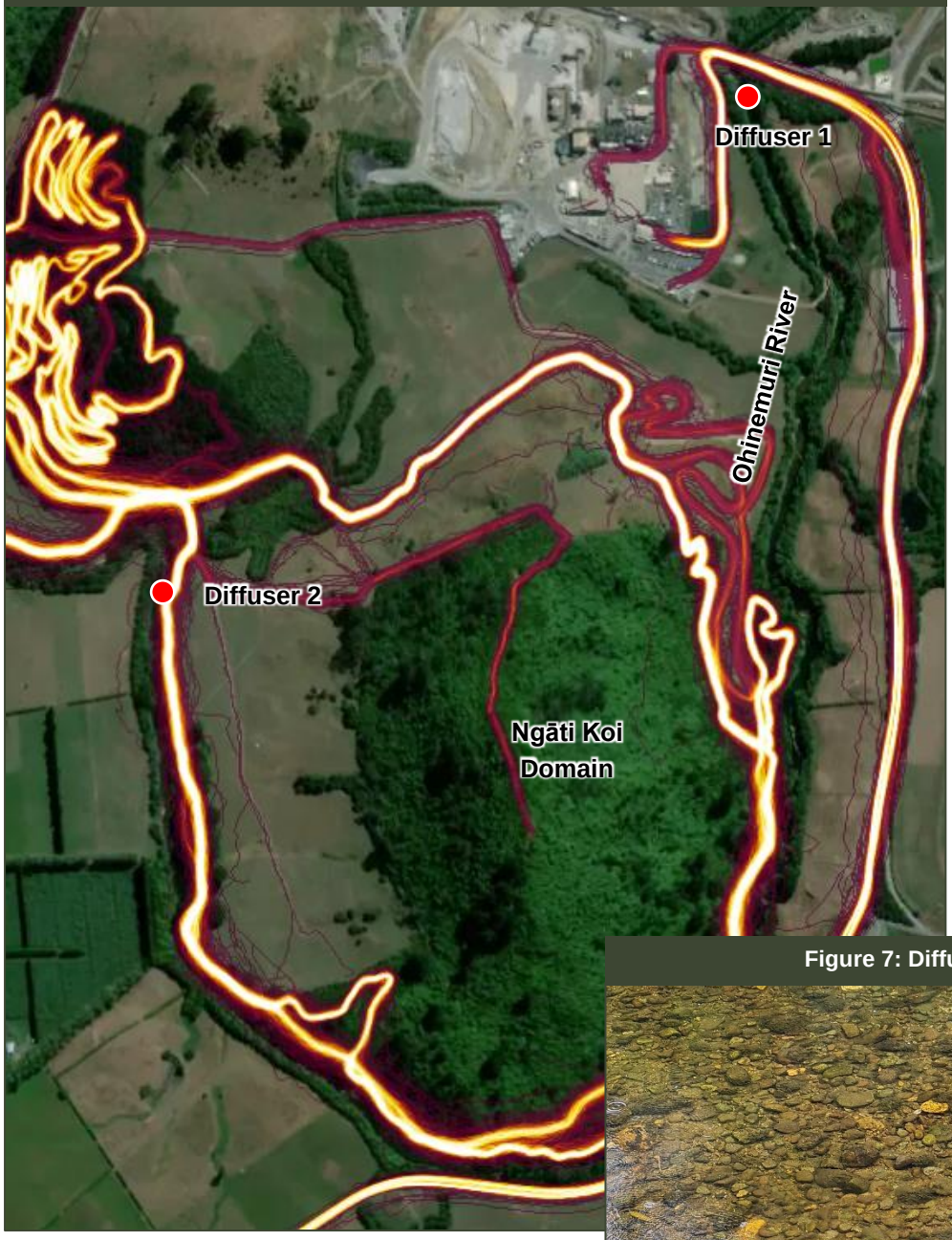


Figure 7: Diffuser 2

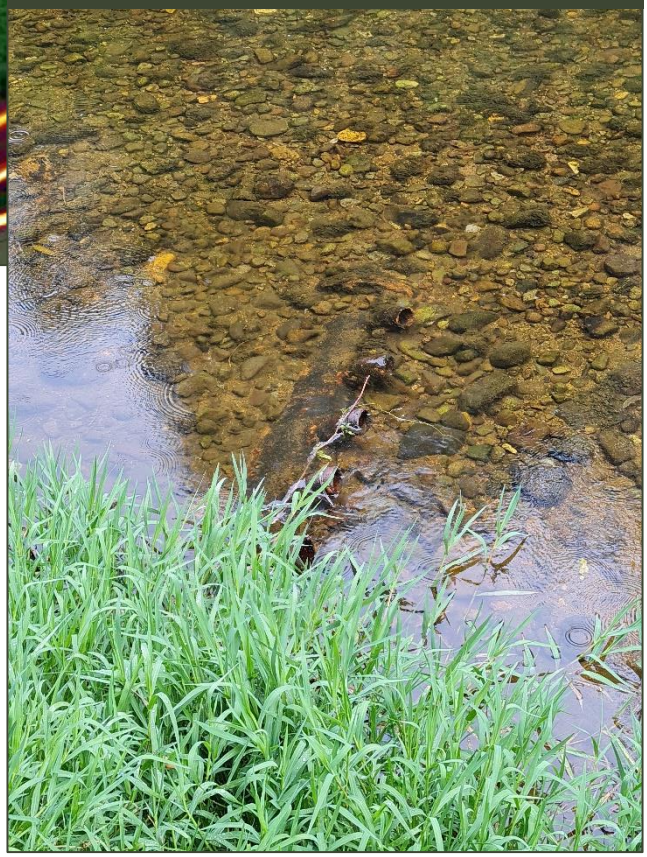


Figure 8: Diffuser 2 showing bubbles

4 Wharekirauponga Underground Mine

As part of the Waihi North Project, OGNZL is proposing to establish a new underground mine targeting the Wharekirauponga orebody which lies under the southern end of the Coromandel Forest Park Conservation Area (the Park) administered by the Department of Conservation (DOC) – the Wharekirauponga Underground Mine (WUG). A tunnel portal (Willows Portal) is proposed to be located on land owned by OGNZL to the south of the Park, and a series of ventilation raises (raises) will be constructed above the mine to provide air circulation and an emergency exit. Up to four raises are proposed within the Park. Although the exact locations are not yet known, the four raises are proposed to be in an area west of the Wharekirauponga Track and include part of the Wharekirauponga to Golden Cross Track – although the raise sites will avoid track locations. An additional raise on OGNZL-owned land south of the Park is not considered in this assessment. The raises will be located within low-use and largely unformed tramping and pig hunting areas and each will include a structure similar to that shown in Figure 1.

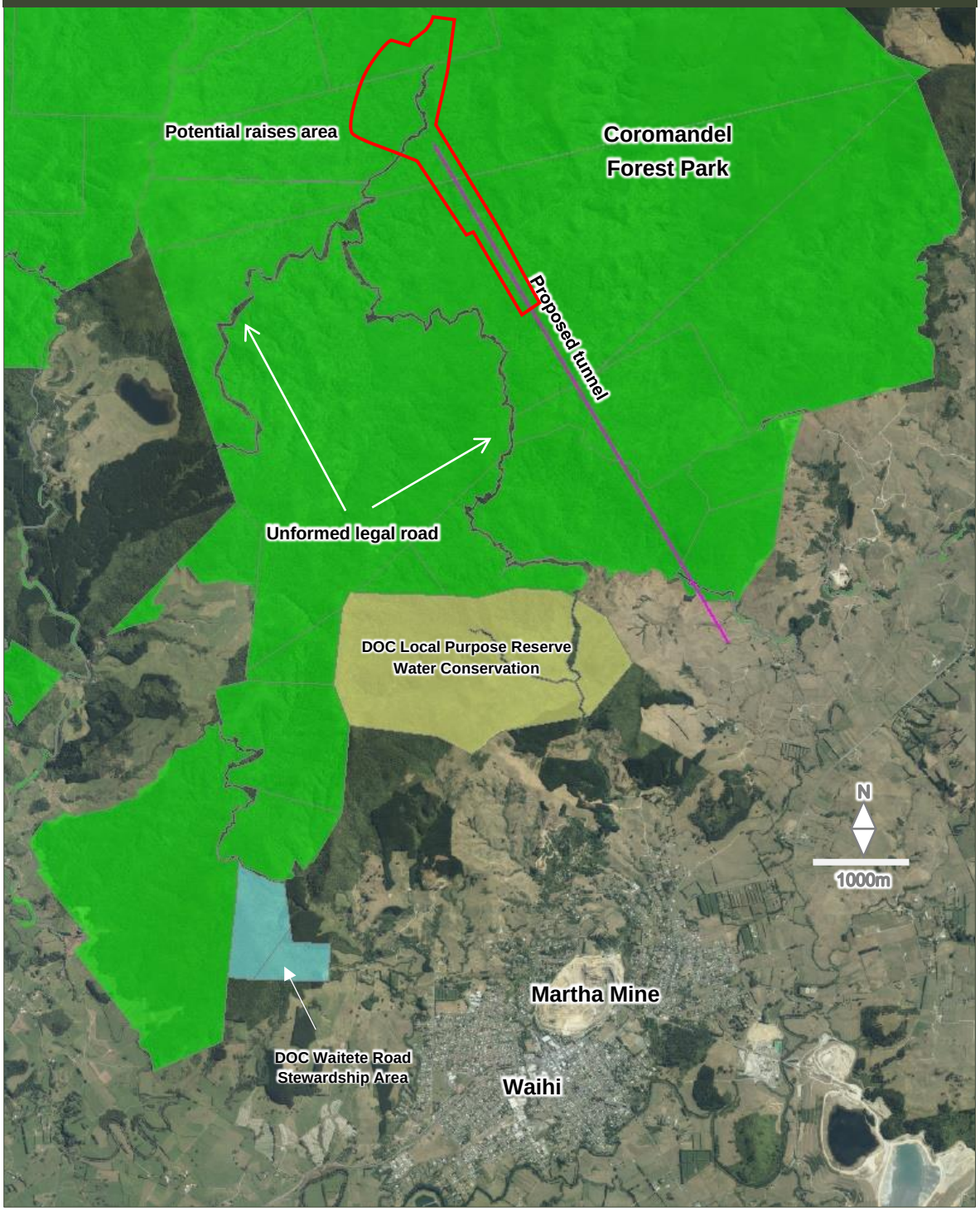
Associated developments are proposed to be located on land owned by OGNZL immediately south of the Forest Park at the Willows Road site, including an additional ventilation and a temporary rock stack and other infrastructure associated with the tunnel portal. Visual amenity effects of development on Willows Farm have been assessed by Boffa Miskell in the Landscape Assessment. Boffa Miskell note that all the developments at Willow Farm or on other private land will not be visible from the Wharekirauponga Track. Some hillsides adjacent to Willows Farm within the Forest Park are within 'zones of theoretical visibility' of the portal developments, but the areas are heavily forested and any visitors (most likely pig hunters) will have very little chance of seeing beyond their immediate surrounds.

Figure 9: Design of surface infrastructure for ventilation raise (OGNZL supplied – note that exclusion fencing is not proposed)

4.1 Study area

The raises are proposed to be constructed within the Park within the area shown in Figure 10. The study area is focused on the Park south of the Wentworth Valley (Figure 11).

Figure 10: Wharekirauponga proposed ventilation raise area



4.2 Recreation values

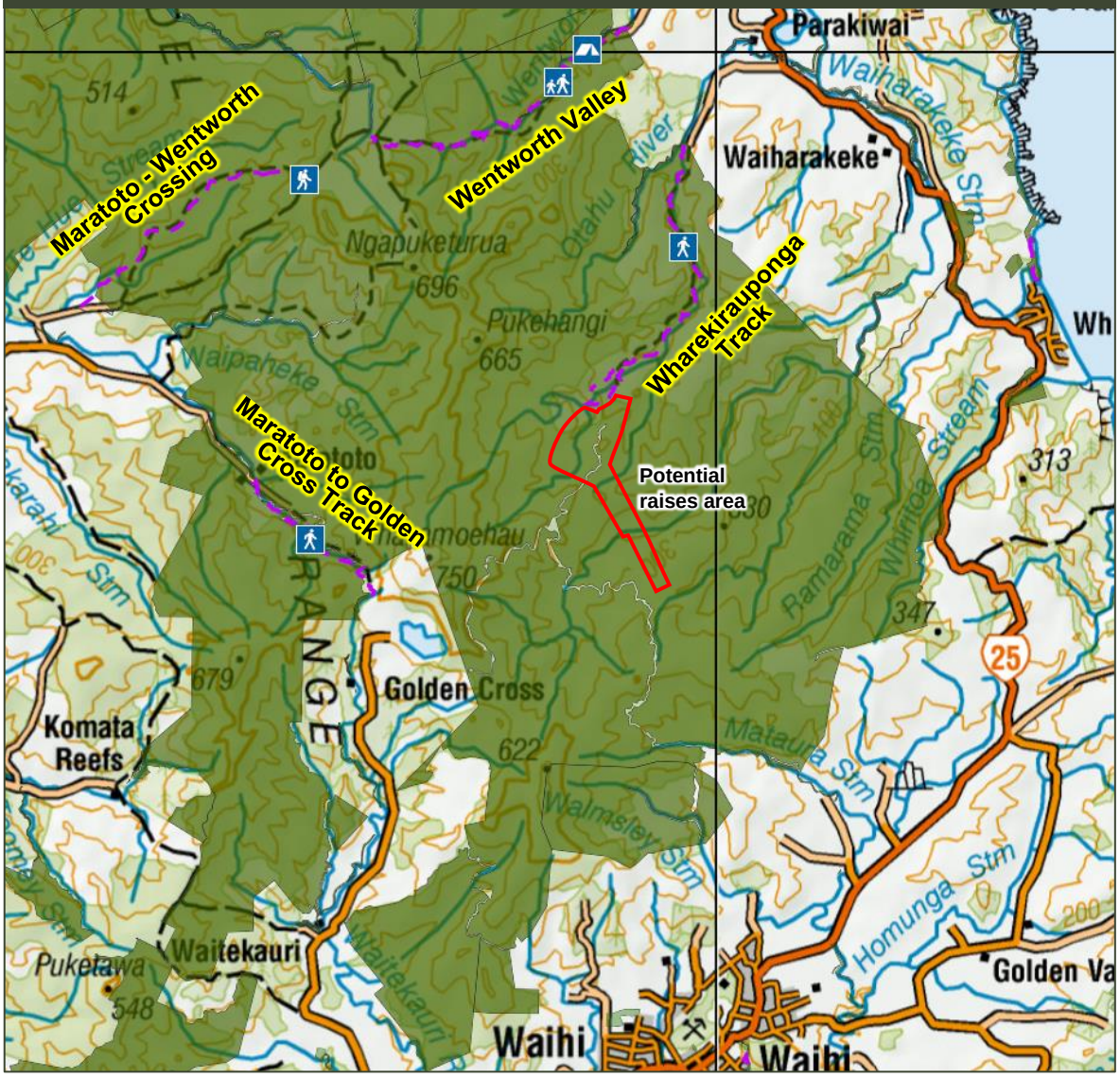
This section describes the recreation values associated with the study area sourced from published material and literature review.

4.2.1 Department of Conservation

DOC's 'Discover the outdoors' online GIS mapping service identifies four walking tracks in the Maratoto, Wentworth and Wharekirauponga area (Figure 11). These are the:

- Maratoto - Wentworth Crossing, a 5 hour one way advanced tramping track "recommended for experienced trampers only."
- Wentworth Valley Walks, including a 2.5 hour easy grade walking track from the Wentworth campsite to Wentworth Falls, and a 30 minute walk to two historic mine shafts.
- Maratoto - Golden Cross Track, a 1.75 hour easy walking and tramping track "through an old mining area, through regenerating broadleaf/hardwood forest and reverting pasture land."
- Te Wharekirauponga Walk (called in this report the 'Wharekirauponga Track' for consistency with other consent reporting), a 3.5 hour easy walk on an "old horse-drawn tram track. It passes unusual andesitic rock formations en-route to the old camp and battery site for the Royal Standard Goldmine. Beyond the battery site and tunnel are the Wharekirauponga Falls."

Figure 11: Wharekirauponga area DOC tracks



Conservation Management Strategy

The *Waikato Conservation Management Strategy 2014-24* (CMS)[9] describes the recreation values of the Park. Some extensive quotes are used here as the CMS is the primary document for recreation management in the study area, and it also describes the desire to further develop public access near the proposed raises.

In describing the links between heritage and recreation values, the CMS notes (p26):

> *Within the Coromandel Forest Park, there are numerous significant sites associated with quartz reef mining in the 19th and 20th centuries. Also within the park, concentrated in the Kauaeranga and Tairua catchments are many sites, notably the driving dams, associated with the kauri logging industry, which continued until the 1930s…..*
>
> *Historical and cultural heritage helps us to understand how people have changed the environment over time. Few areas of New Zealand remain unmodified by the effects of human occupation. A single site or area usually has a range of interrelated values, including historical and cultural, biodiversity and recreational values. Visitors are interested in both natural and cultural heritage, and many historic sites attract large numbers of visitors. Historical and cultural heritage conservation is an essential part of integrated conservation management.*

The study area includes the south-eastern corner of the 'Maratoto, Wentworth and Wharekirauponga' area (or 'Internal Place'), which is a subset of the 'Hauraki-Coromandel Peninsula Place' (Figure 12). The CMS introduces the Hauraki-Coromandel Peninsula Place at page 64:

> *The Hauraki–Coromandel Peninsula Place comprises all public conservation land from the northern tip of Coromandel Peninsula to (but not including) the Karangahake Gorge. The Department administers 38% of the total land area on the Coromandel Peninsula, including the 72,000-ha Coromandel Forest Park. Management of the land has a direct influence on the environment and opportunities available to those who live and visit the Peninsula. The policy direction for this Place focuses on lands managed by the Department, and the protection of biodiversity values, outstanding natural landscapes and natural character, including integrated management with others of pressures originating off public conservation lands, particularly with respect to coastal development. This Place includes three discrete areas, each with specific management needs: Northern Coromandel-Thames Coast, Kauaeranga Valley and Broken Hills, Maratoto, Wentworth and Wharekirauponga.*

The ventilation raises will be within the 'Maratoto, Wentworth and Wharekirauponga' area (Figure 13), which is described (p70):

> *Historic values centre on kauri logging, gold mining and early telegraph communication. Kauri logging and mining sites feature throughout the Wentworth, Maratoto and Wharekirauponga valleys. Examples include the actively managed Royal Standard Tramway at Wharekirauponga, and mining sites between Maratoto and Golden Cross. The Wires Track at Maratoto follows a historic telegraph route. The protection of significant historical features in this area is a priority and, where it is safe for visitors, their integration with recreation experiences will be important goals.*
>
> *Recreation opportunities include camping, tramping, visiting historic mining and logging sites, picnicking and hunting. Four-wheel driving, horse riding, and trail bike and mountain bike tracks are available in the Maratoto area, but are currently limited elsewhere on the Peninsula. The track network links the Wentworth Valley to Maratoto and also Maratoto to Golden Cross. The popular Wentworth campsite offers a traditional camping experience and is managed under concession. It receives 13,500 visitors annually and, along with the*

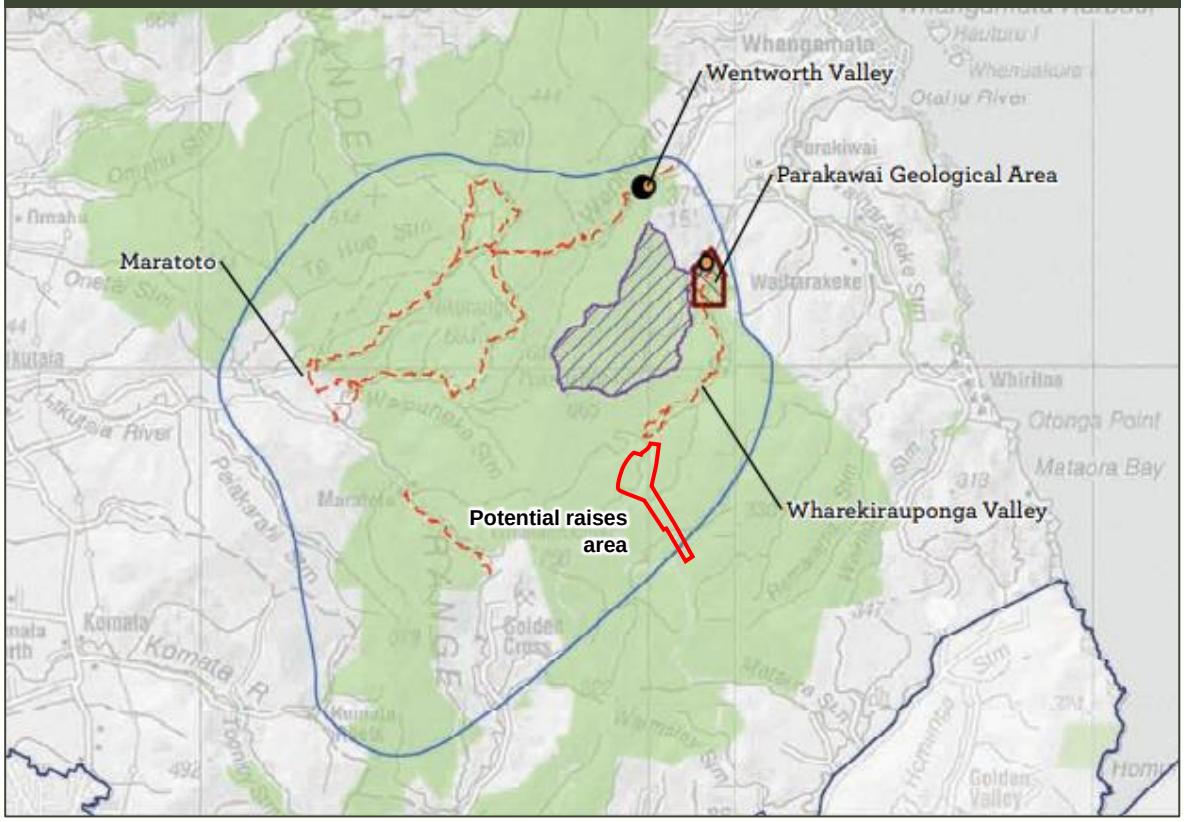
[9] Department of Conservation. 2014. *Conservancy Conservation Management Strategy Waikato 2014-2024.* Department of Conservation Whanganui.

Figure 12: DOC Place boundaries. Detail from CMS Vol 2 map 8.2

Wentworth Falls Walk, is managed as a Gateway destination. Other recreation opportunities, such as mountain biking in exotic forest south of Whangamata and the Hauraki Rail Trail, complement those available in this area. Management issues are associated with four-wheel drive vehicle use, and include balancing use by motorised and non-motorised vehicles and other users, and formalising management of an unauthorised campsite in the upper Maratoto Valley/Tairua River catchment.

Recreation priorities include development of the Gateway destination sites, continued provision of opportunities associated with historic and natural values of the area, and maintaining four-wheel drive vehicle, mountain bike and horse riding opportunities that are limited elsewhere on the Peninsula. There is significant potential for the creation of a 'Great Walk' style multi-day tramp linking the Wharekirauponga and Wentworth tracks. Assistance from the community and the private sector would help realise this opportunity.

Figure 13: DOC Maratoto, Wentworth and Wharekirauponga Area. Detail from CMS Vol 2 map 8.2.1



The Boffa Miskell Pest Animal Management Plan found no evidence of deer in their study area. Any reference to hunting is therefore to, primarily pigs, as well as some goats.

The CMS also states the preferred outcomes for the Maratoto, Wentworth and Wharekirauponga Internal Place (p73):

> *The area comprising Maratoto, Wentworth and Wharekirauponga is recognised and highly valued for its natural and heritage values, and backcountry visitor setting.*
>
> *The priority ecosystem at Otahu is maintained and restored, with forest health improving elsewhere, in partnership with other interested parties. Populations of Threatened and At Risk species (including Archey's frog) are protected with assistance from the community and interested parties. A community-led kiwi zone protects remnant Coromandel brown kiwi populations. Significant geological values are protected at Parakawai, and a native forest landscape prevails.*
>
> *Important heritage artefacts associated with kauri logging, gold mining and telegraph communication, including the actively managed Royal Standard Tramway, are preserved and integrated with recreation experiences.*
>
> *Visitors experience outdoor adventures with a sense of isolation, but accept some noise disturbance in the vicinity of four-wheel driving routes. Maratoto is the focal area for four-wheel driving and trail bike activities on the Peninsula. These are restricted to the existing track network and are managed in cooperation with users to minimise conflict between user groups. Four-wheel driving clubs maintain tracks and a basic campsite within the Maratoto area.*
>
> *Mining history features at Wentworth and Wharekirauponga, with the Wentworth Valley Gateway destination (Wentworth Track and campsite) a focal point for walks and traditional camping in a bush setting. New recreation opportunities are developed in partnership with*

the community and interested parties, such as a new multi-day walk, which is open to the public.

Relevant policies in the CMS include Policy 5.5 which refers to developing a 'great walk style' access opportunity in the Wharekirauponga area in partnership (p45):

5.5 Conservation gains from business partnerships

The Department will seek to identify and promote new business opportunities and partnerships that complement conservation values and deliver conservation gains while enhancing prosperity. Waikato has identified four key business sectors with which it will work to achieve greater conservation gains over the term of this CMS: farming, energy, forestry and tourism….

Businesses are increasingly seeking to demonstrate how they can contribute to sustaining a healthy environment. The potential to engage in conservation partnerships increasingly makes sense for businesses, as it can significantly improve their worth, value and reputation while helping to conserve natural, historic and cultural heritage values. Places for which the outcomes in Part Two—Places identify potential business opportunities include:…

- *Providing multi-day 'great walk' style tramping/walking opportunities, including hut accommodation, in the Thames Coast to Broken Hills and Wharekirauponga areas on the Coromandel Peninsula.*

Relevant CMS Part Two policies include (p74):

9.2.2.8 Engage with local authorities, tourism organisations, recreational users, the community and other interested organisations to identify linkages between recreation opportunities managed by the Department and opportunities elsewhere on the Peninsula, such as the Hauraki Rail Trail and multi-day walking opportunities.

9.2.2.9 Develop recreation opportunities and facilities that are sited in locations that are suitable and safe for the proposed activity, and avoid or minimise adverse effects on natural, cultural and historic values and other recreational users.

And specific to the Maratoto, Wentworth and Wharekirauponga Internal Place (p79):

9.2.2.38 Liaise with recreational users and other interested parties to facilitate their assistance with monitoring and management of motorised vehicle, horse riding and mountain biking activities at Maratoto.

9.2.2.39 Consider expanding camping opportunities in this area in collaboration with interested parties.

9.2.2.40 Consider restricting freedom camping at the Maratoto car park and the Quarry Road car park (Wharekirauponga) to a small number of self-contained freedom camping opportunities.

9.2.2.41 May authorise development of a multi-day walking opportunity and associated public accommodation facilities encompassing the Wentworth and Wharekirauponga Valleys in consultation with interested parties, and in accordance with Policy 16.2.1.5 in Part Three, provided that:

a) it protects significant ecological, geological and historic values;

b) the existing track network is used;

c) any adverse effects are minimised;

d) any structures and link tracks are of a scale and design that are in keeping with the surrounding landscape and anticipated use; and

e) any accommodation is available for public use at all times as if it was a Department of Conservation hut.

Policy 16.2.1.5 relates to general authorisations for undertaking a commercial activity on DOC-administered land or building a structure, including:

f) whether the structure is readily available for public use;

g) whether the structure is consistent with the visitor management zone on Map 3 and as described in Appendix 12;

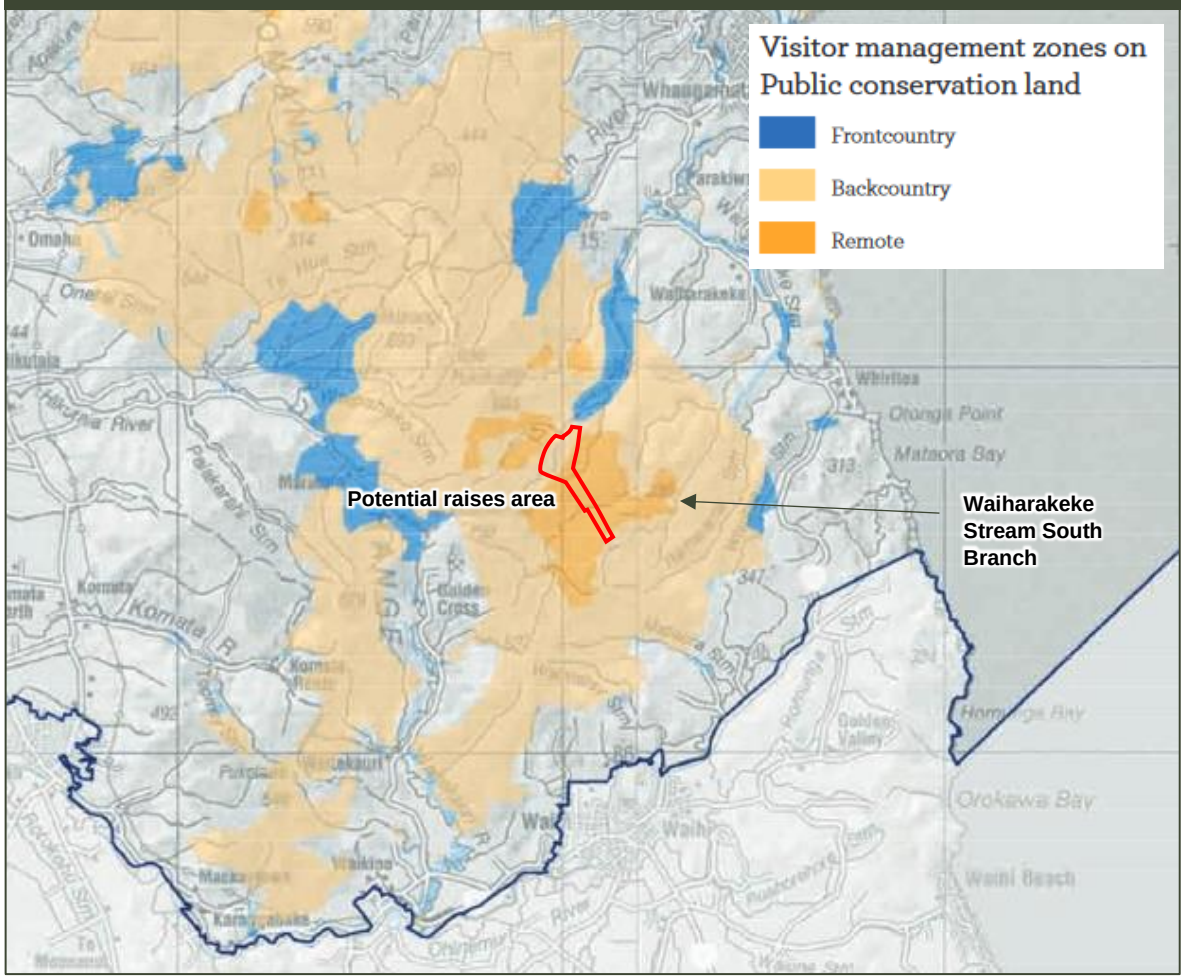
h) whether the structure enhances the visitor experience;

i) whether the activity promotes or enhances the retention of a historic building;

j) whether the activity is a suitable adaptive reuse of an existing building….

The Visitor Management Zones for the study area are defined in Map 11.5 of the CMS. This shows the area to the south of the Waiharakeke Stream South Branch to be a 'backcountry' setting, while the area just north is a 'remote' setting (Figure 14). Definitions of these Zones are included in Appendix 1 of this report, and include expectations for a relatively low level of service provision for visitors to a remote zone and an expectation for a low level of interaction with other visitors, and higher levels of service in backcountry settings and a higher tolerance for interactions with others. Wilderness zones, of which there are none in the Hauraki–Coromandel Peninsula Place, are expected to have no provision of visitor services.

Figure 14: DOC Visitor management zones. Detail from CMS Vol 2 Map 11.5



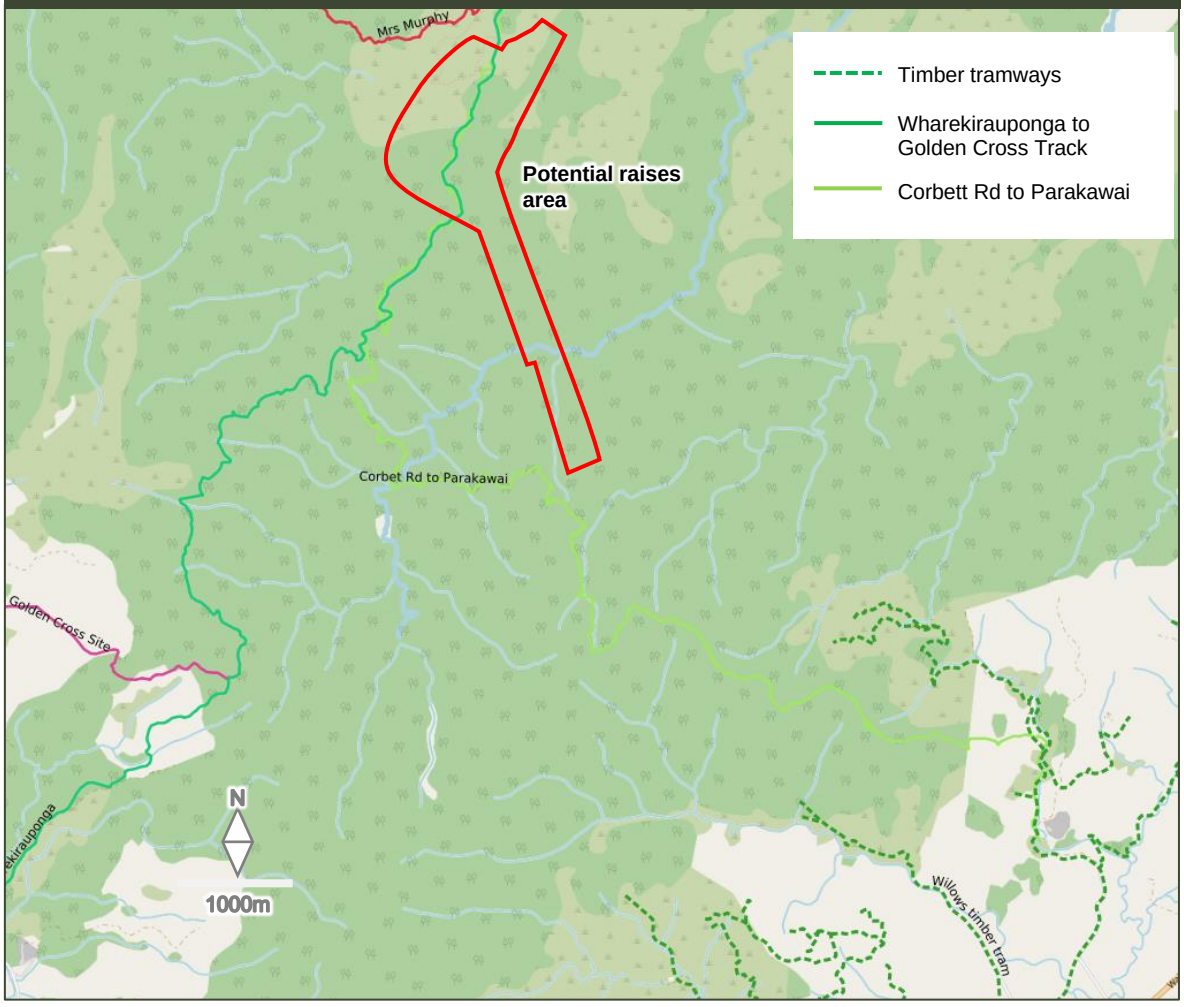
4.2.2 *Ohinemuri Regional History group track information*

The Ohinemuri Regional History group describes a range of tracks to heritage settings in the old Ohinemuri County Council boundary area.[10] Figure 15 shows the timber tramways and walking tracks local to the study area according to the Ohinemuri online GIS.[11] The tramways shown in Figure 15 do not appear to be complete considering the tramways identified during a site visit by this report author. The track locations are described as being sourced from the extensive tramping experience of Chook Sutton and are described collectively as 'Chook's Tracks'.[12]

These tracks are also available as GPX GIS files, based on live records of walks. These are shown in Figure 16 with the tracks overlaid on a Topomap 1:50,000. This also shows the alignment of the legal roads in the study area, indicating the common accessway for the Corbett Road track leading from private land off Corbett Road, and reaching the legal road within the Park. Figure 16 also shows what are described as 'Ian's tracks', which are GPS records of additional local tramping routes.

The 'Corbett Road to Parakawai Track' in Figure 15 is also described as the 'The Old Union Hill Pack Track via Corbett Road to the Te Whareki Pack Track', with the description:[13]

Figure 15: Ohinemuri Chook's Trails map raises area. Source Ohinemuri GIS



[10] https://www.ohinemuri.org.nz
[11] https://qgiscloud.com/Waitete/Ohinemuri_GIS/?bl=mapnik&l=Features!%2CIndustrial-Municipal!%2CWater%20races!%2CDams!%2COre%20tramways!%2CTimber%20tramways%2CECMT%20Railway!%2CHorahora%20transmission%20line!%2COld%20bridle%20or%20walking%20trails%2CChook%27s%20tracks%20waypoints!%2CChook%27s%20tracks%20tracks%2CLegal%20Roads%20HDC!%2CDoC%20Land%20Coromandel%202016!%2CDOC%20Public%20Conservation%20Areas%20NZ!%2CNZ%20Parcel%20Boundaries%20Wireframe!%2CNZ%20Topo50%20Maps!%2CWaikato%200.5m%20Rural%20Aerial%20Photos%20(2012-2013)!%2CBay%20of%20Plenty%200.25m%20Rural%20Aerial%20Photos%20(2011%20-%202012)!%2Cohinemuri.org.nz&t=Ohinemuri_GIS&e=19575797%2C-4487765%2C19578159%2C-4486168
[12] https://www.ohinemuri.org.nz/tracks/chooks-tracks
[13] https://www.ohinemuri.org.nz/tracks/chooks-tracks/88-old-union-hill-pack-track

The track starts on the carpark side of the bridge and follows the true right side of the Ratarua Stream on what was an old bush tramline.

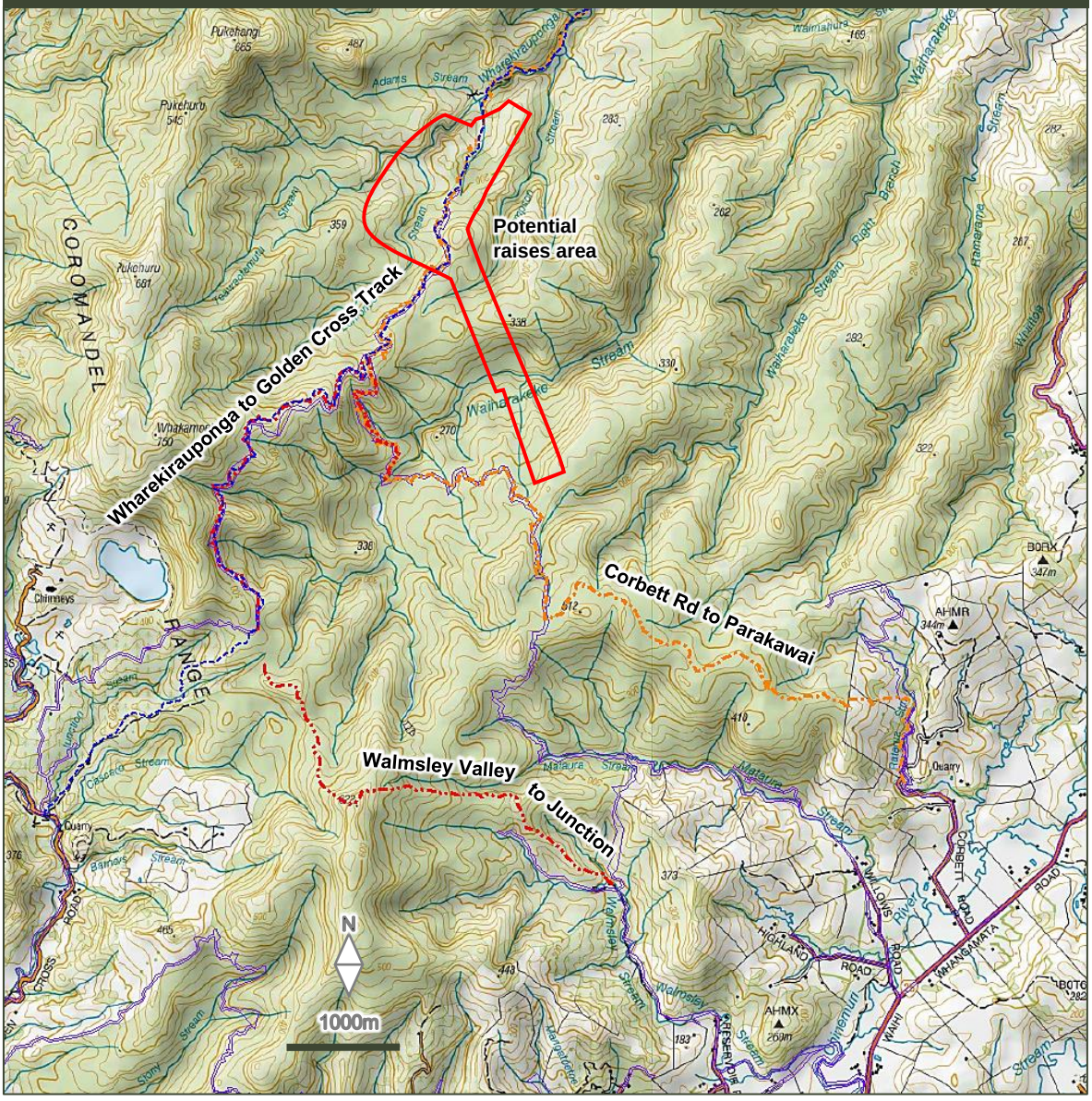
One leaves this line after about ten minutes and many gateways, – (Leave them as you find them), to follow the farm road up the hill to a hayshed before climbing up a fenceline to the right of the shed to the highest grassed point on the farm where a style will be found to get over the boundary fence into the bush and onto the ridge.

You will require good knowledge for this track, as it passes through old hauler lines. Most of the climbing is done on the farm paddocks. The next 1 ½ hours is undulating, before reaching the summit, after which you lose height passing large Rimus and Ratas on the way, to walk down the left handside of the third branch of the Waiharakeki stream.

The track tips to top of Coal Creek before passing large sinter rock outcrops on the lefthand side of the track.

The first real little stream crossing after these outcrops is where the Great Northern Gold Mine was. A real dud as work stopped after twelve months.

Figure 16: Ohinemuri trails over Topo50 with raises area. Legal road in purple.



After 20 minutes from here one reaches the Waiharakeke Stream crossing followed quickly by a further small stream crossing before slowly climbing through beautiful bush for 50-60 minutes to join the Te Whareki pack track to [Parakiwai] *Quarry Road right or Golden Cross, Waitekauri left.*

Both ends from this point take around 2½ to 3 hours to complete.

There is no detailed description of the Wharekirauponga to Golden Cross Track.

4.2.3 Track counter – Wharekirauponga Track

OGNZL had a directional pedestrian counter installed on the Wharekirauponga Track 1.5km west of the Parakawai Quarry Road carpark in August 2019 (Figure 17). This records the number of walkers on the track and the direction in which they travel.

Figure 18 shows the directional data for 2023. Over the period, 3209 walkers were recorded heading south (uphill), and 2943 heading north to the Parakiwai carpark – a daily average of 7.3 walkers heading south and 8.1 heading north, and maximums of 93 and 107 respectively on the 2nd of January 2023 (Boxing Day).

OGNZL workers rely on the track to access drill sites when weather does not permit flying, and this accounts for approximately five trips per week in both directions (approximately 250 trips per year). This has only a small effect on the total count. The higher count for those heading north could suggest walkers and trampers completing circuits from, perhaps Golden Cross or Wentworth, although this

Figure 17: Wharekirauponga Track counter location

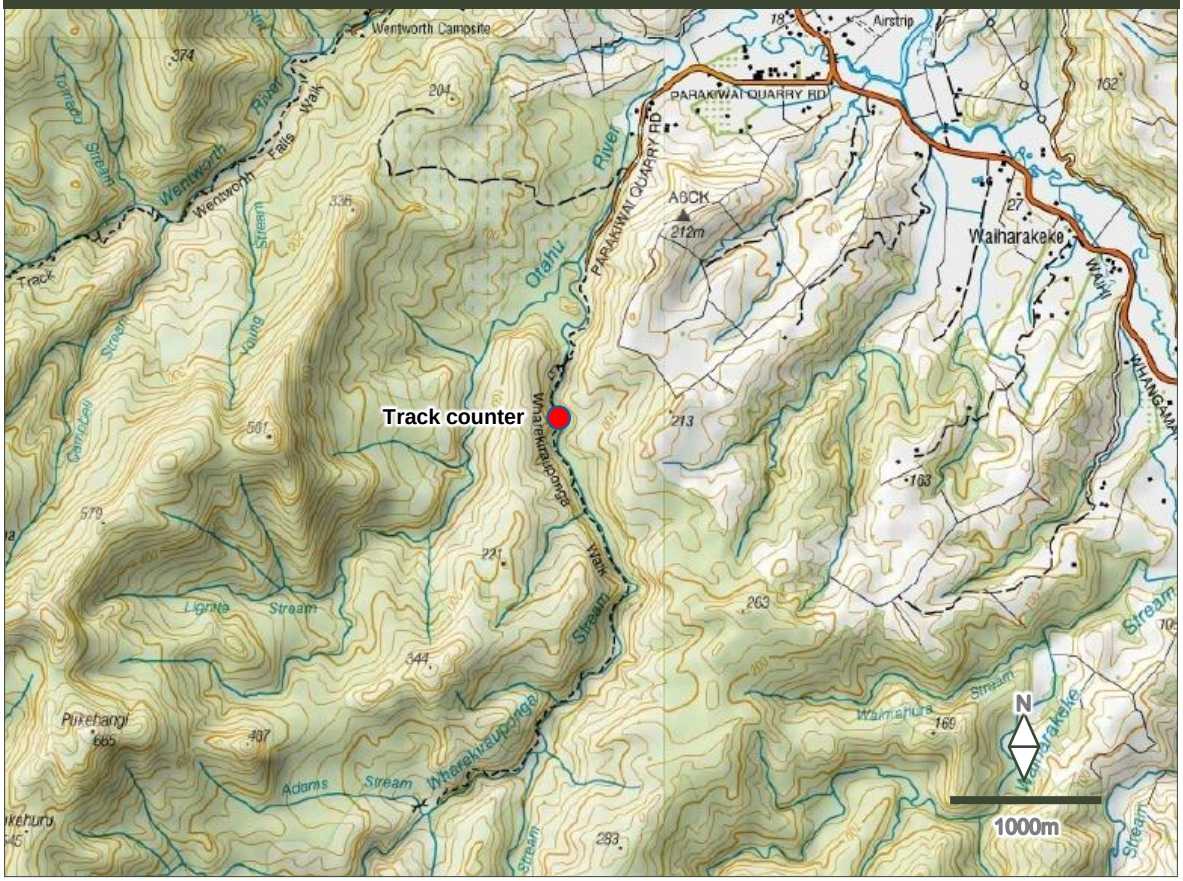
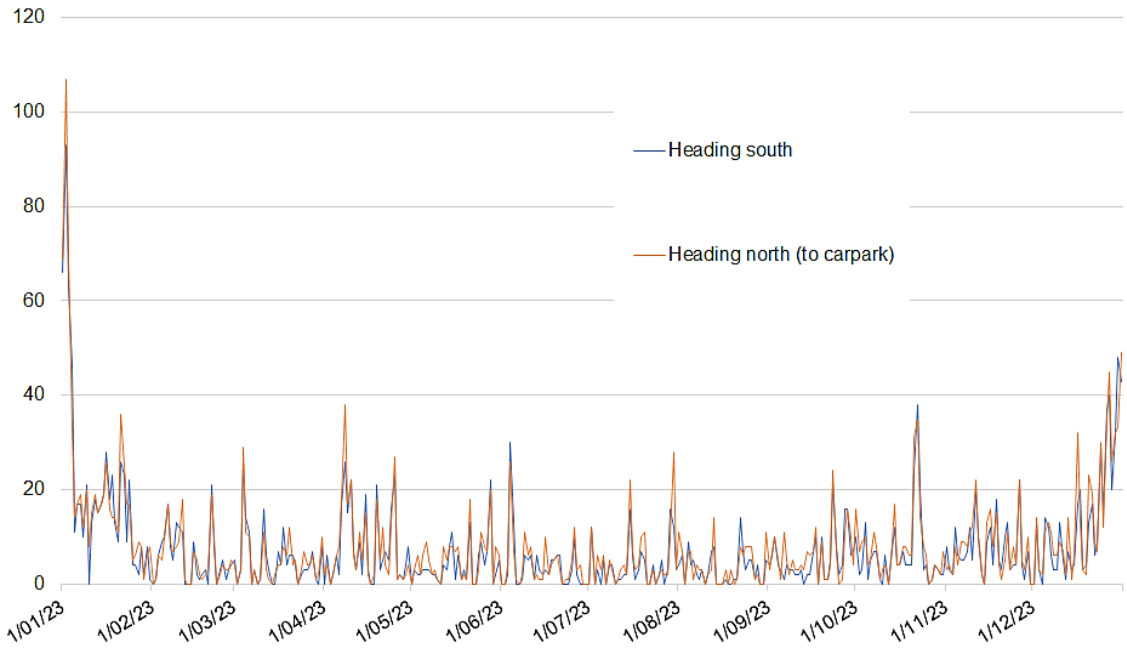


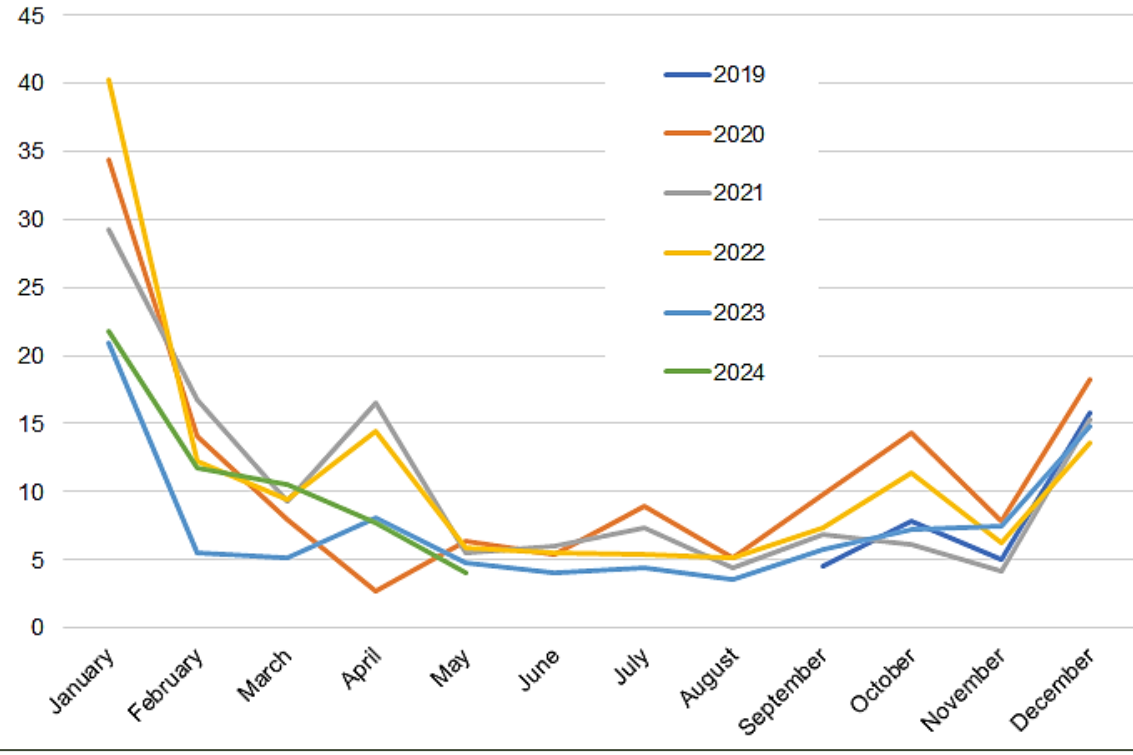
Figure 18: Wharekirauponga Track 2023 directional daily count counter data,



option has not been available since 2018 when that track was closed for kauri die-back management. The difference is likely to be the result of the counter missing individuals walking in groups, and OceanaGold staff walking in and flying out. A total estimate of visitors is therefore calculated by taking the higher figure of the two directional counts.

Figure 19 shows average daily counts for the track counter (average of both directions) by month from September 2019 to May 2024. Patronage levels have been reasonably steady up to 2023 but

Figure 19: Wharekirauponga Track average daily count by month Sept 2019 – May 2024



marked by busy periods over Easter in 2021 and 2022 and during the October school holidays in 2020 and 2022. In 2023, the total count reduced by almost a third.

Annual totals for individual visitors per full year are (using the highest of the daily directional counts):

- 2020: 4,763
- 2021: 4,450
- 2022: 4,722
- 2023: 3,209

The track counter is located within the closed section of track (as of 27 September 2024) and so no more recent data are available.

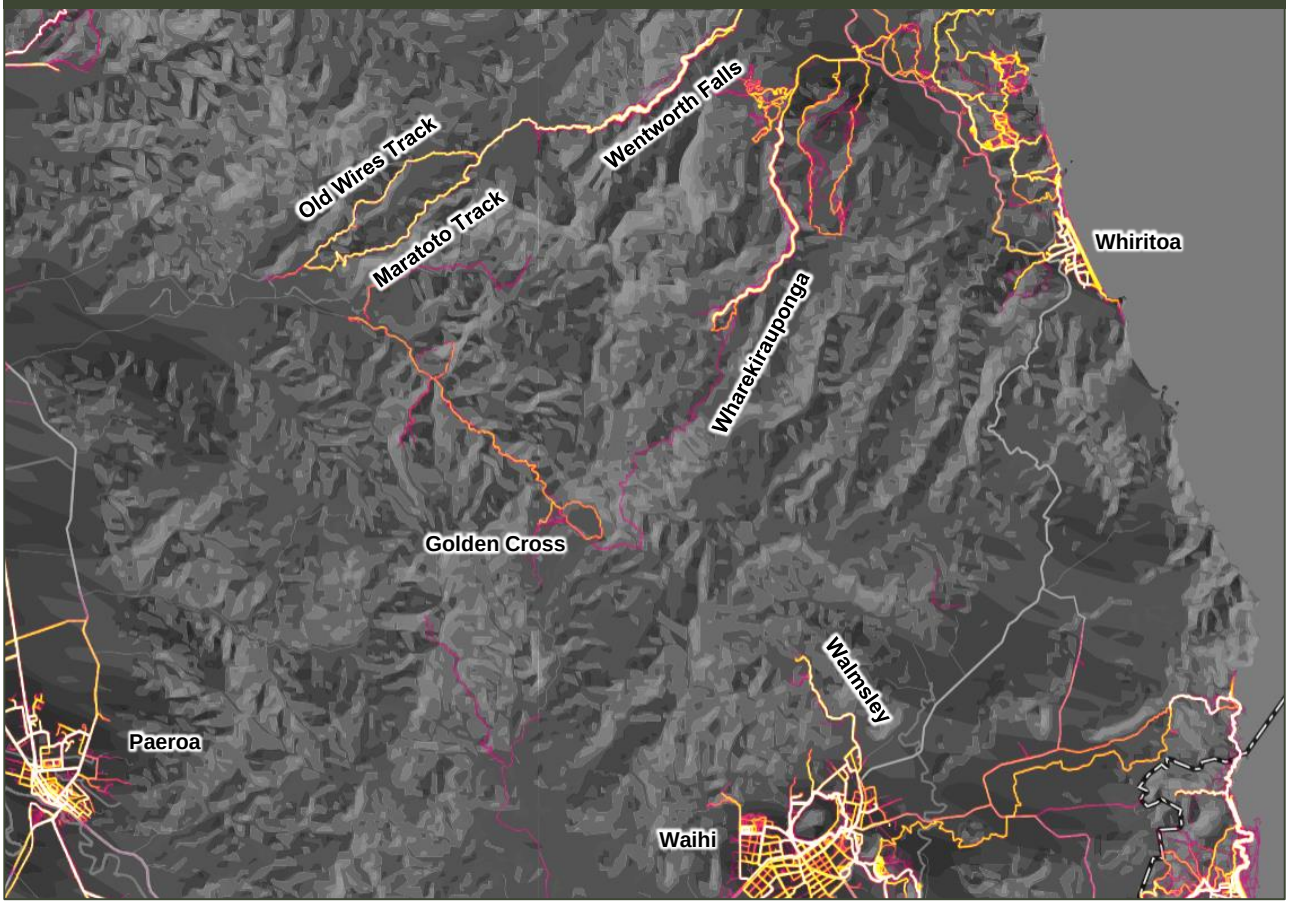
The Department of Conservation operates a pad-style counter on the track near the road-end. This also counts visitors accessing swimming holes near the track start and not travelling any further. The OceanaGold data are used here as the counter gauges those accessing the full length of the track.

4.2.4 Strava data

Figure 20 shows the Strava heatmap for 'footsports' (running, hiking, walking) in the southern Coromandel Range for the 12 months up to November 2020. More recent Strava heatmap data are available – such as that used in Section 5.1 – but show no activity on the Wharekirauponga to Golden Cross Track (which has been closed since 2018), and so the older data have been retained to indicate the location of the Track. Data for 12 months to 2024 are shown in Appendix 2.

Figure 24 also relies on the data filter for 'footsports'. This shows the relative popularity of the Wentworth Falls and Wharekirauponga Track, but also some activity along the Wharekirauponga to

Figure 20: Strava heatmap for footsports for southern Coromandel Range, 12 months data to November 2020



Golden Cross Track. Figure 24 shows the Wharekirauponga to Golden Cross Track area in more detail with three activity records.[14]

The 2024 Strava data in Appendix 2 for the same areas show, as stated, no records for the Wharekirauponga to Golden Cross Track, and also records by OceanGold staff and contractors recording their tracks to test sites immediately south-west of the Wharekirauponga Track end[15] (that is, there is no indication that general members of the public are walking off-track). It appears that some walkers are still using the closed section of the Wharekirauponga Loop Track. The heatmap for the wider area for 2024 shows no activity on private land north of Whiritoa or south of the eastern end of the Wharekirauponga Track, suggesting the 2020 data include records from an event on private land, most likely rogaining or orienteering.

4.3 Interview summaries

Telephone interviews were carried out with:

- Barry Denton, Waihi Tramping Club
- Colin Hallett, Te Aroha and District Tramping Club
- Peter Lee-Johnson, Katikati Tramping Club
- Mike Morrison, Whangamata Tramping Club
- Thames Information Centre (phoned for advice as a tramper)
- Kauaeranga Visitor Centre (phoned for advice as a tramper)
- Paul Matthews, Hauraki District Council Parks and Reserves Manager;
- Anne Marie Spicer, Hauraki District Council Councillor, Chair Waihi Ward;
- Kerry Single, Chair and Victoria Battery Tramway & Museum Society Inc.; and
- Eddie Morrow, General Manager, Gold Discovery Centre, Waihi Gold Mine Tours, Waihi iSite, Waihi Bicycle Hire.

The interviews were not solely in relation to WNP and considered the role of gold mining in recreation and tourism in and around Waihi generally, the performance of OGNZL in supporting recreation and tourism, and the potential to develop additional access into the southern end of the Coromandel Forest Park, as well as checking the tramping experience in the study area.

The key findings included:

- The Wharekirauponga to Golden Cross Track is reasonably well-formed but not maintained, with the occasional large tree-fall and one major slip or wash-out, but passage is otherwise acceptable (apart from the slip) and takes five to six hours from Golden Cross to Parakiwai Quarry Road. The Waihi Tramping Club generally stages annual trips on the route, while the Katikati Club might visit every five years and the Whangamata Tramping Club ‘every few years’. Others describe the route as a ‘oncer’ – one visit is enough. It would be rare to encounter other users – mostly pig hunters. Due to the slip, the Thames Information Centre does not recommend it as a tramping option. The DOC Kauaeranga Visitor Centre had no information on the track but stated that if it did not appear on the online DOC GIS Topomap as a track then it would be shut due to kauri die-back.[16]

[14] In low use areas it is possible to see and count individual activity records, but in relatively high use areas, such as the Wharekirauponga Track, the routes coalesce and become indistinguishable.
[15] Cassie McArthur, OceanaGold pers. comm., Dec 2024
[16] At November 2020 the DOC online GIS showed the Wharekirauponga Track but not the crossing from Wharekirauponga to Golden Cross: https://www.doc.govt.nz/parks-and-recreation/places-to-go/coromandel/places/coromandel-forest-park/things-to-do/wharekirauponga-track/ The track was closed in 2022.

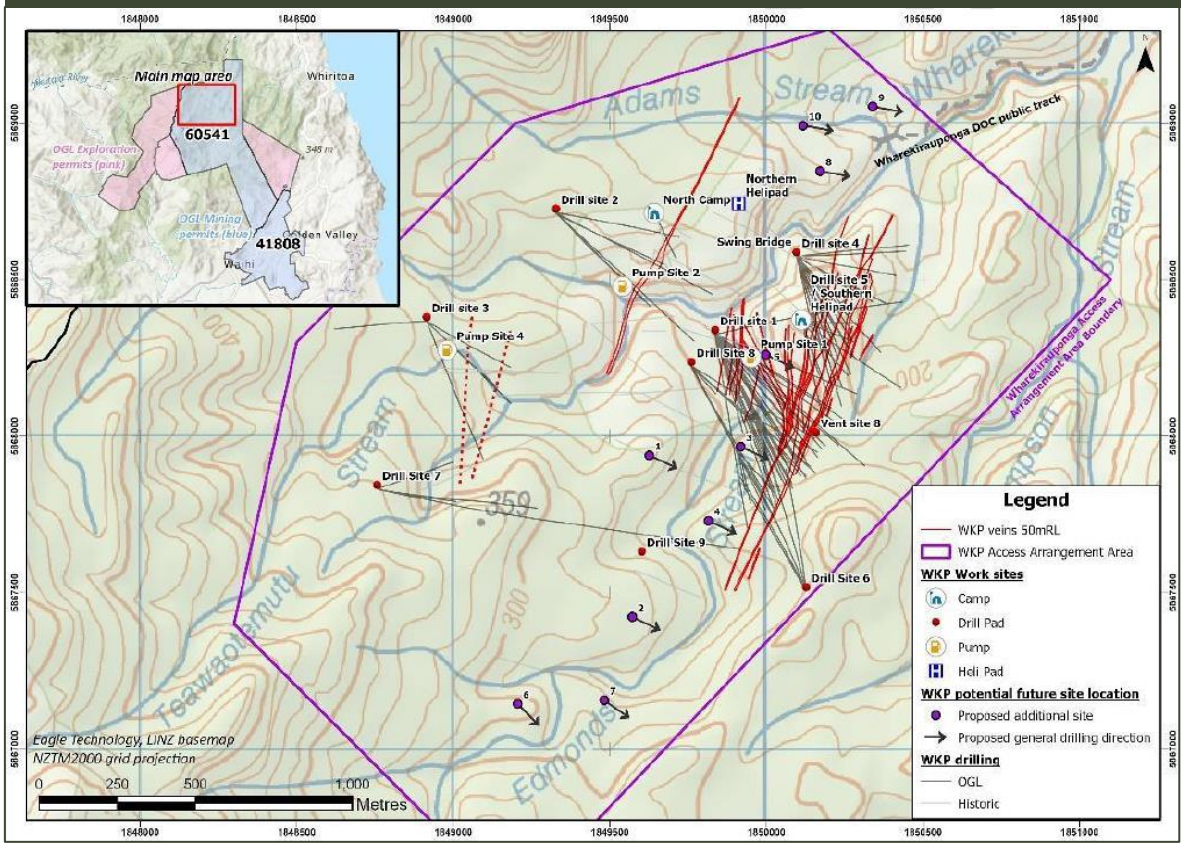
- Local knowledge is required to access and to actually know about the Wharekirauponga to Golden Cross Track and it is more suited to experienced trampers.
- The Corbett Road Track is not often used for tramping, and clubs rarely access it. Local hunters are the main users.
- Gold mining is integral to the Waihi visitor experience, and it underpins the destination theme of the township. Maintaining the visibility of the mine and associated heritage features is important. With eventual mine closure, these stories will still be able to be told effectively. Working with the mine in the future remains important. Waihi has a rich mining history. There is the need to keep attractions in place for domestic visitors which make up 87% of visitors to Waihi. Day visitors from Papakura and Auckland for shopping and local visitor experiences are very important.
- OGNZL is widely considered to be a very good local community player, with excellent communications and contributions to community well-being, and to the operations of local tourism operators.
- There is the potential to develop more day-walks in the Waihi area, and the concept needs more consideration. Better promotion of all the short and longer walks already existing in the Waihi area is also required to better develop the walking market.

4.4 Effects of the Wharekirauponga Underground Mine and mitigation

4.4.1 Exploration drill shafts, pump sites, piezometers and vent construction

OGNZL proposes an increase in the number of exploration drill shafts from ten to 18 (four additional in Stage 1 and four additional in Stage 2) and four associated additional camps and messing facilities (two in Stage 1 and two in Stage 2), with a correlated increase in helicopter access. The additional sites are shown in purple in Figure 21. The three of most interest to recreation are those located near

Figure 21: Existing and proposed new exploration activities (OceanaGold Project Description)



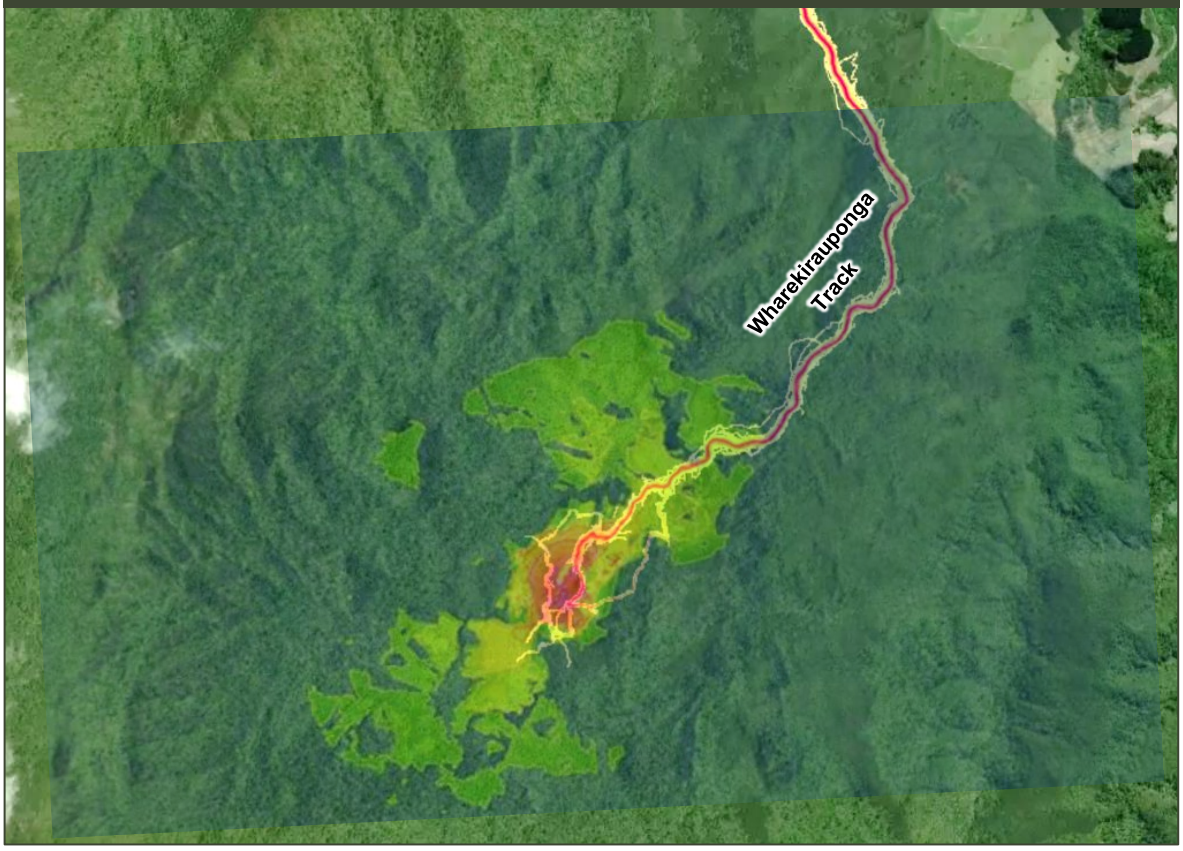
the western terminus of the Wharekirauponga Track, as these have the highest likelihood of affecting visitors to the Forest Park via noise associated with drilling, other works and helicopter movements (sites 8, 9 and 10). They will be out of sight of all sections of public track and visitors would need to walk off-track to access them. The four vent raises, one of which will operate as an egress raise, will be located on four of the most appropriate drill sites.

The potential raise location sites includes areas within the DOC's defined recreation 'remote' zones. These areas are typically characterised by limited infrastructure and basic facilities that support recreation – such as "basic low-use tracks, marked routes and huts".[17] Within these areas, low levels of recreational use are expected, as are encounter-rates with other people.

Boffa Miskell in their Landscape Assessment for the raises finds that, "*The sensitive siting of these elements within the extensive homogenous forest cover combined with their comparably diminutive scale will ensure the inherent characteristics and values of this outstanding natural landscape will remain.*"[18] However, trampers may encounter the raises, drill rigs or pump sites as discrete elements within the Park rather than as components of a broader landscape – if they happen to encounter them. During the lifetime of the project, the control of pest ungulates (pigs and goats) will deter the majority of existing users from the affected area beyond the Wharekirauponga Track. The net level of potential effect on individual users of the location of structures in the Forest Park will therefore be very slight.

Noise effects from the construction of vents and other structures, and drilling, will have the greatest potential for impact, as noise will propagate beyond the relevant site and may be heard on the Wharekirauponga Track. Figure 22 shows the Marshall Day (MD) Noise Assessment for vent shaft construction nearest the Wharekirauponga Track. This is the noisiest activity proposed compared with pad construction and drilling, both of which have far more limited noise footprints.

Figure 22: 2024 Strava heatmap overlaid with MD noise map for vent shaft construction



[17] See Appendix 1
[18] Report's Executive Summary

Drill activities are likely to be 'just audible' at the Wharekirauponga Track according to the Marshall Day Noise Assessment. Recommended noise management includes avoiding making noise during busy visitor periods, with the following limits:

- Ensure drilling activity and helicopter activity to service drill sites within 400 m of the Wharekirauponga Track cease from 1 December to 28 February inclusive when the track is open.

As discussed above, the southern end of the Park beyond the Wharekirauponga Track, is a low use recreation setting, with access now temporarily limited for kauri die-back management. Although part of the setting is within a recreation remote zone (as defined by DOC) where low levels of mechanical noise would be preferred, the reality will be very low impacts on recreation values, by virtue of very low levels of visitor activity. Drill, camp and mess sites will be located away from tracks but may be encountered by pig hunters, but this will be uncommon considering proposed pest management activities (ie, there will be no pigs to hunt).

Vibration effects from underground blasting associated with the WUG are considered by Heilig & Partners Pty Ltd (2024) in their *Vibration Performance Assessment*, and further by Dr. John Heilig of Heilig & Partners Pty Ltd. The latter is a specific assessment of vibration effects on walkers on the Wharekirauponga Track, and forms Appendix 3 of this report. De Heilig's assessment indicates that detonation events may be 'slightly perceptible' by users of the Wharekirauponga Track over a 50 m section. The low likelihood of detonations occurring while a walker is nearby – and the low scale of effect – indicates a negligible scale of effect from underground blasting. There is no risk of flyrock or overpressure from underground blasting.

Figure 23 shows a typical river piezometer. While these will be located in areas where visitors are unlikely, it is recommended that black plastic pipe is used to make them less visible.

Figure 23: Example of an existing river piezometer

4.4.2 Helicopter movements

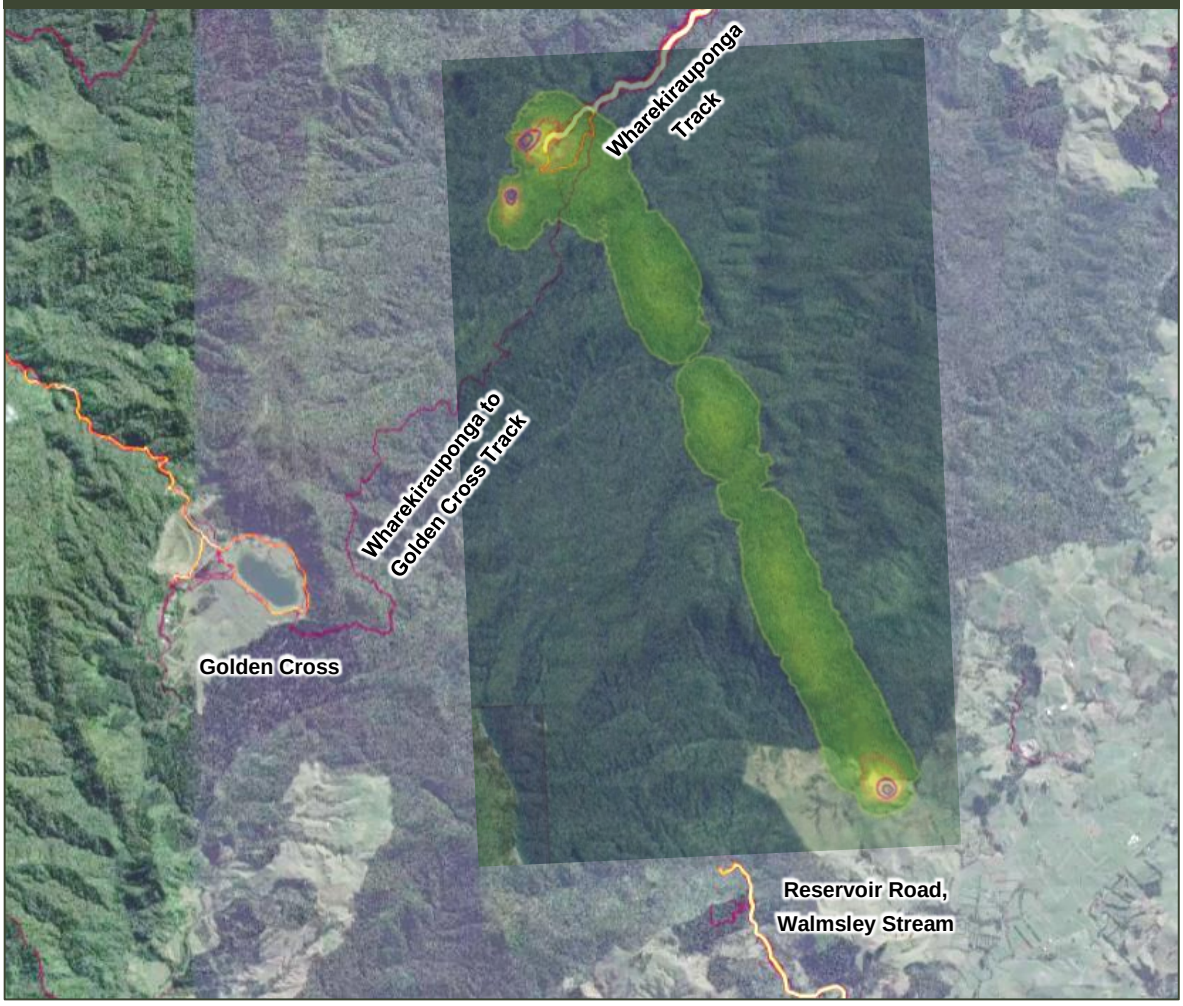
Figure 24 shows the calculated noise level map generated by Marshall Day Acoustics in their Noise Assessment Report for the helicopter flight path between the 'Willows' and 'Forest' sites, overlaid on the 2020 Strava heatmap for footsports (i.e. Figure 20). The two Forest sites shown are the closest exploration sites to the Wharekirauponga Track. The noise assessment is based on the maximum number of permitted movements, at 30 return flights per day in the corridor shown. Typical helicopter movements are:

- For 15 to 20 minutes each (round trip).
- Flights for lifting equipment (food and rigs) mostly occurring on Mondays, Wednesdays and Fridays, and generally between 8:30 and 11:30am. Depending on weather and drilling priorities, this period can extend by a couple of hours.
- Passenger flights occur on most days, weather depending, generally from 8:00 to 9:00am and from 4:00 to 5:00pm. Flying does happen on weekends unless absolutely necessary; for example if it has been raining for multiple days and drill crews are running out of food or diesel.

The average number of flights per day for the period 1 April 2023 to 31 March 2024 was nine, or 12 per day if averaged over the days when flights occurred (263 days).

Marshall Day Acoustics concludes that the noise effects of helicopter movements on visitors to the Conservation Area generally, and the eastern end of the Wharekirauponga Track, will be 'not significant'. This assessment considers the level of noise at ground level, the short duration of the flights, and the likely low number of people present in the Conservation Area during each flight.

Figure 24: 2020 Strava heatmap overlaid with MD noise contour map for helicopter movements



However, visitors to the Conservation Area will have high expectations for the dominance of only natural sounds during their visit. While the relevant access tracks are closed for Kauri die-back management, noise effects on visitors will clearly be near nil. Should the tracks open during the consent period, the following measures would limit the potential for adverse noise effects on visitors:

- Cease routine helicopter operations near the Wharekirauponga Track between 1 December and 28 February inclusive when the track is open.

4.4.3 Vent operation

The Marshall Day Acoustics Noise Assessment indicates that that noise levels from the vents will generally be only above ambient noise levels (around 40 – 45 dB) within 100 to 200 m, and unlikely to be heard at the Wharekirauponga Track, and would be barely audible at the other raises, and likely only if receivers are at the raise site itself. These noise levels are described by Marshall Day Acoustics to be at a level low enough to be considered not significant.

Considering the scale of effect on tramping in the Coromandel Forest Park generally and the eventual removal and rehabilitation of the raise sites, the scale of effect on recreation at a regional level will be very low. However, the localised effects on users of the Wharekirauponga to Golden Cross Track who encounter the raise sites could be considered more than minor in an otherwise undeveloped natural setting where few interactions with the signs of development would be expected.

Mitigations during the life of the project could include:

- Locating the raises as far away as possible from established walking routes;
- Avoiding locating the raises on any tramway formations;
- Developing track detours away from the raise sites.

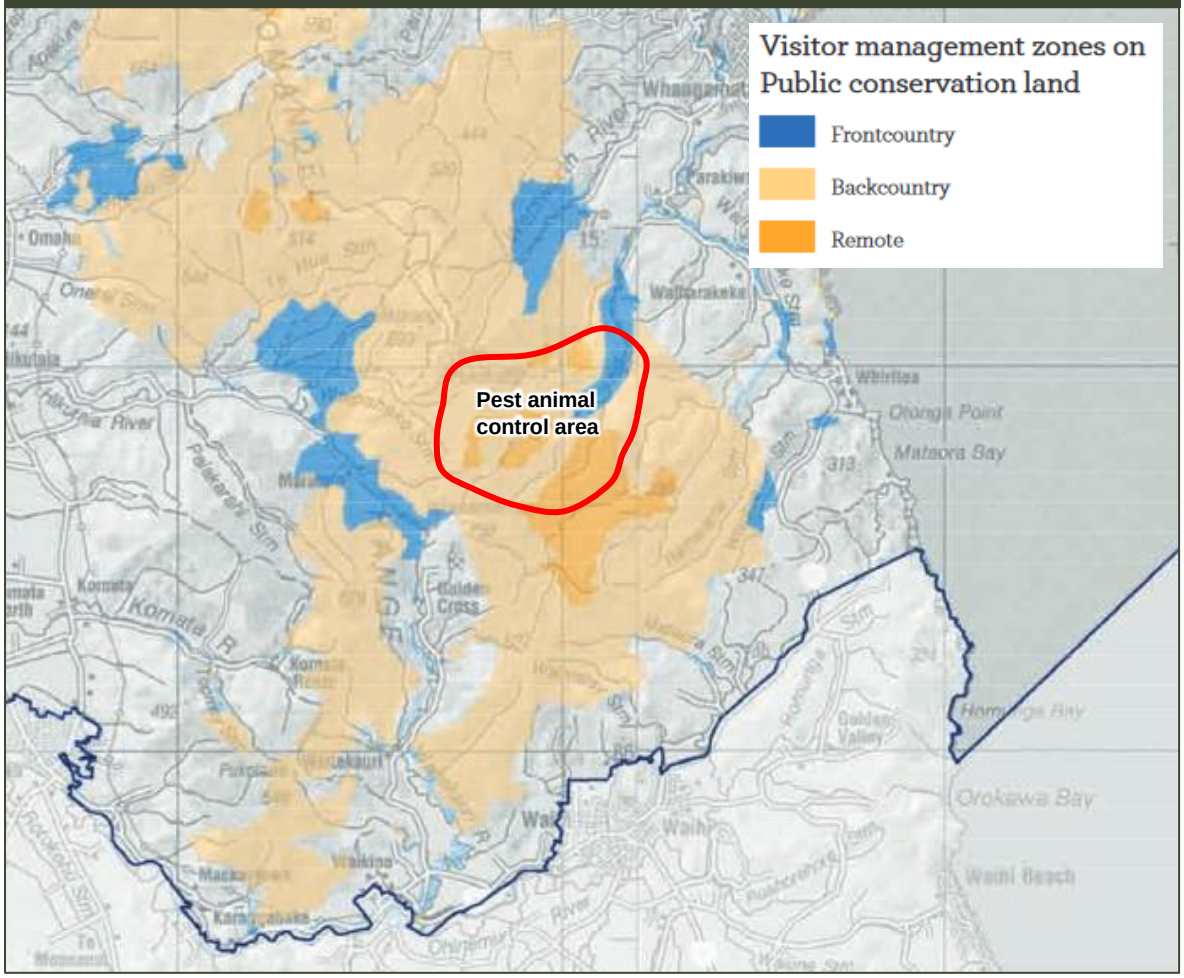
An alternative (or additional activity) is to provide interpretation about the raises and identify them as features of interest on the routes. Setting accurate expectations about the recreation experience in any destination is an important element of recreation management generally, and leaving the raises as a ‘surprise’ element of a tramp is not recommended. For example, if the raises are located a short distance from the route, signs indicating their location and a little information about their function would be useful. If they are located on a route, signs should be located prior to them being encountered.

Regardless of the final raise locations, the presence and operation of the raises is unlikely to change the level of recreational activity on existing routes as the primary driver for recreational use is pig hunting and completing a traverse of the Range (with little or no pig hunting occurring while pest management activities are underway).

4.4.4 Pest control

The Boffa Miskell Pest Animal Management Plan proposes removal of pigs and goats from a 632 ha ungulate control area, shown in Figure 25, overlaid on the CMS visitor management zone map. This indicates the scale of remaining areas in the Coromandel Forest Park which will remain for pig hunting. Effects on recreation opportunities from pest animal control are considered to be minor.

Figure 25: DOC Visitor management zones. CMS Vol 2 Map 11.5. Showing pest control area



4.4.5 Access development opportunities

The process of preparing this report identified the potential to further develop the affected routes for enhanced access. There is an expectation set in the CMS for exploring additional recreation access options in the southern part of the Park ("encompassing the Wentworth and Wharekirauponga Valleys"),[19] and an ideal opportunity presented by the local historic tramway formations. Interest exists from some local tourism and recreation representatives. While the examination of this option via this study has been cursory, consideration could be given to changing the recreation status of the setting to include more front- and back-country recreation opportunities, and improved developments for crossing or circling the southern end of the Coromandel Range. The location of the raises would not fetter this opportunity.

[19] CMS section 9.2.2.4. See Section 4.2.1 of this report.

5 Gladstone Open Pit, TSF3 and NRS

The proposed Gladstone Open Pit (GOP) is proposed to be situated predominantly over Gladstone Hill with a minor co-joined pit excavated into Winner Hill. A tailings storage facility (TSF3) is proposed to be located east of the existing OGNZL tailings facilities with a rock stack to the north of the existing TSF2 (the Northern Rock Stack (NRS). This report section considers the effects of these three developments on local recreation and tourism activities, including those on private land owned by OGNZL (including the western face of Union Hill), and on users of Ngāti Koi Domain.

5.1 Recreation values

Figure 26 shows the location of publicly accessible lands near the GOP, NRS and TSF3 areas, showing also the outline of the proposed working areas including borrow areas and stockpile areas for non-acid forming material that will be used for pit closure and site rehabilitation. All proposed works are confined to private land, apart from an unformed legal road which extends within TSF3 from Trig Road North. This no-exit road is bounded by land owned by OGNZL.

Figure 26: Public lands in GOP, NRS and TSF3, including borrow areas. WAMS base map

Strava heat map data (described in Section 4.2.4 of this report) indicates the routes preferred by cyclists (Figure 28) and runners (Figure 27) near the GOP, NRS and TSF3 sites. There is no activity within or near TSF3, which makes sense considering it is to be located largely on private land, and that the legal road within it is unformed and within developed farmland. Strava heatmaps from 2021 are used here as they show data from the Full and Half Nugget annual multisport event which was not held in 2024 due to concession issues with DOC at Orakawa Reserve near Waihi Beach.

Part of the GOP site and the OGNZL-maintained circuit around the base of the Ngāti Koi Domain has been developed for walking and mountain biking, with the cycle network collectively called the Black Hill Mountain Biking Trails. Figure 29 shows the Strava heatmap data for both cycling and running in more detail for near the GOP site and Ngāti Koi Domain, and Figure 30 shows the mountain bike trail locations as defined by Trailforks, an international social media platform for

sharing mountain bike track location and status data, adopted by most local authorities and mountain bike clubs in New Zealand as the standard data portal.[20]

The Strava heatmaps show an access route to the west of the GOP area on private land, crossing the OGNZL conveyor and meandering north-east across farmland and adjacent to the proposed NRS. This is the route of The Full and Half Nugget annual multisport events which operate between Waihi Beach and Waihi.[21] Figure 31 shows the event route map for the final stage near Waihi. A 10km loop run, part of The Nugget Multisport Festival, circuits the Martha Pit and the Ngāti Koi domain via the western side of Winner Hill on OGNZL land.

The Blackhill Motorcross Club course is located on the north-eastern corner of Ngāti Koi Domain, with vehicle access across OGNZL land (the course is visible in Figure 30). The Club issues to members keys to the locked gate to the course, and the keys expire annually.[22]

Figure 28: Strava heatmap – cycling. 12 months of data to July 2021

Figure 27: Strava heatmap – running. 12 months of data to July 2021

[20] See https://www.trailforks.com/trails/map/?activitytype=1&z=15.0&lat=-37.39625&lon=175.86028&m=hybrid
[21] https://thenugget.co.nz/
[22] https://blackhillmx.co.nz/

There are no formal agreements in place between OGNZL and the Black Hill Mountain Biking Trails or the Blackhill Motorcross Club allowing access across private land. All developments on OGNZL land have occurred via casual agreements with no security of tenure or access.

Figure 29: Strava heatmap for GOP area – cycling & running. 12 months of data to July 2021

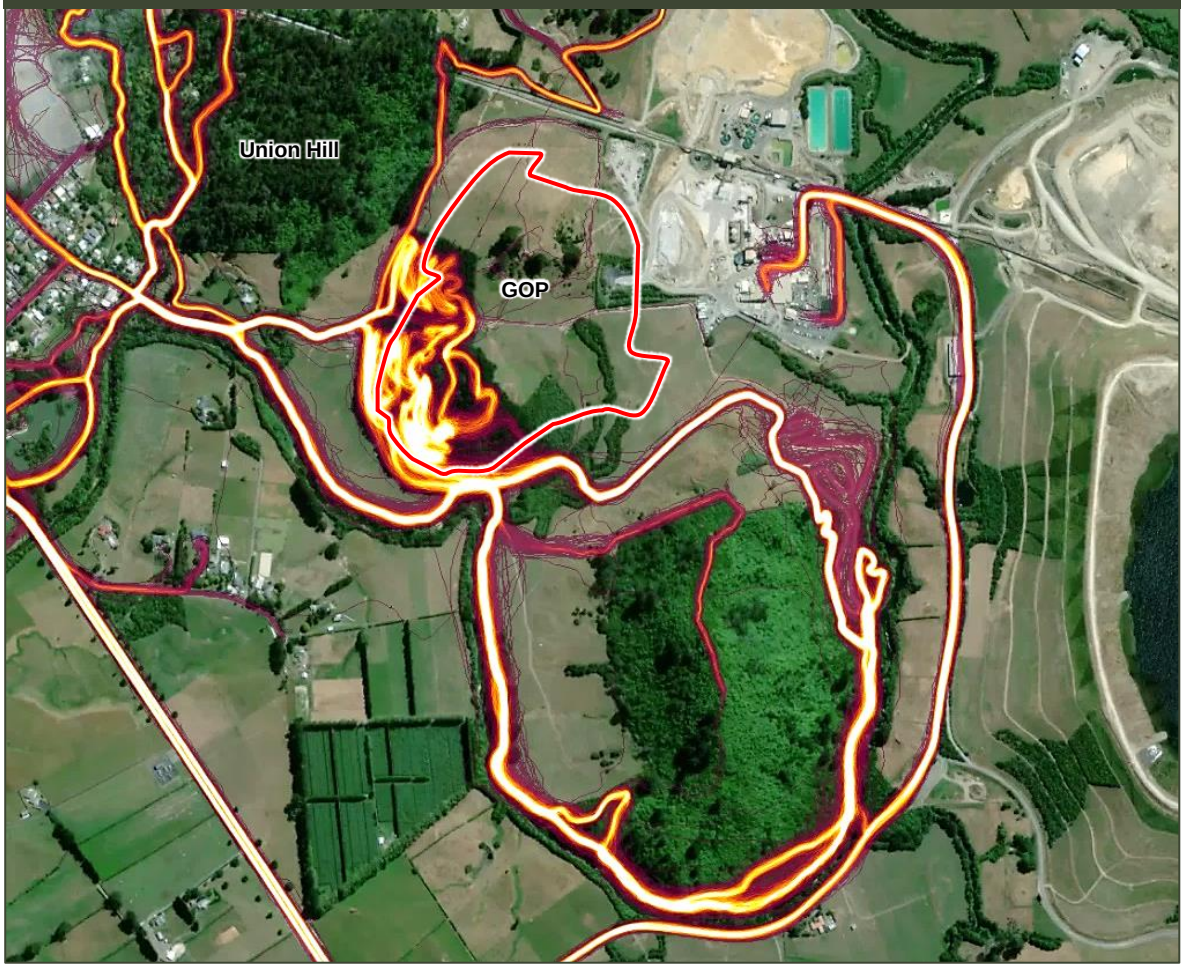


Figure 30: Trailforks trail map for Black Hill MTB trails

Figure 31: The Nugget multisport event MTB route in green (road cycle section in red)

Ngāti Koi Domain is a recreation reserve under the Reserves Act 1977 and was gazetted as such in 1975, having originally been gazetted as a public domain in 1903.[23] The reserve was agreed to be vested in Ngāti Tara Tokanui as a recreation reserve and jointly administered with the Hauraki District Council according to the 2017 Ngāti Tara Tokanui Deed of Settlement with the Crown. The Reserve is referenced in the *Hauraki District Reserve Management Plan 2022*:

> ***Reserve Description and Use***
>
> *This reserve is a combination of bush and farmland, part of which is currently leased out for grazing. A track from the end of Clark Street follows the Ōhinemuri River upstream and eventually ends at the lookout on the summit of "Black Hill". There is no vehicle access into the reserve, however there is a motorcycle dirt track available for motorcycle riders…*
>
> ***Reserve Specific Policy***
>
> 1. *To partner with Ngāti Tara Tokanui over the ongoing management and development of the reserve.*
> 2. *Heritage New Zealand Pouhere Taonga will be consulted with prior to any development activities in association to the reserve, to ensure heritage values are maintained.*
>
> ***Future Development***
>
> *Subject to funding and support from Ngāti Tara Tokanui, Council may consider:*
>
> 1. *Further restoration planting to enhance the biodiversity and amenity of the reserve.*
> 2. *The development of a multifunctional trail to enhance visitor experiences.*
>
> ***Reserve History***
>
> *The local community used this reserve extensively during the years of the first mining era as a recreation area. Many picnics were held there, some being responsible for fires that burned the hills vegetation giving rise to the name "Black Hill".*

[23] New Zealand Gazette 1903 p 2612 and 1975 p 655.

There is no reference to the Domain in the Hauraki District Council's *Hauraki District Sport and Active Recreation Plan 2018-2028*. The walk to the summit of Black Hill and around the Domain – particularly the section beside the Ohinemuri River – is promoted as a visitor activity, with the summit offering, for example, "extensive views of Waihi, and the Waihi basin."[24]

Union Hill to the west of the proposed GOP is owned on its western face by OGNZL and administered by Land Information NZ (LINZ) on the east. Public access to the Waihi Battery gold mining heritage facilities on the western side of the Hill is confined to OGNZL land and there are no formed public tracks on the LINZ block (see Figure 29). Heritage assets on Union Hill are protected according to the Hauraki District Plan and Heritage NZ classifications, and form attractions on the Union Hill Heritage Trail accessed off SH25 to the west and Clarke Street to the south.

5.2 Effects of GOP, NRS and TSF3

There are no effects on recreation or tourism as a result of the development and operation of the TSF3 due to there being no public recreation opportunities in the development area.

The GOP will displace mountain biking from Winner Hill and affect access to the Black Hill motocross track. The NRS will affect a small section of the Full and Half Nugget annual multisport events. These opportunities rely on access over OGNZL land, and there are no agreements in place to secure tenure. Such recreation opportunities must be considered as inevitably temporary based on their current access routes and lack of tenure. It is understood that the Black Hill motocross track has no resource consent to operate on Ngāti Koi Domain.

Defining an adverse effect, in this context, due to the loss of public recreation opportunities on private land – where there is no security of tenure[25] – would limit any private landowner's willingness to offer such opportunities and set a dangerous national precedent. That is, an agency will not offer temporary recreation access to private land if that offer could result in an unavoidable long-term commitment, and the need to implement mitigations if public access was eventually closed. Effects of the GOP on mountain biking, motocross and The Nugget are therefore considered minor and to not require mitigation. This recognises, for example, if OGNZL had agreed to a time-bound lease for recreation access to their land and the lease expired, there would be no requirement to mitigate the end of the lease, although it might be considered an adverse outcome by the previous leaseholder. In this case, there are no leases or other access agreements and no expectation that public access could remain in perpetuity.

OGNZL is, nonetheless, in conversation with the relevant clubs and the Hauraki District Council to support alternative development opportunities, including the potential for a new access route across OGNZL land to the Ngāti Koi Domain for motocross. However, these will depend on access developments within the Domain which are beyond the control of OGNZL.

Visitors to Ngāti Koi Domain – including walkers, runners and cyclists on the summit climb or the circuit track – will be able to see and hear the works at the GOP. The related effects have been assessed by the relevant specialists:

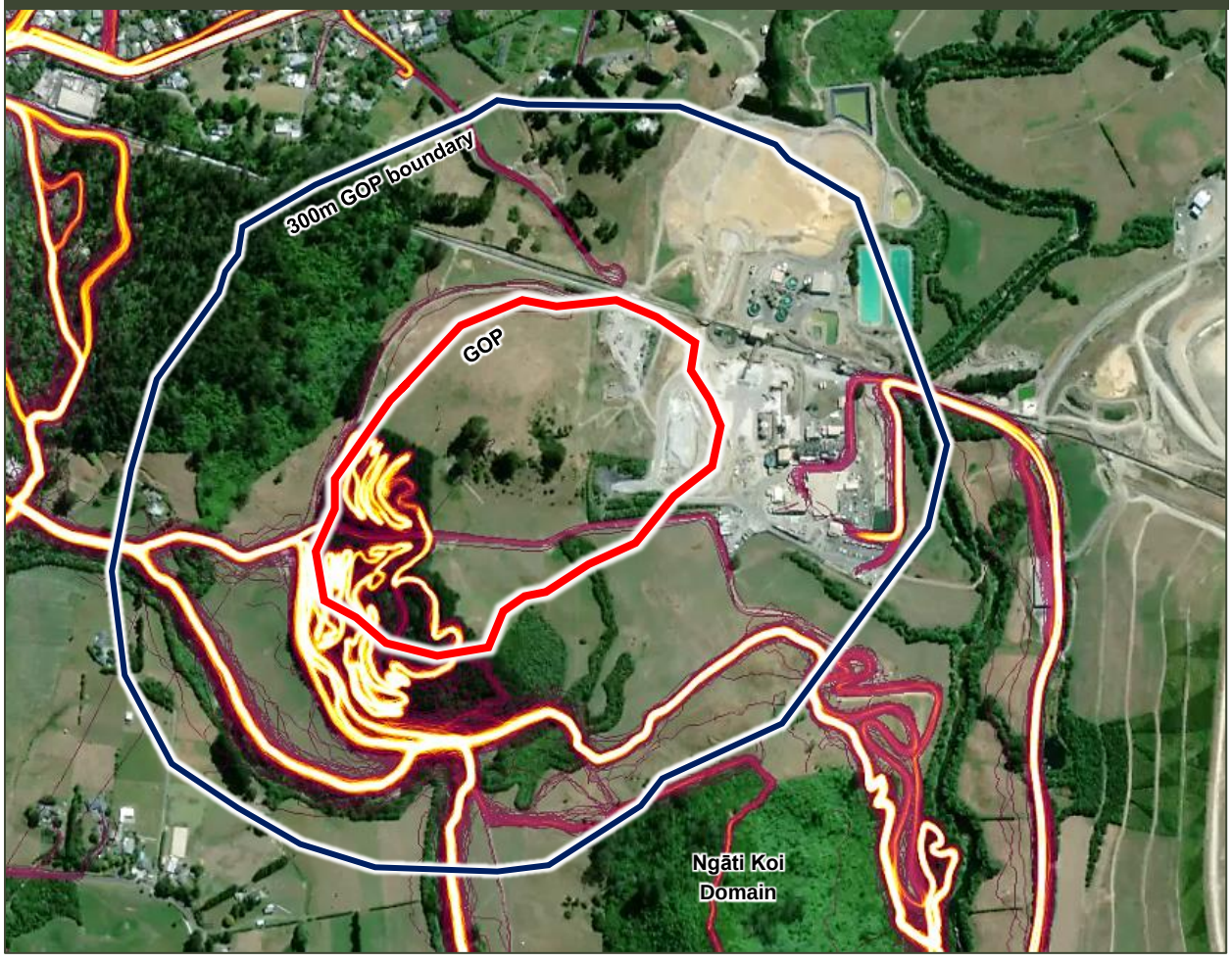
- Noise: Marshall Day Acoustics (2024) considers noise impacts on users of the recreation areas in close proximity to Gladstone, particularly Ngati Koi Domain and the areas of Union Hill with public access. Noise levels would be 50-55 dB LAeq from typical Gladstone operations, with some small areas of the existing motocross track at the Domain exposed to noise levels of 60 dB LAeq at times. The predicted noise levels presented above would ensure a similar level of amenity protection as provided for by some District Plans that contain noise limits of 55 dB for residential activity. Marshall Day Acoustics concludes that, based on the urban location of local walking tracks, noise levels are unlikely to cause annoyance; and

[24] https://www.waihi.org.nz/about/our-outdoors/
[25] Such as where access has not been agreed as a mitigation for the effects of other consented activities.

although operational noise would be clearly audible, noise levels would be only just above what would occur without the project in place.

- Landscape: Boffa Miskell (2024b) note that intervening vegetation covers the majority of Ngāti Koi Domain and limits the areas from which views out towards GOP are available from the top. Where visible at lower elevations, GOP will extend a local area of mining activity seen in association with the existing Processing Plant and Favona Portal. At completion, the potential for adverse effects will be remedied as rural land use is re-established in this context. Similarly for the NRS any change in view will remain in the context of the existing mining activity and surrounding rounded hills to represent no detrimental reduction in visual amenity. Boffa Miskell (2024b) also note that views are similarly concealed by vegetation within Union Hill, with no existing recreation tracks currently formed on the eastern slopes in the direction of Gladstone Hill.
- Vibration: Heilig & Partners Pty Ltd (2024) consider the effects of blasting and subsequent vibration, overpressure and flyrock effects from the GOP. Figure 32 shows the potential flyrock zone around the GOP, which includes public tracks leading to and within Ngāti Koi Domain, and beside the Ohinemuri River. During blast events, closure of these tracks will be required for public safety, as was the case with the Martha Pit Rim Walkway during past blasting activity there. The duration and frequency of necessary temporary closures has not yet been determined, but are expected to be short in duration, and to not occur on Sundays as per the proposed consent conditions. The required Blasting Management Plan will establish trail closure protocols in agreement with the landowner (Hauraki District Council).

Figure 32: GOP 300m flyrock zone on 2024 Strava heatmap



In summary, effects of the GOP, NRS and TSF3 on recreation are limited to:

- The inevitable displacement of several recreation activities from privately owned OGNZL land (with discussions in place to find alternative opportunities);
- Noise effects on visitors to Ngāti Koi Domain, specifically at the summit of Black Hill and on its eastern side. Marshall Day Acoustics (2024) describe these as unlikely to cause annoyance;
- Temporary track closures within the 300m GOP flyrock zone affecting Ngāti Koi Domain and the Ohinemuri Riverside track, managed according to the Blasting Management Plan; and
- Limited effects on landscape values from the summit of Black Hill and other publicly accessible areas (see Boffa Miskell Landscape Assessment).

Displacement of activity from private OGNZL land is not considered an adverse effect, in much the same manner as would the conclusion of any time-bound access agreement – although in this case, no such agreements have been made. Nonetheless, OGNZL is in discussion with recreation groups and the Hauraki District Council to seek alternatives for displaced activities, with the following progress (at January 2025):

- An MoU committing OGNZL to providing alternative access to the motocross course has been signed.
- A second MoU, providing access to alternative land owned by OGNZL for reestablishing a mountain bike trail and offering funding to support this, has been agreed in principle but remains unsigned (is currently being worked through with HDC, as they also have an interest in the proposed area of land).
- OceanaGold has partnered with HDC and the Waihi Community Forum to develop a new recreation hub at Morgan Park, Waihi, which will include a pump track. Resource consent for the track was granted in mid-November 2024, and construction is planned to commence in 2025.

Effects of temporary track closures are potentially moderately adverse at the local level, depending on frequency and duration. However, similar closures were required for the Martha Pit and have not been identified as significant issues to date. Landscape effects are assessed as minor, and noise effects on recreation amenity are low.

6 Mine closure

At mine closure, all surface infrastructure will be removed from within the Coromandel Forest Park and at the Willows Farm portal area. The portal area, GOP, NRS and TSF3 will be returned to working rural landscapes, and in the case of TSF3 with wetland settings. Further details are provided in the OceanaGold Rehabilitation and Closure Plan. Residual recreation effects are not anticipated.

7 Conclusion

The Waihi North Project can be managed to limit adverse effects on recreation and tourism in the Coromandel Forest Park and the wider region.

The operation of the Ohinemuri Treated Wastewater Discharge will have no to very minor effects on local recreation patterns beside the river, and on in-river recreation, particularly contact recreation and angling.

Increased exploration in the Coromandel Forest Park has the potential to affect users of the Wharekirauponga Track by the noise generated by drilling and helicopter movements. Time restrictions on these activities will significantly limit the potential scale of effect, which will also benefit other users of the Coromandel Forest Park.

The southern end of the Coromandel Forest Park beyond the Wharekirauponga Track is a very low-use recreation setting, dominated by pig hunting – which will largely cease within the proposed pest control area for the life of the project. Significant alternative pig hunting locations will remain.

The location of built structures within recreation remote zones is generally incompatible with the expectations of visitors within such settings, although the proposed vent raises will avoid tramping tracks. There is therefore likely to be adverse effects on those few trampers who are traversing the Coromandel Range on the Wharekirauponga to Golden Cross Track who are aware of the raises. However, the net effect will remain minor considering the focus of the activities (pig hunting and crossing the Range).

Development and operation of the GOP, TSF3 and NOR will displace some recreational use of private OGNZL land. This is not considered an adverse effect, in the same manner as the conclusion of any time-bound land access agreement. Implying an adverse effect would jeopardise the provision of voluntary access to private land for recreation nationally. Nonetheless, OGLNZ is securing alternative recreation settings for affected recreation groups.

Mine closure will see the removal of all structures from private land, and there will be no residual adverse effects.

8 References

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Appendix 1: DOC CMS Prescriptions for the management of visitor management zones. CMS Appendix 12

Setting	Urban	Rural	Front country	Backcountry—accessible and walk-in	Remote	Wilderness
General description	• Areas inside or on the periphery of urban areas • Typically includes a historic or cultural site	• Remnant native forest, wetlands, marine reserves and historic or cultural sites in areas dominated by farmland and plantation forest	• Where the majority of visitation occurs; typically small areas, scattered within or on the periphery of large, relatively natural areas • Includes the vicinity of main 'scenic' roads passing through public conservation lands • Often focused on a particular attraction	• Large-scale natural settings generally accessed first through front country • Includes popular walks and tramps set within large-scale natural settings and/or that access other settings	• Catchments beyond the backcountry zone, forming the wild lands in the interior of large, protected areas, with basic low-use tracks, marked routes and huts	• Gazetted wilderness
Accessibility	• Enabled for people of most ages and abilities	• Typically via sealed and unsealed roads, and in some cases by boat • Enabled for people of most ages or abilities	• Readily accessible areas, usually via sealed roads, or scheduled ferry or air services • Mostly by car, but also tour buses and guided parties to some sites • Enabled for people of most ages and abilities	• People will have travelled some distance to reach these settings • 'Backcountry accessible' focuses on gravel roads, four wheel drive roads , navigable waters and aircraft landing sites • Motorised ground access generally restricted to roads and designated routes • 'Backcountry walk-in' is focused beyond the influence of motorised access	• Typically 5 or more hours travel from front country • Access supported by aircraft in some areas	• Requires passing through backcountry and remote to reach the boundary

Setting	Urban	Rural	Front country	Backcountry—accessible and walk-in	Remote	Wilderness
Predominant visitor groups	• Short-stop travellers and day visitors	• Short-stop travellers, day visitors and over-nighters	• Predominantly short-stop travellers, day visitors and over-nighters • Other visitors in transition to backcountry and remote settings	• Predominantly 'backcountry comfort seekers' and 'backcountry adventurers'	• 'Backcountry adventurers' and 'remoteness seekers'	• 'Remoteness seekers'
Facility setting	• High-standard footpaths, cycleways and modified landscapes • High degree of control via information and direction signs, and barriers	• Short walks, campsites and picnic areas, for a range of ages and abilities • High degree of control via information and direction signs, and barriers	• Good-quality facilities, services and easy access • Sometimes the origin for tramping tracks and routes, with signs and information to make this transition clear • High degree of control via information and direction signs, and barriers	• A range of facility standards, including any designated vehicle routes , and popular walks and tramping tracks • Evidence of control limited to essential directional signs and barriers on Great Walks, and places where there are significant hazards	• Basic huts, bridges, low-use tracks and marked routes • Evidence of control is limited to essential signs	• No facilities
Desired visitor experience and interactions	• Varying, from activities with large groups, time with small groups/families, some time away from other groups and, in some cases, solitude			• Generally some time away from other groups and, in some cases, solitude • Occasional encounters with organised groups • Generally accepting of occasional intrusion of noise	• Reasonable expectation of isolation from sights, sounds and activities of other people • Interaction with few other groups • Considerable self-reliance on backcountry skills	• Complete isolation from sights, sounds and activities of other people • Maximum interaction with only one other group is generally acceptable
Preferred maximum party size	• What is socially appropriate • Conforming concessions schedule—15	• 50 • Conforming concessions schedule—15	• 15 • 50 for periodic tour bus parties • Conforming concessions schedule—15	• 15	• 8	• 6

Setting	Urban	Rural	Front country	Backcountry—accessible and walk-in	Remote	Wilderness
Typical visitor interaction levels	• What is socially appropriate	• 20 or less people seen per hour	• 30 or less people seen per visit duration	• 15 or less people seen per day for 'backcountry adventurer' tracks or routes • 40 or less people seen per day for 'backcountry comfort seeker' tracks or routes	• 10 or less people seen per day	• 6 or less people seen per visit duration
Concessions operations	• Concessionaire activity may be permitted in all these visitor management zones, subject to conditions to avoid, remedy or mitigate adverse effects, including compliance with criteria within this table; the outcomes and policies for Part Two: Places and the Policies in Part Three apply • Concessionaire client activities should not be advantaged or disadvantaged compared with those for non-concessionaire visitors, unless there is a specified reason for different management; the outcomes and policies for Part Two: Places and the Policies in Part Three apply					• Concessions should only be granted for this setting where consistent with policies for wilderness areas
Concessions effects management	• Avoid, remedy or mitigate effects by setting conditions		• Avoid or mitigate effects.	• Concessions activity to be indistinguishable from other approved activities		• Concessions should only be granted for this setting where consistent with policies for wilderness areas
Aircraft management	• Aircraft access for visitor use purpose should not be approved other than in accordance with Policeis 3.5.1 to 3.5.11 (Aircraft) in Part Three and the outcomes and policies in Part Two—Places					• Aircraft access should only be granted where consistent with policies for wilderness areas

Appendix 2: 2024 Strava heatmaps Coromandel Forest Park

Figure 33: Strava heatmap for footsports for southern Coromandel Range, 12 months data to November 2024

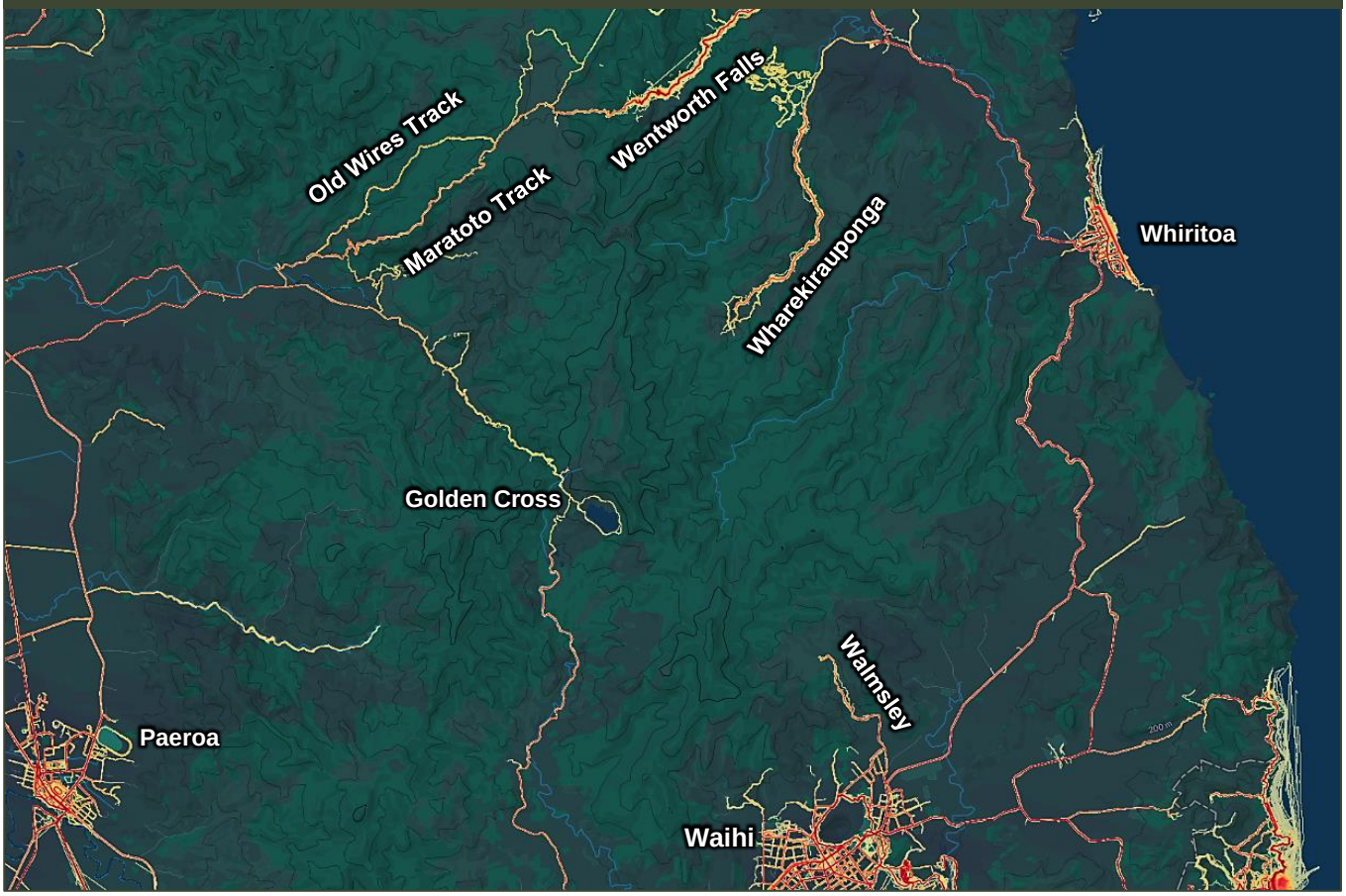
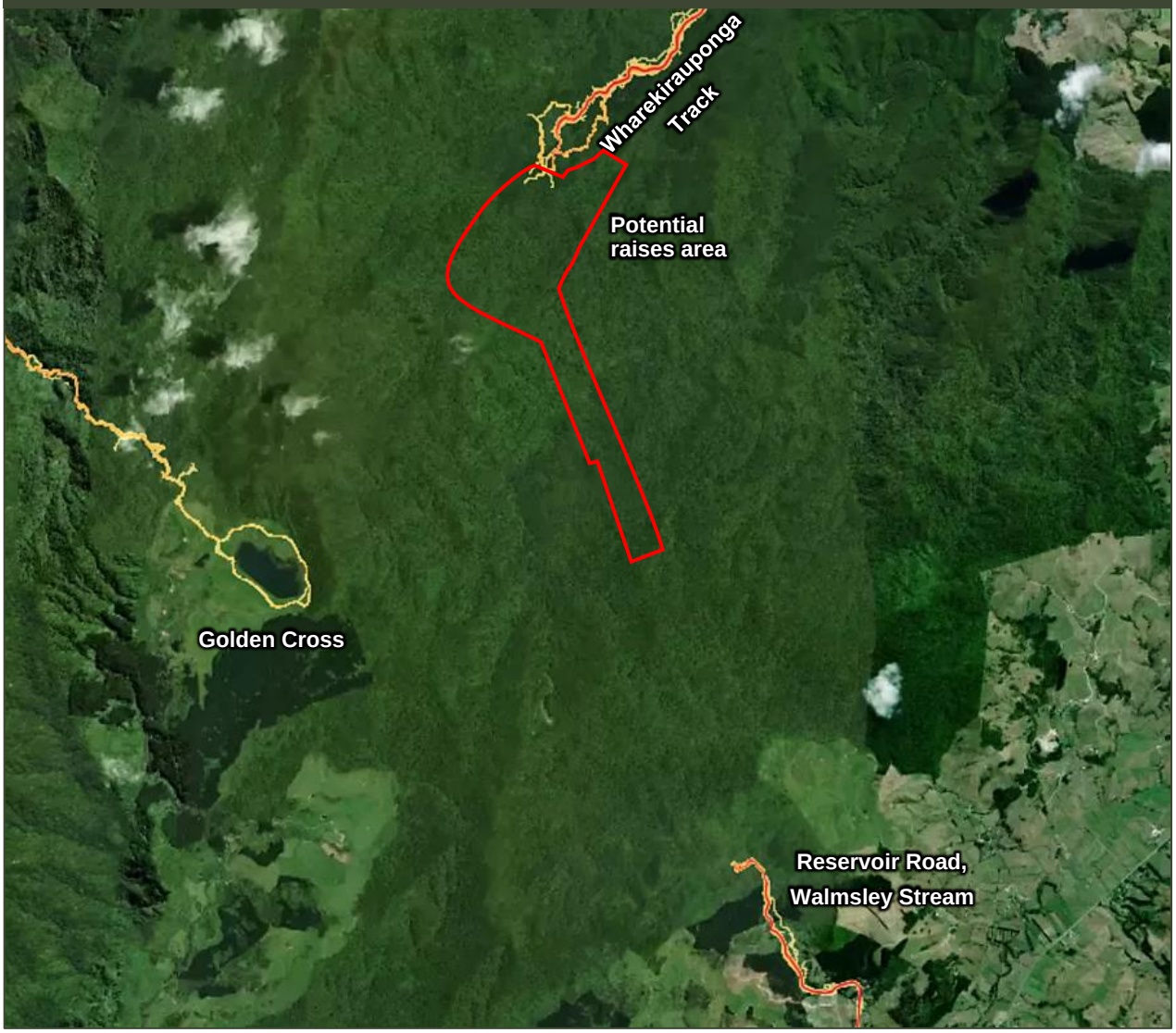


Figure 34: Strava heatmap for footsports for study area, 12 months data to November 2024



Appendix 3: Heilig & Partners vibration assessment, Wharekirauponga Track

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www.heiligandpartners.com.au

datatrap
vibration management software

Friday, December 20, 2024

Ref:jhh:Walking track assessment updated

Mr. Malcolm Lane
Lane & Associates

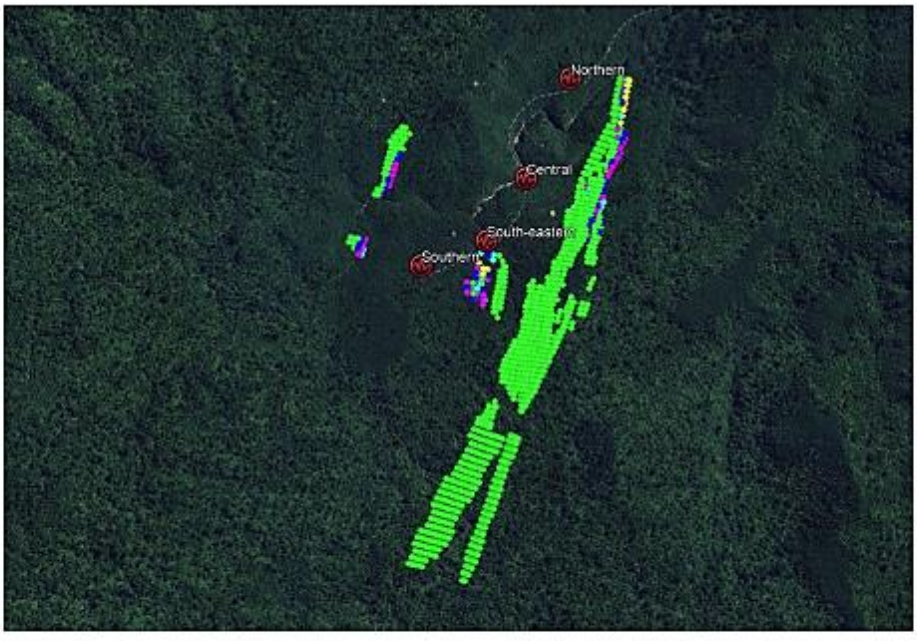
RE: Walking Track assessment

Dear Malcolm,

Following on from our discussions regarding the possible implications of vibration from the underground stope blasting at the WUG on persons that may be using the Wharekirauponga Walking Track at the time of any blasting, the vibration levels have ben modelled and the results presented as a series of frequency distributions to better show the range of vibration levels that they may experience. Our previous discussions have always indicated the shortfall of the vibration contouring approach in that it shows the maximum level of vibration that may occur, even though this may be from a very small number of blasts.

The production blast areas have been identified from the previous modelling and the associated explosive weight to comply with a maximum 15mm/s level of vibration on the natural ground surface calculated. The 15mm/s reflects the permissible vibration value agreed with the ecologists as protective of the Archeys frog species. The production blasting areas will necessarily have the greater explosive weight and induce the higher levels of vibration when compared with the small diameter development blasting activities.

The assessment has considered three representative locations along the Wharekirauponga Walking Track. Together with the stope blasting areas, these modelled representative locations are shown in the following image. Additional locations can be modelled as requested.



The vibration levels are presented in different metrics, including:

i. The expected level of vibration (i.e average value).

ii. The effective maximum level of vibration (i.e a vibration level that exceeds 95% of measured values).

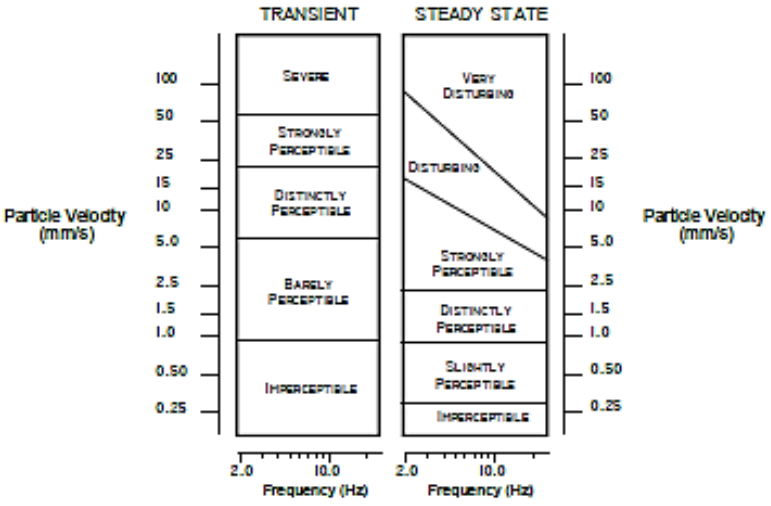
iii. A vibration level that according to a distribution of values based upon the statistical distribution (normal distribution centred around the mean value).

The results for each scenario and the four representative assessed locations are shown on the following pages.

For people using walking tracks or partaking in other outdoor activities, for a given level of vibration, the experienced effect will be significantly less than that experienced indoors. Whilst there are many technical studies have endeavoured to link the characteristics of vibration, such as amplitude, dosage, duration, frequency, directionality and so on, with a human response, the outcomes have been varied. It has been shown to often be better linked with the presence of other secondary sources, such as associated noise or other causal effects from vibration, such as rattling of windows or small trinkets. Of those studies that have endeavoured to correlate amenity with vibration, there has been a focus on the affected person being within a property. This reflects the most common scenario and together with history that has shown that persons are often more aggravated about vibration when they perceive there might be a possibility it could damage their property, the absence of studies that link vibration amplitude with a person's perception when outdoors is not surprising.

When people are outdoors, the secondary effects such as noise, rattling of windows and a concern about damage to their property are effectively eliminated and therefore the overall perception of vibration greatly reduced. Experience has shown persons outdoors will consider vibration far less intrusive than they would consider an equivalent vibration level measured inside a property. Although it has not been quantified, experience suggests that up to an order magnitude difference could exist between the indoors versus outdoor vibration level for an equivalent overall perceived effect with a factor of at least 2 applicable under almost all circumstances.

The adjacent Wiss drawing shows how vibration from blasting might be perceived by humans. Vibration might be "*strongly perceptible*" at 4mm/s and 25Hz indoors, however based upon the previous comments, it would more likely be considered only "*slightly perceptible*" when measured outdoors.



Based upon the ecologist's requirement to maintain the vibration at the ground surface to below 15mm/s (95% compliance) to minimise any impact on the Archeys frog population, the modelling has shown that except for a small 40 metre section of the Wharekirauponga Walking Track directly above WUG production blasting where the vibration perceived by persons would be "*strongly perceptible*" to '*disturbing*", at all other locations along the walking track, the vibration from blasting would be only "*slightly perceptible*".

It is therefore considered that given the section of the potentially affected track where the vibration might be more easily perceived is less than 50 metres, the potential effect of the blast generated vibration on persons using the Wharekirauponga Walking Track is minimal and requires no further restrictions. Signage notifying persons that the track may on occasions be near to underground mining activities could be erected should the vibration alarm persons using the track.

As always, you are most welcome to contact me at your convenience to discuss in further detail any of the issues raised in this letter.

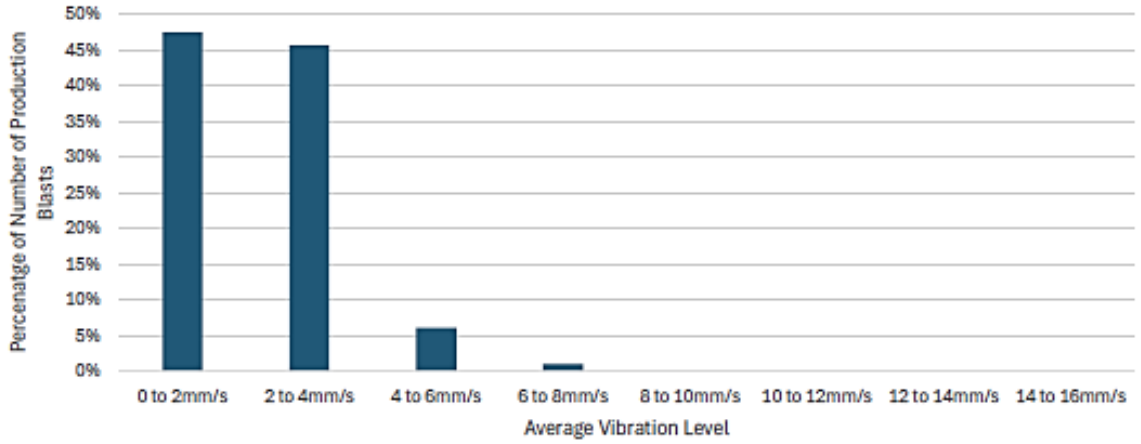
Yours truly,

John Heilig

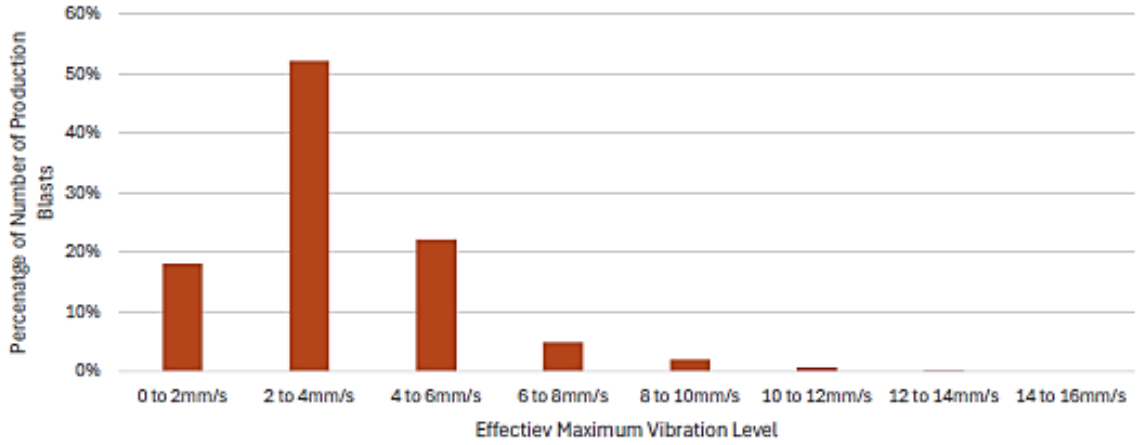
Dr. John Heilig
Principal - Heilig & Partners Pty Ltd

Southern Representative Location

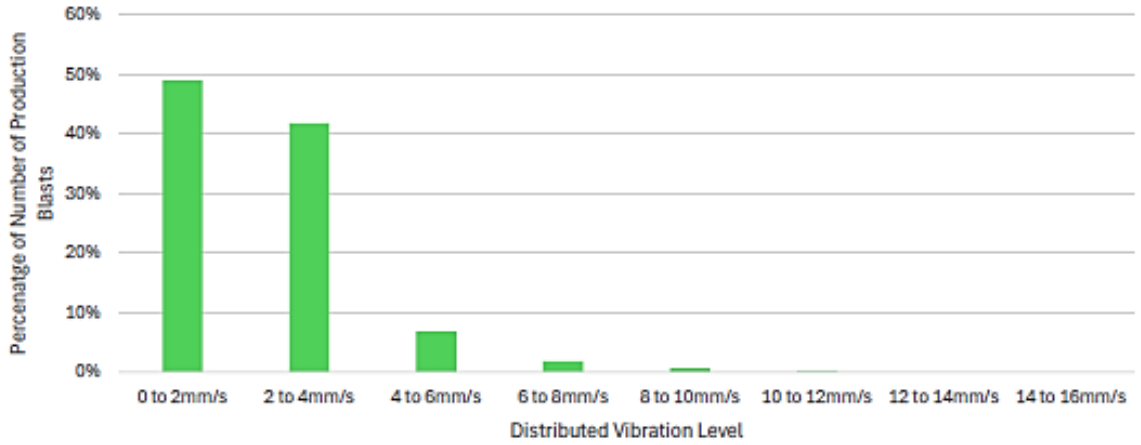
Average Vibration Distribution



Effective Maximum Vibration Distribution

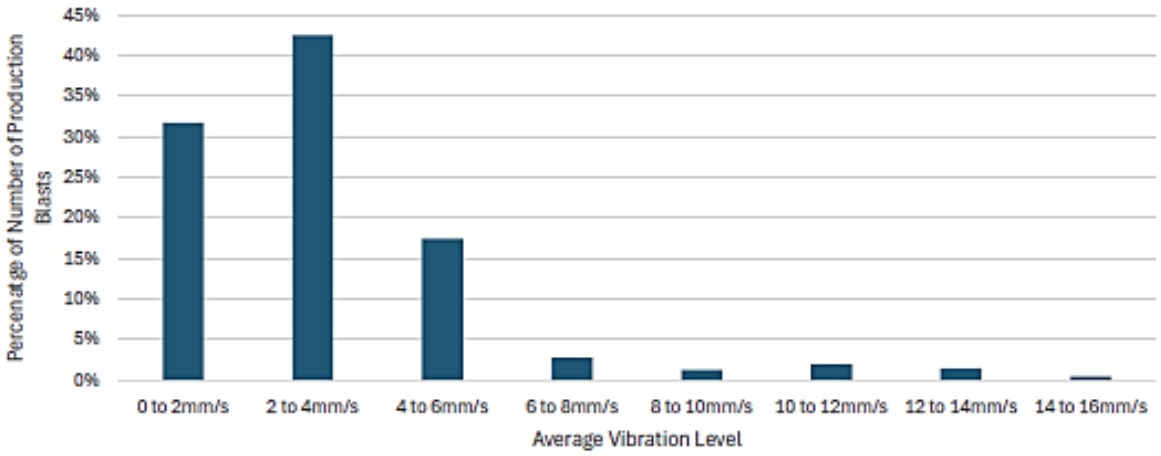


Statistical Vibration Distribution

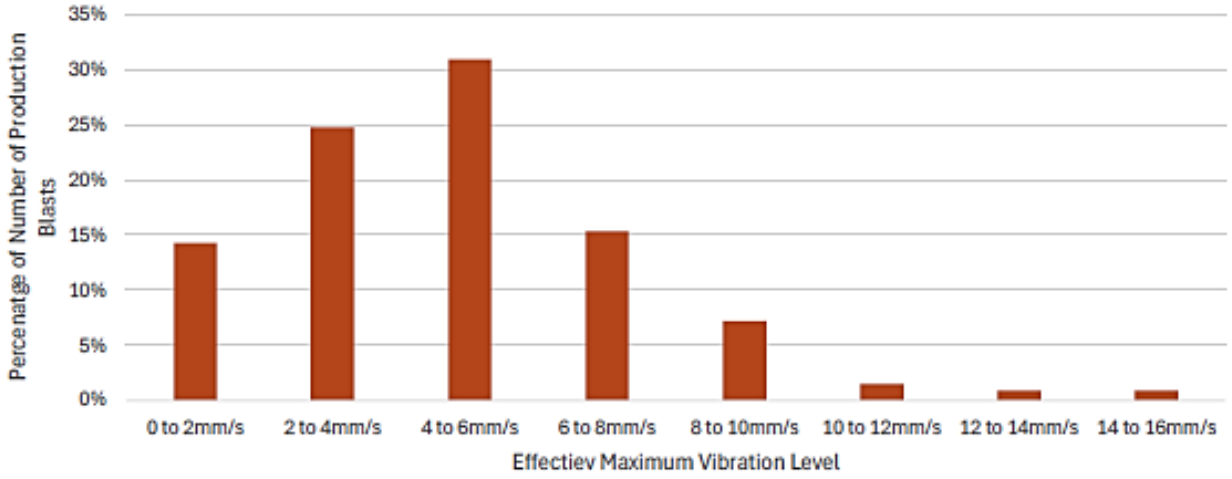


South-eastern Representative Location

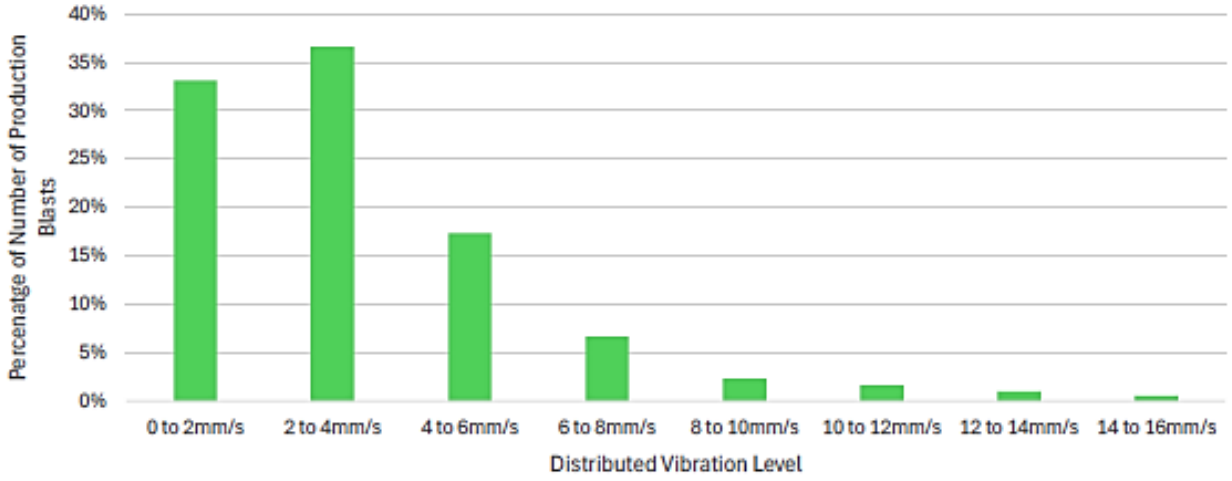
Average Vibration Distribution



Effective Maximum Vibration Distribution

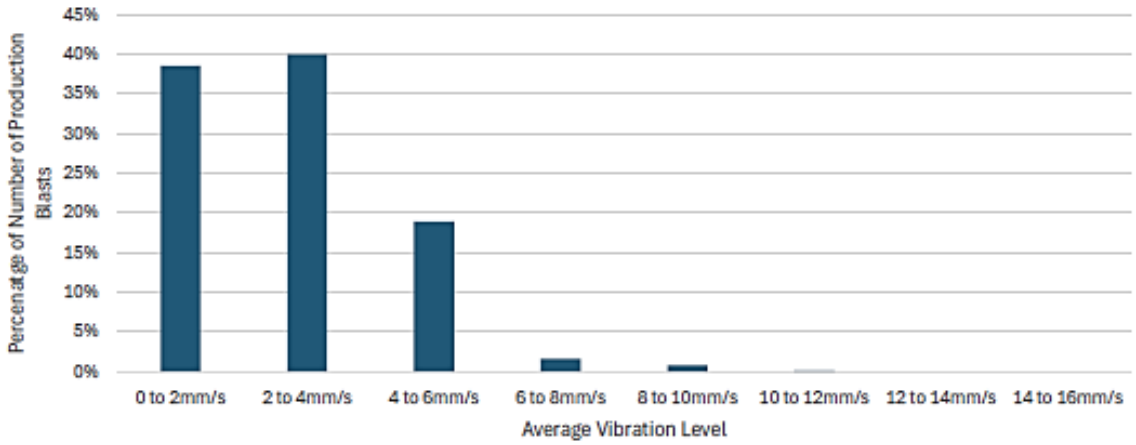


Statistical Vibration Distribution

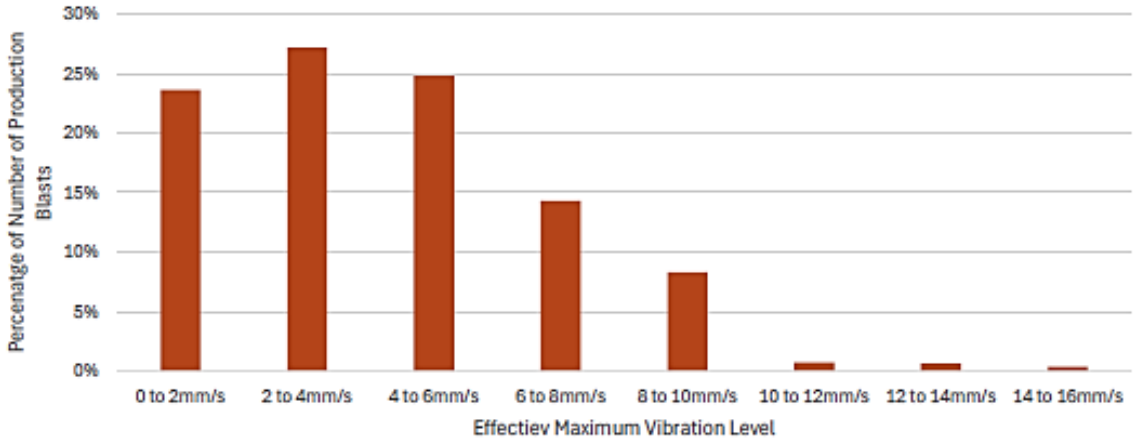


Central Representative Location

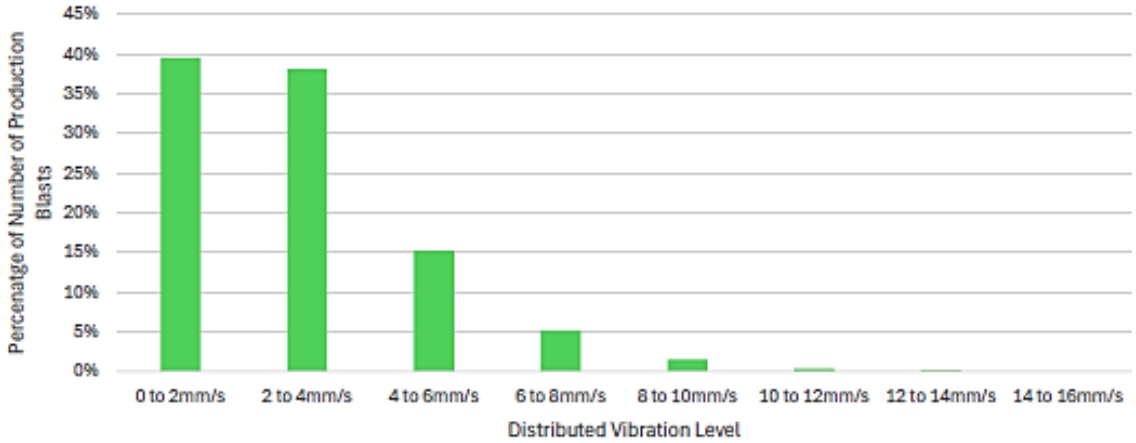
Average Vibration Distribution



Effective Maximum Vibration Distribution

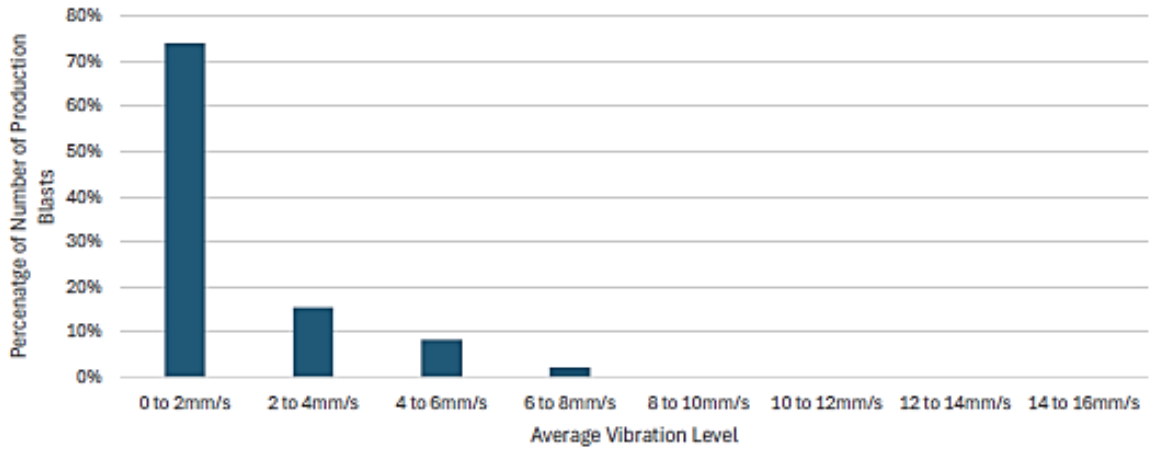


Statistical Vibration Distribution

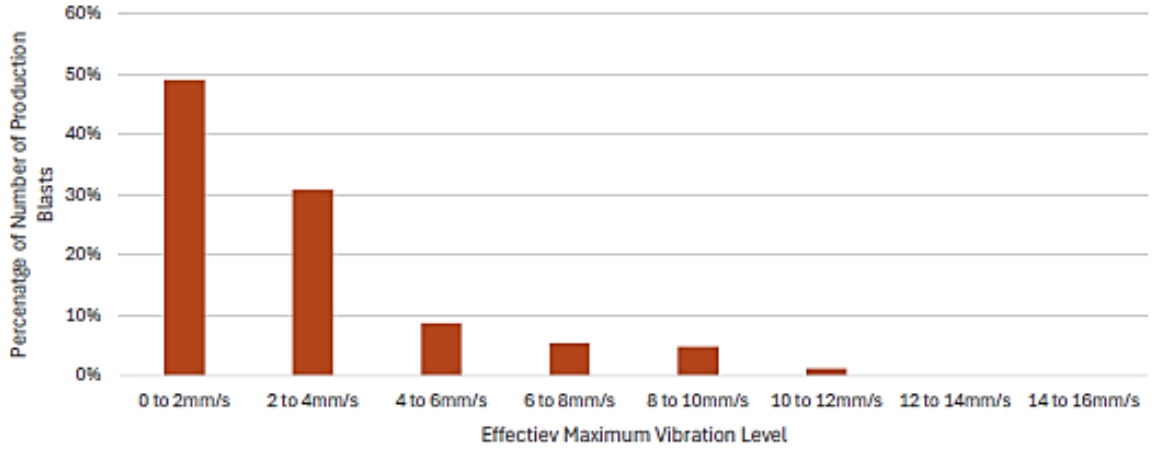


Northern Representative Location

Average Vibration Distribution



Effective Maximum Vibration Distribution



Statistical Vibration Distribution