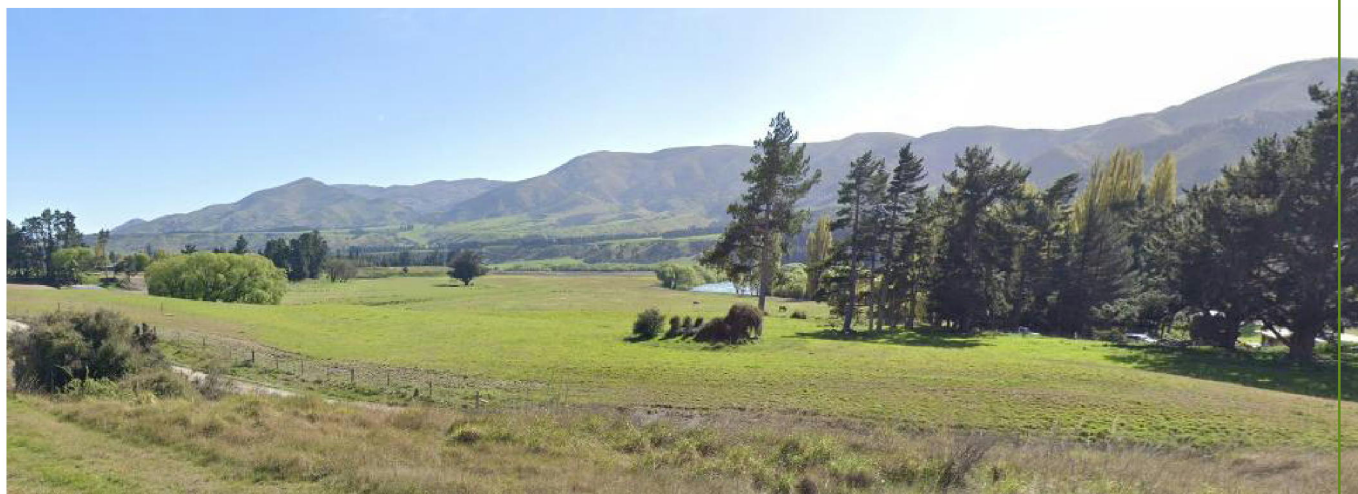


***Application for Resource Consent in accordance with
Schedule 4 of the Resource Management Act 1991***

*By
Awa Koura Mining Limited
for the purpose of mining at Sandy Point, Queensbury*



Surveying, Planning and Engineering Consultants

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Terramark.co.nz

1 April 2025

Resource Consents Manager
Central Otago District Council
PO Box 122
Alexandra 9340

By email: info@codc.govt.nz

Re: Resource Consent Applications by Awa Koura Mining Limited

Please find attached a resource consent application by Danny Walker for Awa Koura Mining Limited to carry out alluvial gold mining for three years on a site at Queensbury before it is converted into a 8-lot rural lifestyle development.

For reference, the applicant's details are:

Awa Koura Mining Limited
c/- Daniel Walker
Patons Rock
RD 2
Takaka
e: coldgold@xtra.co.nz
c: 027 2241793

Please forward all invoices to coldgold@xtra.co.nz

All resource consent associated correspondence is to be directed via the writer; the applicant's agents, and our contact details are as follows:

Terramark Limited	Attention:	Darryl Sycamore
Level 1 330 Moray Place	Phone:	03 477 4783
Dunedin 9016	Email:	darryl@terramark.co.nz

If you have any further queries, please do not hesitate to contact the undersigned.

Yours faithfully
Terramark Ltd



Darryl Sycamore
Resource Management Planner

Land Use Consent Application

Awa Koura Mining Limited

Awa Koura Mining Limited is seeking resource consent to extract alluvial gold at Queensberry on the Clutha Terraces adjacent to the Upper Clutha River / Mata – Au in Central Otago District.

The site was subject to an Exploration Permit 60912, where sampling demonstrated a shallow economic resource. The site is also subject to an approved 8-lot rural-lifestyle subdivision, and the landowner has entered into an arrangement whereby the gold resource can be extracted prior to converting the residential activity where any extraction opportunity is then lost in perpetuity. Mining is proposed to commence at the southern end of the permit, progressively restored with residential development commencing immediately thereafter.

The proposed mining area is located south east of Luggate and north of Queensberry, adjacent to the Clutha River in Otago as shown in figure 1 below. The area is known locally as Sandy Point.

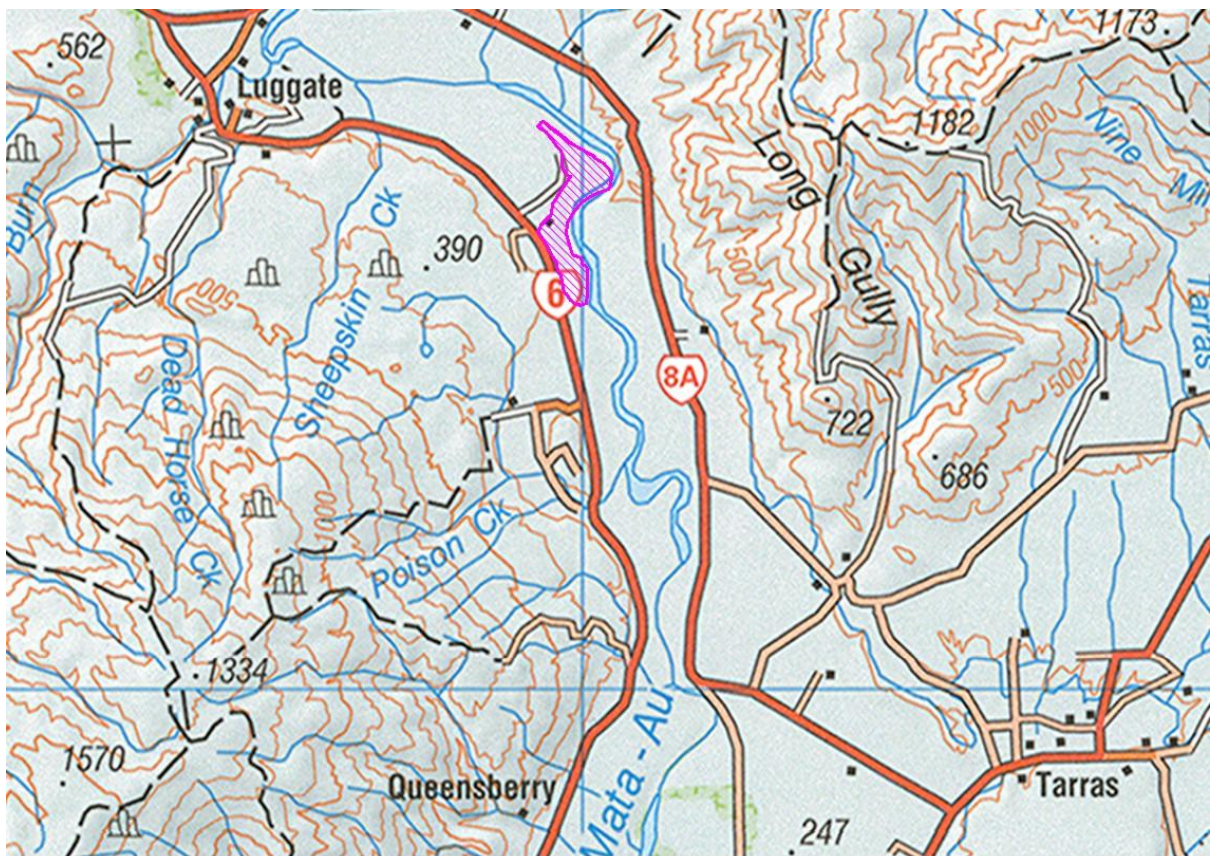


Fig. 1 – Location of Mining Permit (in purple)

Site Description

The site is an active working farm fattening beefies and a lesser number of breeding cows, and lies in the Rural Resource Area of the Central Otago District Plan (District Plan). To the north, the site forms the boundary with the Queenstown Lakes District, against the Autaia Scenic Reserve (administered by the Department of Conservation (DoC)). To the east is the Clutha River/ Mata-Au separated from the site by way a Marginal Strip also administered by DoC.

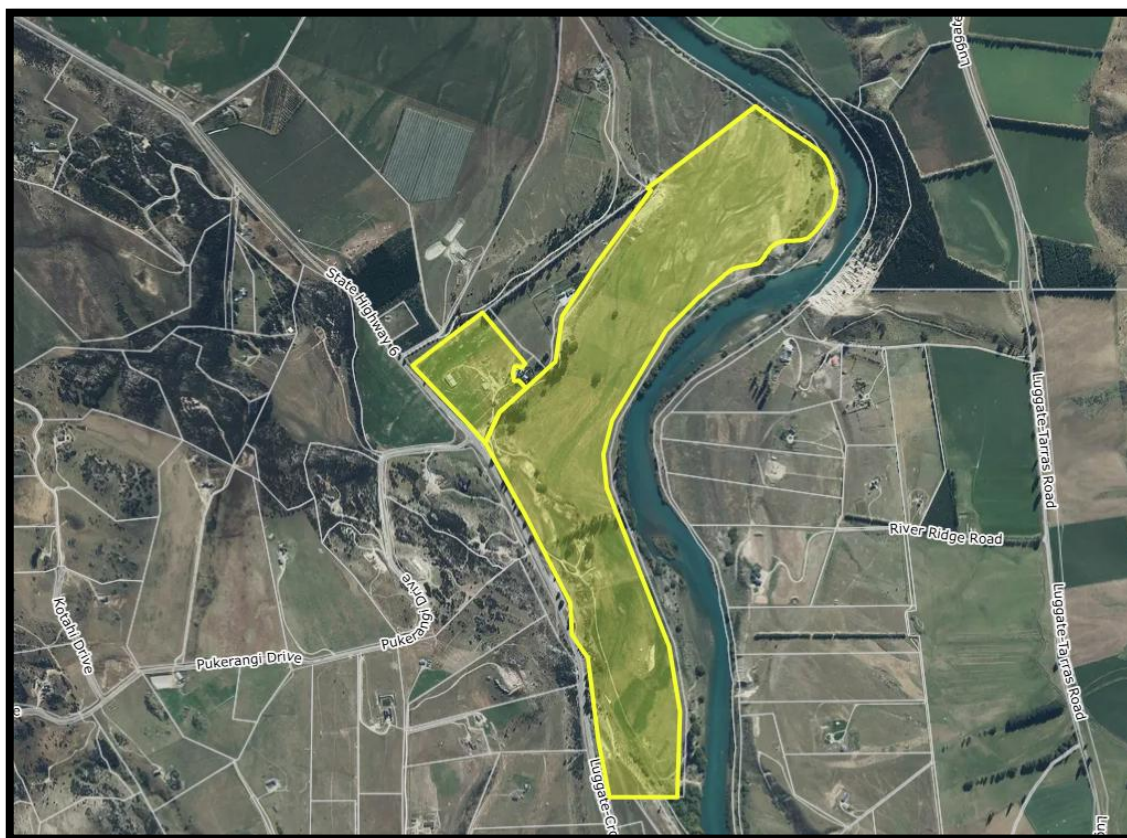


Fig. 2 – Extent of the Farm owned by Kim Landreth

Description of the Wider Environment

The wider receiving environment is dominated by the Clutha River/ Mata-Au and the river terraces. Residential developments are scattered throughout the area. The township of Luggate to the north continues to expand towards the south, typical of all townships in the District.

Dairy farming (and the associated heavy vehicle movements) and centre-pivot irrigation is becoming commonplace and has now modified the catchment in a manner previously thought unlikely.

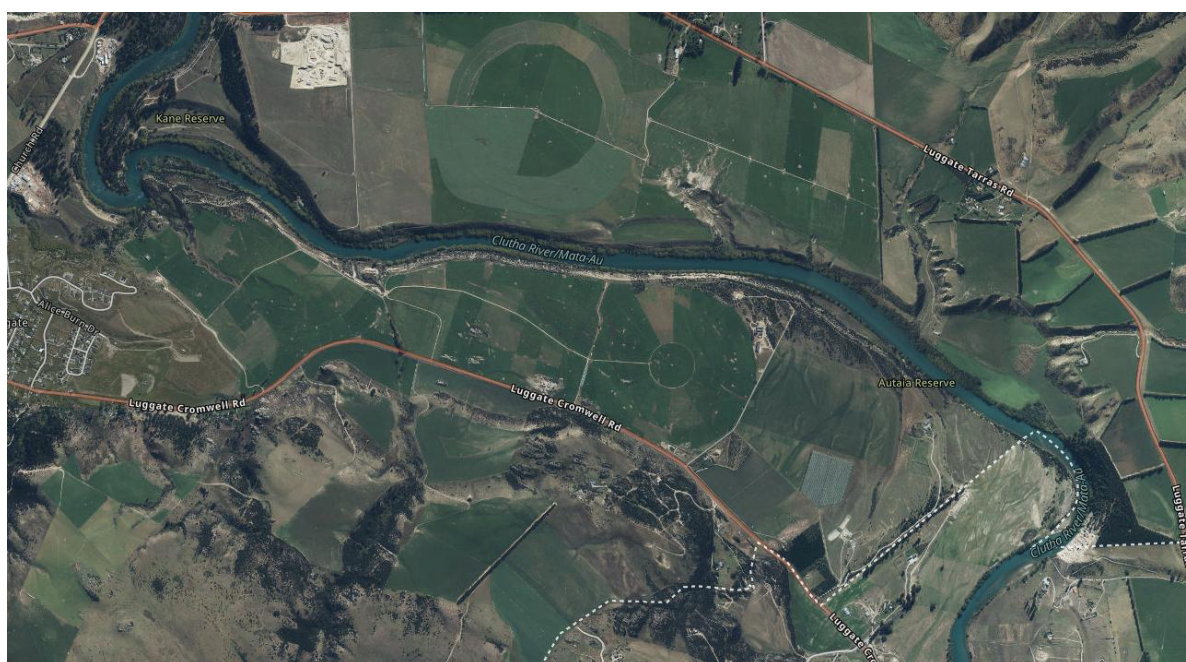
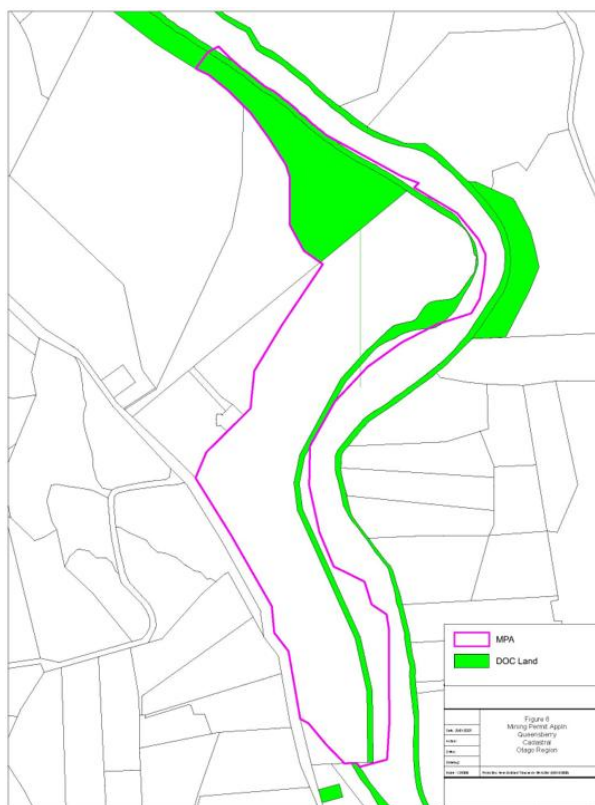


Fig 3 – Subject Site in Bottom Right With Luggate (Left) and Centre-pivot Irrigators Altering the Landscape



Fig 4 –Luggate (Left) and Centre-pivot Irrigators



Immediately to the north of the subject site is the DoC reserve. This is the solid green parcel of land shown in the image to the left. DoC marginal strips are located alongside both sides of the Clutha River/ Mata-Au. The Sandy Point Reserve also administered by DoC is located over the river.

Description of the Geology of the Resource

The geology of the proposed mining area is shown in the attached Figure 5 from QMAP.

Sandy Point is predominantly represented by a low outwash terrace of the Clutha River/ Mata-Au, roughly 10km downstream of Luggate Township. With a length of approximately 340 km and a catchment area of nearly 22000 km², the Clutha River is one of the largest rivers in New Zealand and the largest by volume.

The Upper Clutha River valley is filled with Quaternary gold bearing gravels and sands in a well-

developed series of terraces. These Quaternary deposits include alluvial and glacial deposits.

The Clutha River Valley has undergone aggradational and degradational periods depending rates of uplift associated with the faulting going on at any one time throughout the Quaternary. These aggradational and degradational cycles have formed a mix Quaternary alluvial sediments (Q1al, Q2al, Q4al, Q6al, Q8al, Q10al, Q12al and eQal) as well as fan deposits (Q1af), which form on the majority of the banks and terraces on either side of the Clutha River. High grade basal deposits occur overlying the tertiary grits and clays, with an abundance of heavy minerals associated with the presence of gold.

The sediment profile of Sandy Point is a relatively thin Fraser soil, which is typical of the low terraces and floodplain benches of Otago. This soil is characterised by a fining-upward sequence of medium-large river cobbles and finer river sands within a gently undulating slope (Fs3aG: (Otago Regional Council, 2024).

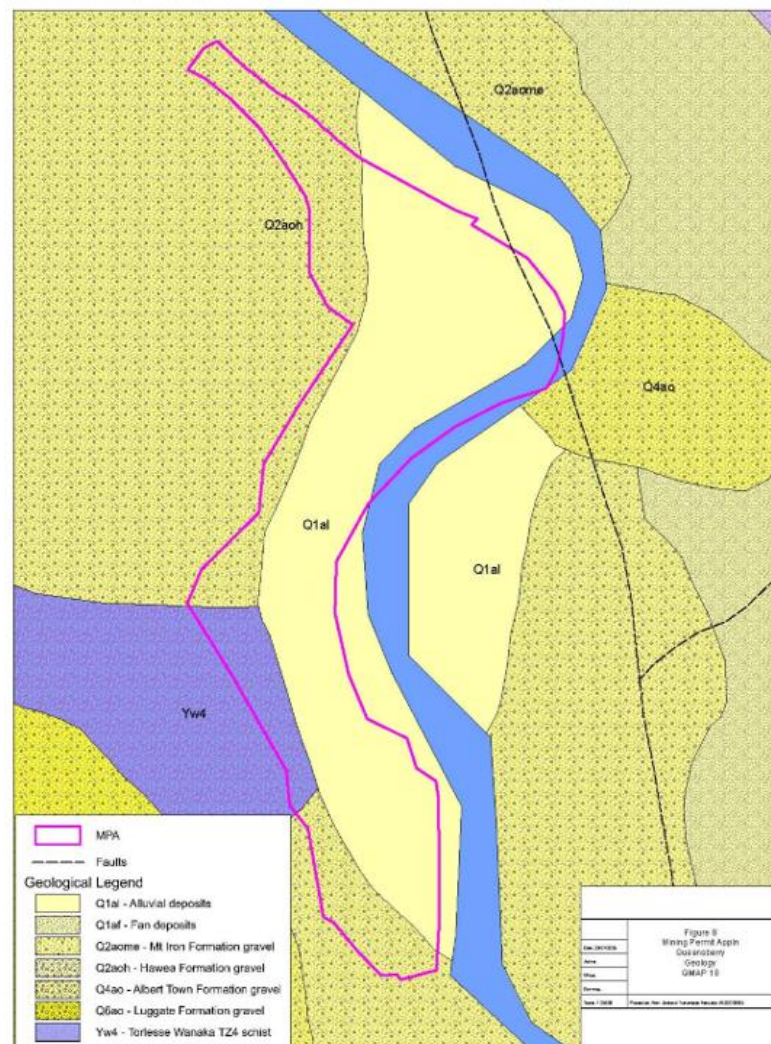


Fig. 5 – Geological Map of Mining Permit Area

Proposed Mining Methods

Awa Koura Mining Limited is both the administrator and operator for the mining permit. The mining method will involve extraction using earthmoving machinery and processing through a floating screen / trommel plant as is typical of many New Zealand alluvial mining operations. The proposed works will be for a maximum of 3 years, before remediation and conversion to rural lifestyle properties.

Mining will be carried out Monday to Friday for up to 10 hours a day, 5 days a week at a throughput of 200m³ per hour. Whilst the applicant initially sought a 7-day working week for the site, following a consideration of a Landscape Assessment by Mike Moore, it was considered appropriate to reduce the activity to a typical working week to limit effects on neighbours.

Mining works are anticipated to commence within 3-months of obtaining resource consent. It is thought an active mining area of no more than 4ha will be sufficient. Support offices, the gold room, parking, fuel storage and maintenance areas will sit outside of the active mining zone.

Equipment on the site will include the 6-foot floating gold screen, five excavators ranging from 20t to 50t, two dump trucks, a bulldozer and various pumps and ancillary equipment. Fuel will be stored in double skinned tanks, banded area to ensure any risk to the environment will be sufficiently protected in the event of a rupture. In relation to the labour component, the applicant advises six staff will be permanently employed running the operation.

The 6-foot floating gold screen will be engineered and transported to the site. An initial cut will be created with overburden stored for later placement or rehabilitation. Water will infill the cut generally commensurate with the existing river level. The floating screen will then be introduced into the new cut.

Topsoil will be stripped in blocks ahead of mining, trucked and stockpiled for rehabilitation. Mining will be undertaken using mechanical excavators feeding a floating plant with shaker & jigs. Mining will commence at the southern-most end of the site. zig-zagging between the main road and river. The mine face around 50m wide, as indicated in Fig.6 below.

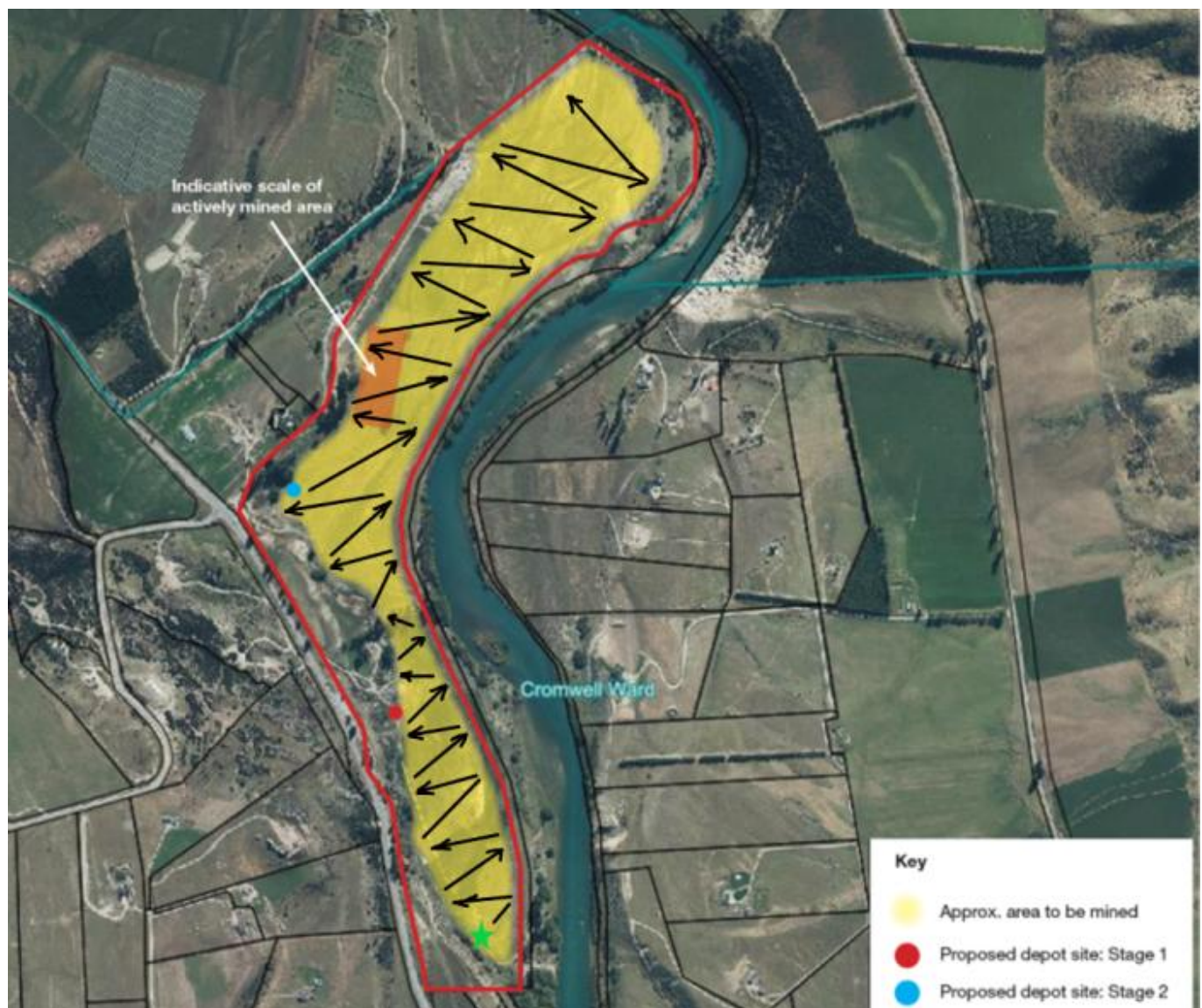


Fig. 6 – Commencement Point (green asterisk) and the Mining Concept

The mining will take place progressively, impacting on a limited area of the site at any one time, and with remediation work being undertaken as the operation proceeds. Mining is proposed to commence at the south end of the site and to take a zigzag path, culminating at the northern end of the site. Awa Koura Mining Ltd estimate that the plant will move 13m per day.

There will be disturbed land in the area of the operation, in the form of overburden / topsoil bunds, stripped area awaiting excavation, the dredge pond, tailings piles and reinstated land not yet revegetated. The width of the swept path of the operation will be 50m, and the area actively mined will be no more than approx. 210m in length x 85m width (including overburden bunds) as shown in Fig.6. The area of soil and overburden removed in front of the dredge will be restricted to no more than 50m width and 50m long. The extent of the area of obvious disturbance behind the operation (due to absence of vegetation cover) will vary with the season. In total the area subject to disturbance will be no more than 2ha with peripheral disturbance being no more than 4ha. Once remediated, the approved subdivision will be given effect to, progressively developing rural lifestyle properties on that remediated land.

There will be a small depot area, from which the operation will be run. This area will host fuel tanks, two storage containers, and a small portacom building. Vehicles, including staff cars and (intermittently) a second digger, would also be parked in this area. It is proposed that this depot area will be sited in one of two places over the life of the operation as illustrated in Figure 6.

Lighting of the processing, depot and active work area will be discernable from some properties in winter months. Lighting levels will be managed to ensure compliance with the standards for rural areas. As well as lighting, moving vehicles will have visual effects where visible from beyond the site.

To ensure that adverse effects on the natural character and known heritage values of the Clutha River including areas of kanuka are avoided, buffer zones are proposed as follows, with no mining to be undertaken in these areas:

- 40m from top of the riverbank
- 5m from the drip line of any kanuka
- 10m from the boundary with the DoC reserve.

No areas that fall within the definition of ‘natural inland wetlands’ as defined in the National Policy Statement for Freshwater Management, October 2020 within the proposed mining area. Given this situation it is my assessment that effects on natural character (as it applies under Section 6a RMA) are avoided by the proposed mining.



Fig. 7 – Indicative Floating Wash plant for Mining (Shown without the noise attenuating cover)

Excavations will be few meters deep into the gravels. At that stage groundwater, hydrologically connected to the surface water system, will then rise to create a pond generally aligned with the river water level. The floating screen will be manoeuvred into the screen-pond. At this stage material will then be extracted using an excavator to feed the floating wash plant. Whilst the wash plant has not yet been

constructed, Fig.7 below provides some context in terms of scale and form. A key difference in the proposed wash plant to that shown in the image below is the proposed wash plant will include a cloak to provide additional mitigation of noise effects, and will be in a colour typical of the rural environment. It should be noted, the wash plant will also sit on the water profile below existing ground level, with the pontoons mostly submerged. As such only the top half of the plant will be visible, with bunding to the sides of the active mine area comprising topsoil and overburden will provide further shielding from many viewpoints. The shroud sitting over the plant will further reduce any visual and aural effects.

Water will be drawn into the wash plant from the pond and discharged directly to the pond. Surface water from the pit will be taken at a maximum rate of 70 litres per second, with a daily maximum take of 2,479 cubic metres (m³) based on a maximum 10-hour working day. All water will be returned directly to the pond at the point of take and as such, is considered generally non-consumptive and therefore not subject to assessment to allocation, metering, minimum flow or and efficiency assessment.

Some additional water may be required to be extracted directly from the Clutha River/ Mata-Au on an 'as-needed' basis. The applicant volunteers to record the time, rate and volume of those additional takes to augment the mining operation. In any regard any take will comply with the ORC permitted activity rules and there are no primary allocation blocks afforded to the Clutha River/ Mata-Au. That take and use has been assessed the take is broadly non-consumptive apart from an immeasurable fraction will be lost to evaporation.

The active mine plan provides some context to the operation. Putting aside offices, maintenance areas and storage areas, the active mining operating will be approximately 2ha with disturbance around that active mine site being limited to a halo of no greater than 2ha. The active mine pond will comprise approximately 1,250m², with site works separating topsoil and overburden to the leading face, and restoration and planting to the rear. This is best illustrated in the mine plan concept.

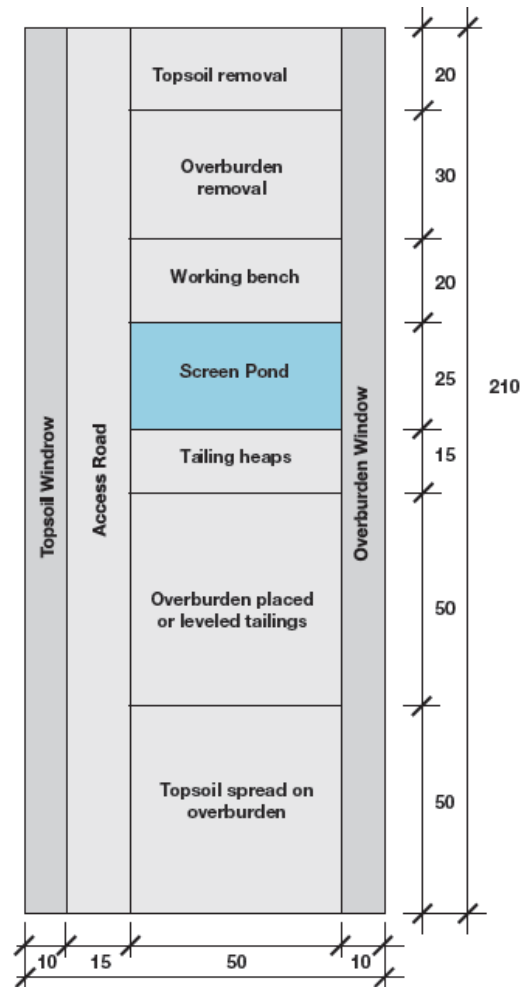


Fig. 8 Approximate Mine Concept

It is proposed no effects of the activity will occur to the values of the Clutha River/Mata-Au. As all wash-water will be retained in the pond, and there is no pathway for sediments to be lost beyond the pond it is considered the activity will operate independently of the Clutha and the values associated with it.

No mining will occur within 10m of the DoC marginal strip and therefore any riverbank to ensure no interaction with sediments or slumping. In an extreme rain event scenario it is accepted there is potential for floodwaters to enter the pond and release sediments into the flooded river system, although this would be a highly exceptional situation and unlikely in any given 3-year period. Whilst any loss of sediment to the watercourse is undesirable, it is appropriate to acknowledge the river in that state will have a high sediment and faecal bacteria loading irrespective of any addition from the mining activity. In addition under that extreme flood scenario, it is appropriate to acknowledge the residential properties associated with the approved rural lifestyle development would also suffer inundation.

The proposed mining operation will be in accordance with good industry practice, using modern mining equipment and acting in a manner that is technically competent and at a level of diligence reasonably and ordinarily exercised by experienced operators engaged in a similar activity and under similar circumstances. This requirement is prescribed by New Zealand Petroleum & Minerals as permit of their permit obligations, including a strict assessment against previous compliance records.



Fig. 9 – Scale of Active Mine Area (in orange) and Screen Pond (in blue) Relative to Site

As some context relative to the site, the orange box located relatively central in the site comprises 2ha and will make up the active mining area. The smaller blue box inside that provides a sense of scale for the screen pond which includes the wash-plant and excavator(s) on the margin feeding the plant and the progressive remediation.

Access

The site is currently served by a hard-packed gravel access on the State Highway. This is to be upgraded to asphalt for the first 20m as part of the approved 8-lot lifestyle development to mitigate loss of gravels to the State Highway surface.

It is proposed the site remains as it is, with a stable hard gravel surface for the life of the mining project, rather than suggesting a surface treatment upgrade as it will be compromised by the heavy mining equipment occasionally accessing the site. In effect, the status quo will remain albeit with a minor increase in movements to and from the site.

With respect to sight lines and visibility, the existing entrance to and from the site enjoys generous open space such that at least 300m is visible in any direction. This complies with the 100kph speed limit when associated with activities on State Highway 6. Pukerangi Drive, a relatively new road winding up the Queensbury Hill area is immediately opposite the existing site entrance. In that regard there is clear sight lines and the road rules relating to opposing turning vehicles applies. This is a simple layout with little opportunity for confusion.



Fig. 10 – Sight Lines from Access

Access was assessed as part of the approved subdivision consent to create eight rural lifestyle properties over the proposed mining area. In that subdivision, the New Zealand Transport Agency was consulted and provided their written approval subject to conditions of consent and concluded the effects would be less than minor.

With respect to the mining proposal, there will be the initial movements of heavy vehicles onto the site, and off the site at the end of the three year mining period. It is assumed a traffic management plan will be required to ensure road users are not affected by the transport of the heavy machinery. Movements of heavy equipment will be generally limited to the start and end of the mining/ rehabilitation process.

From a day to day perspective, vehicles for staff, fuel trucks and sporadic contractors will be required. These will be little different to any other working farm, or that of the approved 8-lot lifestyle development to follow immediately after mining and rehabilitation. It is acknowledged that fuel trucks are larger vehicles, however these are no different to the milk-tankers that use the State Highway daily for collecting milk from the proliferation of dairy enterprises between Lowburn and Luggate. In comparison, the heavy fuel-trucks will be occasional and will result in less than minor effects on the transportation network.

Overall, it is my opinion the effects of the activity on the State Highway network or road users is less than minor.

Reasons for the Application

The Central Otago District Plan sets out the planning framework for activities within the district. Alluvial mining in the Rural Zone triggers a number of rules, for which resource consent is required. The site adjoins State Highway 6.

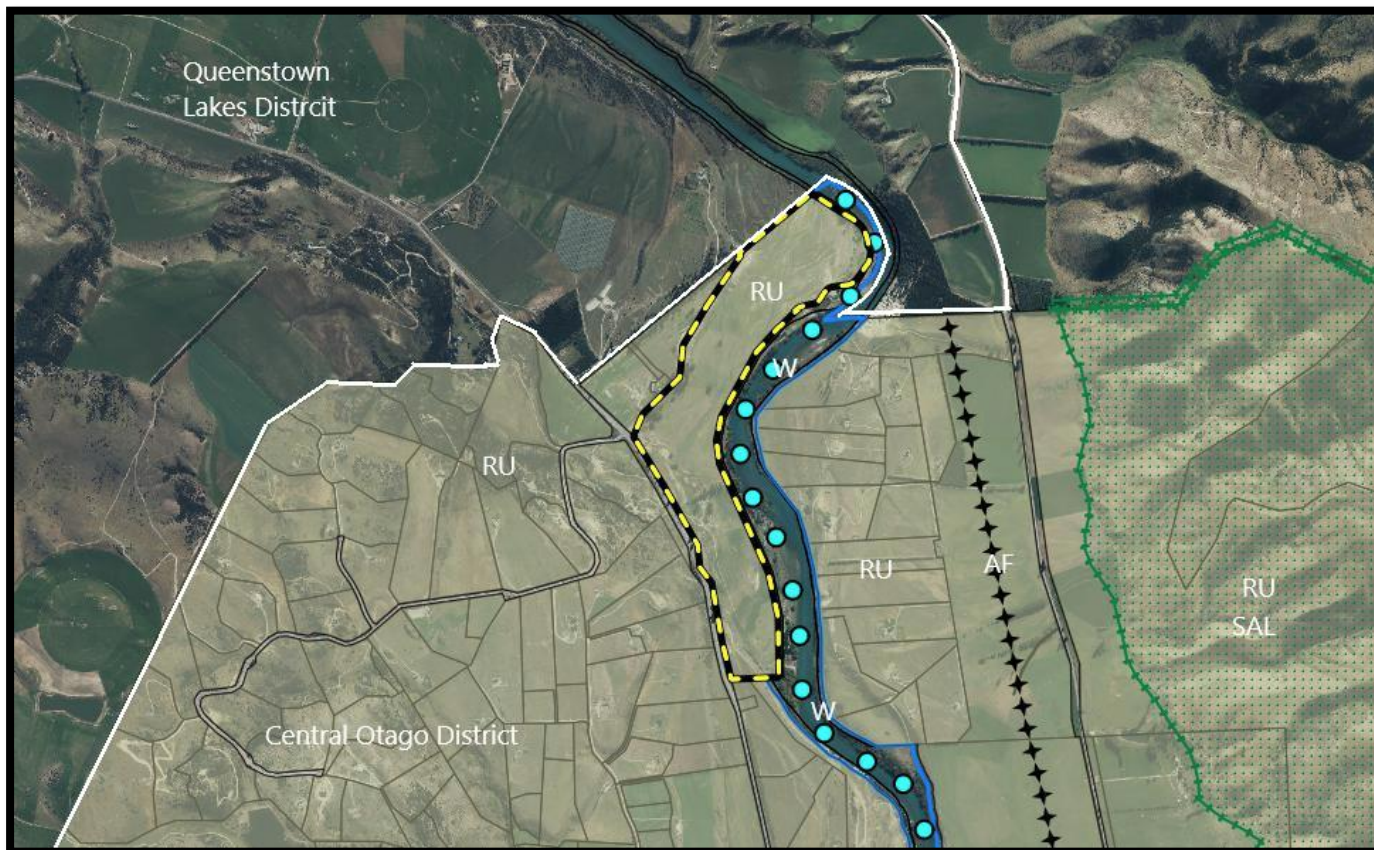


Figure 11 – District Plan Zone Map

The following rules apply to the proposal.

Earthworks

Rule 4.7.6(J)(b) relates to extraction activities.

It states-

Except as provided for in 4.7.6.J.a above the extraction (including excavation and/or displacement) of material (excluding any cleanfill, landfill, and farming activities such as irrigation dams and associated works, ploughing and land contouring for border dyke irrigation) shall not exceed an area of 2000m² or a quantity of 3000m³ from any one site provided that:

- i. Where the material extracted is not to be reinstated, then the permanent visual impacts of the activity shall be avoided, remedied or mitigated by the replacing of topsoil and suitable subsoil, resowing, fertilising and planting or other appropriate landscaping, or*
- ii. When material is extracted or displaced for mining, investigative or exploitative work, all areas disturbed shall be progressively restored or rehabilitated to a standard not less than that which previously existed, and*
- iii. Adverse effects on water bodies and land stability are avoided, remedied or mitigated; and*
- iv. Extraction, other than that required for land cultivation, drilling, bore construction, the erection of fences, overhead lines or foundations for buildings is no more than 1m deep or 10m³ in volume within the groundwater protection zones for Roxburgh and Ettrick.*

Council states the reasons for the rule, noting earthworks for mining and the formation of tracks can have significant adverse effects on:

1. landscape values
2. water quality
3. soil structure and quality
4. land stability

Rule 4.7.4.i states any activity which fails to comply with the following rules including Rule 4.7.6(J) is a discretionary activity.

Access

Rule 12.7.1.(ii) states for a State Highway with a 100kph speed limit requires 280m of visibility. The proposed activity complies with this standard.

In addition access to rural State highways and arterial roads shall comply with the following standards:

- a. The access shall be sealed to the same standard as the adjacent road carriageway.
- b. Where the speed limit is 100 kph, spacing between accesses shall be not less than 200 metres (regardless of the side of road on which they are located), and no vehicle access shall be constructed within 100 metres of road intersections AND spacing between intersections (ie road intersections) shall be not less than 800 metres.
- c. Except as provided for in d. below, width of vehicular access ways at the property boundary are to be no greater than 6 metres.
- d. Heavy vehicular accesses shall be designed and constructed to:
 - i. A minimum width of nine metres.
 - ii. Carry the volume and weight of traffic likely to use the access.
 - iii. Ensure heavy vehicles do not have to cross the road centre line when making a left turn.
 - iv. Ensure the surface is constructed to the same standard as the adjacent road carriageway.
 - v. Have sufficient width to accommodate the swept path of the largest vehicle anticipated to use it.
- e. Driveways shall not be parallel to and level with roads within 20 metres of the road reserve.
- f. Figures 12.2 and 12.3 establish the minimum design standards for access determined by activity type.
- g. Access to State highways shall be to Transit New Zealand design specifications.

In this case, the proposal does not meet

- (a) The access is a gravelled rural access and is not sealed as per the standard,
- (b) There is not a minimum spacing of 200m between access formations.
- (d) The minimum width requirements of 9m and the access is not to the same construction standard as the road formation.
- (g) The existing access is not to NZTA design specifications.

Any activity that does not comply with the standards stated in Rule 12.7.1.i-vii shall be considered as a **discretionary (restricted) activity**. Council shall restrict the exercise of discretion to the safe and efficient operation of the affected road, having regard to:

- a. The intensity and duration of the activity.
- b. The classification and use of the road.

Overall, when assessing a suite of breaches in unison, it is appropriate to apply the most stringent assessment matter. As such, the application shall be assessed as a **discretionary activity**.

Additional consents

Consent will be required from the Otago Regional Council for discharge of water and contaminants (sediment) to water where it may enter water.

In this case, the discharge will be entirely within the mine pond with no chance of loss to the Clutha River/Mata-Au. The consent will be assessed as a restricted discretionary activity and there is no reason why the application would require either notification, or a joint process with the CODC given the additional costs associated with that process.

The water take will be a permitted activity and the Clutha River/Mata-Au has no primary or secondary allocation constraints. The sporadic take from the Clutha River/Mata-Au to top-up the mine pond will be a permitted activity under rule 12.1.2.2. of the RP:W on the basis the take does not exceed 100 L/sec or 1,000,000L per day, there is no backflow and that fish are screened to prevent entering the intake structure. Putting that aside, apart from immeasurably low volumes of water lost to evaporation from the mine pond, any water taken from the Clutha main stem is non-consumptive.

In my opinion the ORC consenting requirements are straight-forward and do not warrant any joint process with the CODC.

ASSESSMENT OF ENVIRONMENTAL EFFECTS

In accordance with section 104(1)(a) of the Act, the actual and potential adverse effects associated with the proposed activity have been assessed below. The assessment of effects is not limited to any specified matters including Part 2.

Section 88 and Schedule 4 of the RMA require an assessment of any actual or potential effects in such detail as corresponds with the scale and significance of the effects that the proposed activity may have on the environment, and the ways in which any adverse effects may be avoided, remedied or mitigated. This assessment is proposed below in relation to the proposed activity.

The following environmental effects are considered relevant to this application:

- Effects on infrastructure, flood risk and river morphology and dynamics;
- Effects on aquatic and riverine ecosystems and habitats and taonga species;
- Effects on historic heritage and the spiritual and cultural values and beliefs of mana whenua;
- Effects on natural character and amenity values (including recreational, noise and dust);
- Effects on navigation and public access;
- Effects on water quantity; and
- Positive effects.

These effects are discussed in detail below.

The Receiving Environment and Permitted Baseline

The environment against which an application must be assessed is what is now commonly known as the 'Hawthorn Environment'. That is, the environment as it exists on the ground today, and including the effects of any consents that have been granted or permitted activities that are likely to be exercised. This assessment must be a real-world analysis.

For the purposes of this assessment, this comprises the Clutha River terrace and the immediate area with its associated environmental qualities, species composition etc and the existing impacts of historical mining and human occupation. In this case, the site is a rural site on the margins of the Clutha River/ Mata-Au and is subject to an approved 8-lot lifestyle development. The scheme plan for the development is shown in Fig.12 below and will significantly alter the land in perpetuity. Permanent changes include the addition of vehicle access off the State Highway, driveways and new dwellings with likely ancillary units.

The introduction of residential activity includes lighting effects and light spill, glare and reflection issues (more likely to be most evident to those residents on the opposing side of the Clutha River). Like many rural lifestyle properties in Central Otago, other effects that are likely include smoke from domestic

burners to children doing laps on 2-stroke motorbikes. In any regard, the residential development will introduce effects, and the relative tranquillity of the rural site as it currently is, will be lost.

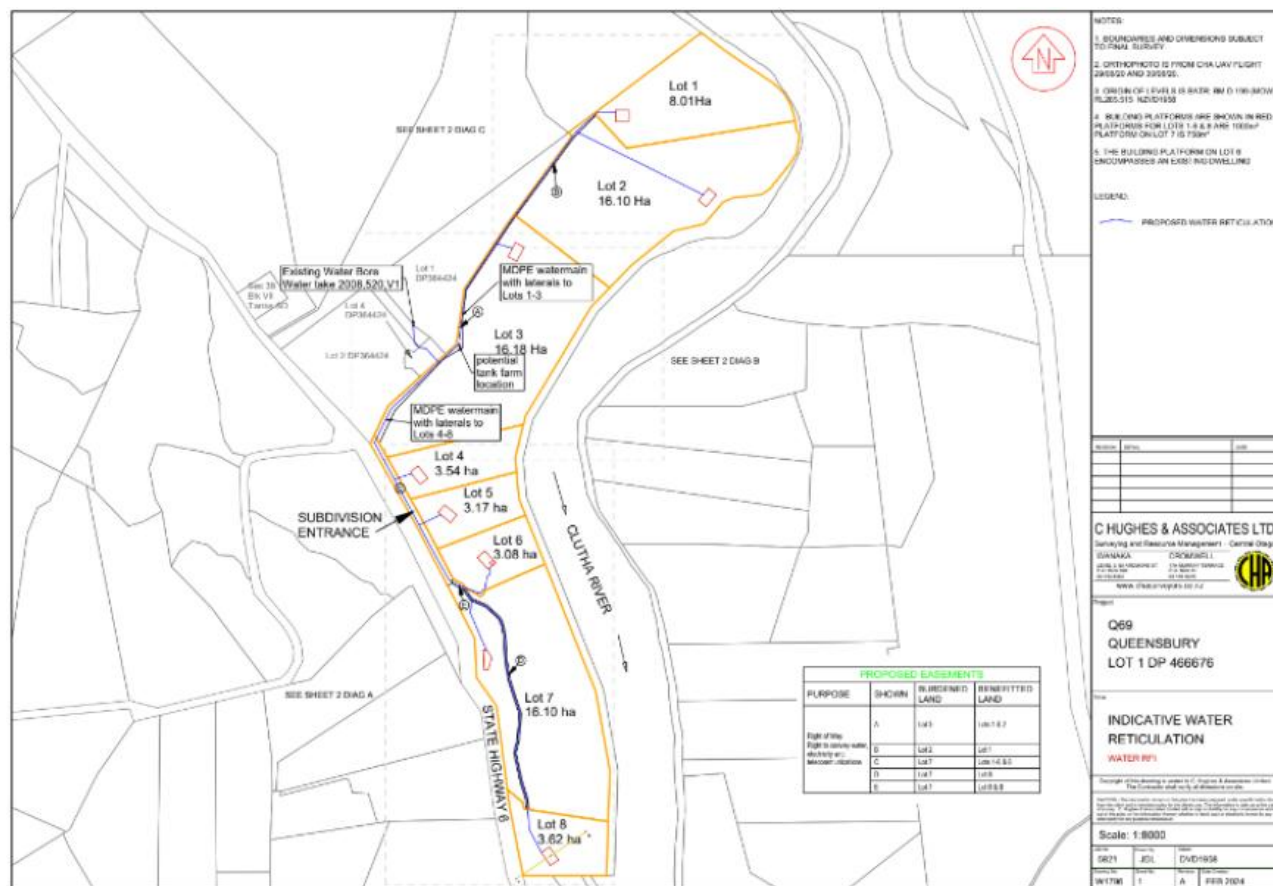


Fig. 12 – Approved Plans for 8-lot Lifestyle Development RC230386

With respect to the permitted baseline, extraction activities in the Rural zone are permitted provided-

- Extraction does not exceed an area of 2,000m² or a quantity of 3,000m³ from any one site;
- Permanent visual impacts of the activity are avoided, remedied or mitigated by the replacing of topsoil and suitable subsoil, resowing, fertilising and planting or other appropriate landscaping,
- The site is progressively restored or remediated to a standard not less than previously existed, and
- The adverse effects on water bodies and land stability are avoided, remedied or mitigated.

There is no specified frequency permitted earthworks are then able to repeat activity, and it would not make sense in a rural context to state you can do a permitted activity only once, but any future earthworks then requires consent even if it is well below the specified threshold. There is also no reference to the permitted activity rule catering for differing activities on the same site (i.e tracking in one location, the construction of a building platform in another, the construction of a silage pit in another, or earthworks for fencing elsewhere) which is highly relevant in a rural farm setting. In any regard, the permitted baseline whilst not specific does provide for earthworks and extraction activities.

Historical Mining in the Sandy Point Area

The Clutha catchment has a long history of land-based mining. A heritage assessment was sought from New Zealand Heritage Properties Limited (NZHPL) titled “Sandy Point, Luggate A Heritage Assessment for Site G40/148 and G40/149”.

The historical research undertaken by NZHPL identified two recorded sites which will be potentially impacted by the proposed works, G40/148 and G40/149, both tailings/mining-gold sites. A further four

mining-gold sites were originally recorded as being in the project area, however the assessment demonstrated that G40/147 and G40/161 are outside of the project area, whereas G40/150 and G40/174 in addition to having been heavily modified by modern development of the site, are also outside of the scope of works and will not be affected.

The NZHPL report found site G40/148, which represents the best-preserved archaeological site within the project area, is considered to have low-moderate heritage values; however, the overall archaeological and heritage values of G40/149 are considered to be low. NZHPL promote a series of consent recommendations and concluded the “magnitude of impact on G40/148 and G40/149 are likely to be minor”. They did suggest the magnitude of impact on unrecorded sites “is likely to be major, given the extent of earthworks necessitated by the proposed mining works. As such, a targeted, exploratory excavation strategy is recommended in order to mitigate the degree of information loss resulting from large scale mining of the project area”. In my opinion this statement is precautionary and fails to consider the decades of land disturbance associated with farming activities. Any heritage features are likely to be shallow and almost certainly impacted by ploughing etc.

The NZHPL report noted the closest Māori site to the project area is G40/67 (oven with moa remains) within Luggate, over 4km away.

More refined detail on each recorded site is shown below. Site G40/147 sits within the marginal strip adjacent to the land held in DoC reserve, whilst G40/148 is within marginal strip against the margins of the Clutha riverbed. In Fig.13 below the red line demarcates the mining permit boundaries whilst has informed the proposed conditions suggested by NZHPL. The applicant intends to adopt a cautionary approach by avoiding the recorded site altogether.

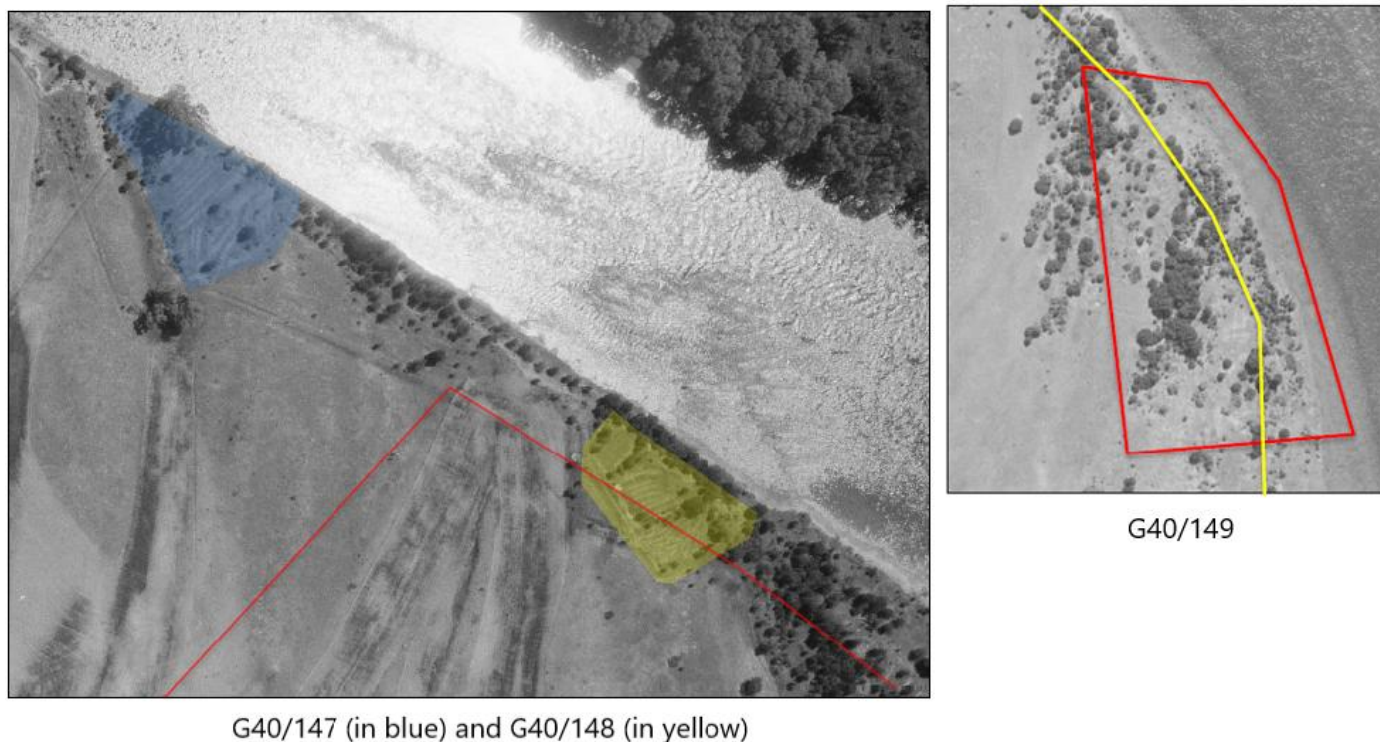


Fig. 13 – Recorded Sites G40/148 and G40/149 within the Subject Site

At a wider level, NZHPL mapped the identified recorded sites below in yellow, and the assumed sites in orange below.



Fig. 14 – Known Archaeological Sites

The applicant seeks to adopt a sufficiently wide exclusion zone around the recorded sites, with the intention to reduce the need for cautious exploratory excavations around them as promoted in the NZHPL draft conditions. There is little interest in mining near these features and risk damage, and therefore an exclusion buffer as promoted below provides ample setback from the heritage sites, but also manuka vegetation and the margin strip values, and removes the need for the exploratory excavations as suggested by NZHPL detailed further in the application.



Fig. 15 – Proposed Setback from Known Archaeological Sites

The NZHPL report notes, “The effects of the proposed works on these two sites therefore depends largely on the extent of planned earthworks. Whereas the visible boundary of G40/148 only extends a

few meters into the project area from the marginal strip, parts of G40/149 extend for almost 30m into the project area. If an effort to avoid all visible, above-surface archaeology is made, then it is likely that the works will have a minor magnitude of impact, with only below-surface (and likely highly modified) archaeology potentially affected. If the proposed works are to extend closer to the boundary of the marginal strip, then there is the potential to affect/destroy large portions of G40/149, with a resultant major magnitude of impact on the site". The proposed mining area has been refined to adopt a more conservative boundary than that of the mining permit boundary. This will ensure known heritage sites are avoided, as well as avoiding effects on kanuka or marginal strip values.

The following conditions were promoted in the NZHPL Heritage Assessment. Having reconsidered the extent of mining relative to the recorded sites, it is my opinion the conditions below that are struck-out are no longer appropriate.

- *As the proposed works described in Section 1.2 will affect sites G40/148 and G40/149, in addition to potential unrecorded sites, an archaeological authority under Section 44 of the HNZPTA 2014 must be obtained from HNZPT prior to any modification of the site. a. If development plans are altered from those reviewed for this assessment (Appendix A), then HNZPT and NZHP must be alerted, as any changes may alter the assessment of effects or invalidate the authority.*
- *Conditions of the resource consent should include archaeological recording and analysis of any archaeological features impacted by the proposed works. a. This recording and analysis should be reported on following HNZPT guidelines and submitted to the HNZPT and the Central Otago District Council.*
- *As a first principle, every practical effort must be made to avoid damage to any heritage site, whether known, or discovered during any redevelopment of the site. a. An exclusion zone should be established to protect the known extent of G40/148 and G40/149.*
- *All works must be carried out in accordance with AMP. Any amendments to the AMP will require prior written approval from HNZPT.*
- *All contractors working on the project must be briefed by the s45 approved person (or person nominated on their behalf) on the possibility of encountering archaeological evidence, how to identify possible archaeological sites/features during works, the archaeological work required by the conditions of the authority, and contractors' responsibilities with regard to notification of the discovery of archaeological evidence to ensure that the authority conditions are complied with.*
- *Any structures encountered, such as water races or building remains, are to be recorded to a Level III standard as defined in HNZPT's guide, Investigation and Recording of Buildings and Standing Structures (HNZPT, 2018). Details of the recommended recording are provided in the AMP.*
- *It is recommended that archaeological monitoring follow a targeted approach in order to mitigate loss of information for those sites (both recorded and unrecorded) most likely to be affected (Figure 10-1):*
 - a. —Immediately outside the 10m exclusion zone to the rear/south of G40/149 and G40/148, two trenches are to be excavated in order to determine if traceable, subsurface remains of these features extend back into the ploughed farmland behind. The first trench will run on the northwest-southeast alignment directly behind the respective exclusion zones. The second trench will run perpendicular to the first, extending southwest back into the paddock. The placement of the second trench will likely be contingent on the findings of the first trench, i.e., the location and extent of observable archaeology. These trenches should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).*
 - b. The area in the vicinity of the house and gardens depicted on the 1883 survey map (SO 7374) should be excavated to natural ground (NB: this has been expanded to account for potential inaccuracies regarding the placement of these features in SO 7374). This can be done in ~100mm spits via hydraulic excavator; however, should archaeologically features and/or deposits be encountered, these may require hand-excavation for all/part of their extents.*
 - c. Although the location of the 1863 general store is not known, it is considered to have been positioned in proximity to the ferry. Given the steepness of the sandy bluff opposite the northern-most bend in the river adjacent to the project area, the ferry is reasoned to have been positioned within the flat area bounding the gentler, more*

southern bend. Moreover, as the majority of gold workings were on the western side of the river (within the project area), it is likely that the majority of the camp was congregated on this side. Therefore, it is recommended an exploratory trench be excavated along the flattened area bounding the southern river bend in order to determine the presence of subsurface archaeology. This trench should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).

- d. The above earthworks must be monitored by the s45 approved person (or person nominated on their behalf) in accordance with the AMP. Any archaeological features and material encountered shall be recorded, analysed, and interpreted in accordance with current archaeological practice and as outlined in the AMP.
 - e. All remaining work outside of the above investigatory recommendations can be conducted under the OCP.
- If archaeological material of Māori origin is discovered at any stage, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all relevant parties including takata whenua via Aukaha and HNZPT and in accordance with the AMP. a. Any taoka tūturu are prima facie the property of the Crown who will be notified of the find. Taoka tūturu will be registered with the Ministry for Culture and Heritage. NZHP, in collaboration with manawhenua, shall notify the Ministry of Culture Heritage and establish the most appropriate temporary storage, management and care for taoka tūturu, until such time as traditional or actual ownership is determined, with an appropriate institution or kaitiaki.
 - Should kōiwi be encountered, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all affected parties as soon as practicable, including [takata whenua via consulting company], HNZPT, and the police. The Ngāi Tahu policy for kōiwi takata shall also be followed (Te Rūnanga o Ngāi Tahu, 2019).
 - Within 20 working days of the completion of on-site archaeological work, the site record forms must be updated or submitted to ArchSite.
 - Within 6 months of the completion of on-site archaeological work, a final report on any archaeological material that is found must be prepared in accordance with ASG12 Archaeological Report Guideline (HNZPT, 2023) and submitted to HNZPT for inclusion in the digital library and to Aukaha.

The author has reviewed the draft application and suggested approach of mitigating risk by adopting generous setbacks. This finds support with NZHPL.

Having considered the NZHPL report and the revised mine area promoted by the applicant to avoid G40/148 and G40-149, it is my opinion that provided the above conditions are carried into the consent decision, that the effects of known and undiscovered archaeology will be less than minor.

Effects on Terrestrial Ecosystems and Ecological Values

The site is a working lifestyle farm, and will be converted into a 8-lot rural lifestyle development.

There are few ecological values on the site. Along the river margins are willow and kanuka, and the applicant has identified a setback area to avoid interaction with any archaeological sites. As a result of that setback, no effects on the existing indigenous vegetation will occur.

There will be the occasional need to 'top-up' the mine pond with clean water from the Clutha River/ Mata-Au. This will be a permitted activity take under the ORC RP:W rules, and will require the placement of a pump and soft hose with a screened intake nozzle into the river. There are numerous areas for siting the intake and hose to ensure indigenous vegetation or the river margins are not damaged. There are no inland wetlands on the site that require assessment or avoidance.

Overall, it is my opinion given the works will be solely within the pastured area rather than existing vegetation or rocky features, there is a less than minor effect on terrestrial ecosystems or ecological values.

Effects on the Landscape

A Landscape Assessment¹ by Mike Moore was sought to better understand the effects of the proposal on the landscape and receiving environment. The environment was assessed in its current form., although cognisant of the approved subdivision for eight lifestyle properties.

Mr. Moore noted the values outlined in the CODP for rural zoned areas are applicable as the property is not within areas mapped as having outstanding natural landscapes (ONL) or significant amenity landscapes (SAL). He considered the effects on the river, and found-

‘on the basis of the topography, vegetation and land use, it is my assessment that the river margins include the immediate riverbanks but do not extend significantly beyond these. I do not consider that the proposed mining activity will be within the river margin’. He also noted ‘there are no areas that fall within the definition of ‘natural inland wetlands’ (in the National Policy Statement for Freshwater Management, October 2020) within the proposed mining area. Given this situation it is my assessment that effects on natural character (as it applies under Section 6a RMA) are avoided by the proposed mining’.

Referring to the 8-lot subdivision consent (230386) on the site, I note Council recognises the District Plan provides for subdivision and development within the Rural Resource Area, and commented that progressive subdivision and development has the potential to erode the open natural character and rural amenity and character of the rural area. That consent included a Landscape Assessment by Patch, who considers that the landscape displays a modified pastoral character with a moderate to low degree of naturalness, mainly associated with its adjacency to the Clutha River, the terrace riser and small pockets of indigenous vegetation.

The 8-lot lifestyle properties will change the character of the land. This is clearly articulated in the Patch Landscape diagrams below for the building platforms.

¹ Landscape Effects Assessment, Mike Moore Landscape Architect, dated 21 February 2025

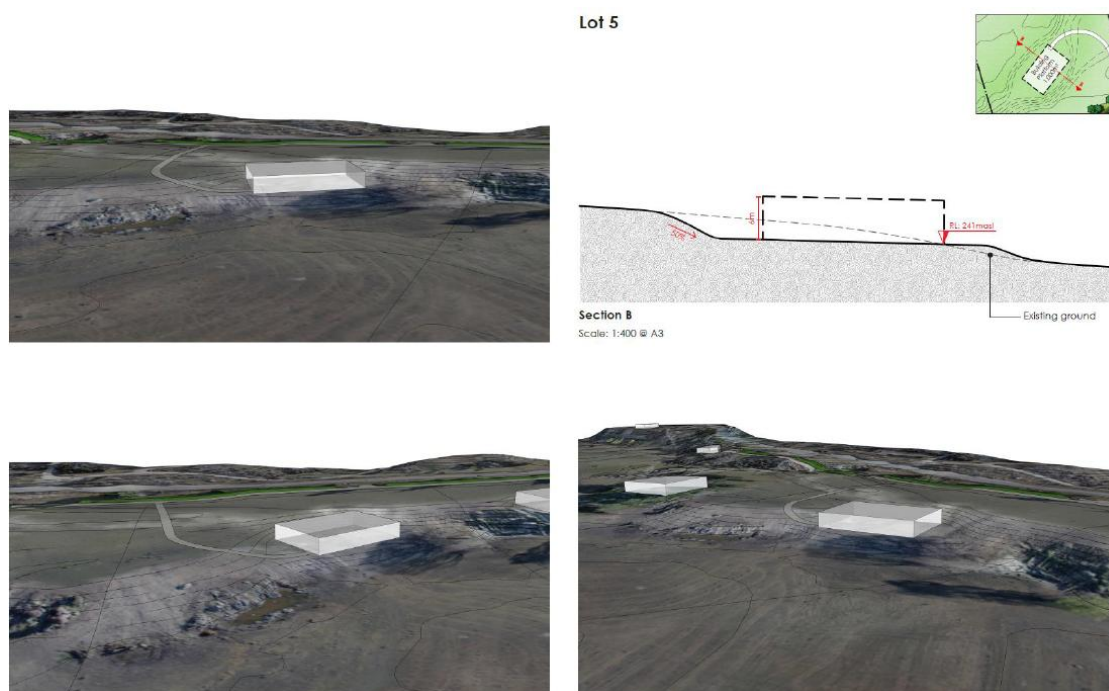


Fig. 16 – Patch Landscape Plan Lot 5 Building Platform

The assessment was based on a 2ha area of active mining area and noted the area of disturbance will progress in a linear fashion as it moves across the site. The implication of this is that visual impact of the operation will change depending on its location within the wider site. The NZ Institute of Landscape Architects have devised a 7-point rating scale² to assess effects. The relationship of the scale to the relevant RMA phrasing is shown below.

Degree of effect assessment scale

Very low	Low	Low-mod	Moderate	Mod-high	High	Very high
Less than minor	Minor		More than minor		Significant	

The Landscape Assessment identified the potential landscape and visual effects arising from the proposed mining operation are as following:

- ☐ Effects on visual amenity, perceptual values, visual coherence and sensory values that stem from the visual cohesion that currently exists within the wider landscape.
- ☐ Effects on rural character that results from the operation moving systematically across the site.
- ☐ Effects on natural character values to the extent that they exist; and
- ☐ Any Cumulative effects that may result from the mine moving across the valley floor and in combination with other non-farming activities within the receiving environment.

The following table summarises the effects assessment-

Viewpoint	Landscape Effects During Mining	Landscape Effects After Rehabilitation	Comments
State Highway 6	Adverse Moderate/low to Low	Neutral	
State Highway 8	Adverse Very low	Neutral	
Sandy Point Lookout	Adverse Moderate-Very Low	Neutral	There is public access to the Sandy Point

² Te Tangi A Te Manu, Aotearoa New Zealand Landscape Assessment Guidelines.

			Conservation Area on the high terrace top overlooking the site across the river. Viewer numbers are unlikely to be high but motivations for viewers are likely to include landscape appreciation.
Pukerangi Drive (close viewpoint)	Adverse Moderate/Low to Nil	Neutral	
Pukerangi Drive (distant viewpoint)	Adverse Low to Nil	Neutral	
From across the river	Adverse Moderate/High to Nil	Neutral	

Mr Moore found from a number of viewpoints, it was found the landscape effects were ‘low to moderate’ although the he noted “Where the effects of the activity are considered moderate (ie more than minor) this effect would only apply to a stationary view and will be short lived (over a period of 16-20 weeks) and as such can be considered temporary”. He applied a weighting to his conclusions which overall found these effects to be ‘Low’.

The proposed mining will modify the existing natural floodplain landform, but conditions are proposed to ensure rehabilitation restores the natural floodplain landform character as closely as possible. The natural / rural character of the site will be adversely impacted for the short duration of the works, but this will be remedied progressively and in short order following completion of the works. The scale of the mining activity disturbance will be significant but not excessively so in the scale of the floodplain. Elements of natural character significance such as terrace landform, wetlands and indigenous trees will be avoided.

The proposed mining will be temporary and is for a short duration. In spatial extent its effects will be contained by the intention to rehabilitate progressively. Limits and setbacks imposed will ensure that adverse effects on the Clutha River / Mata-Au margins and indigenous trees are avoided. Mr Moore promoted as a suite of conditions in support of the proposal. Conditions are proposed to ensure reinstatement of floodplain landform character and pasture before the eventual exercise of the subdivision consent.

1. *All mining and rehabilitation works are to be completed within 3 years.*
2. *All works shall avoid the river terrace landform and shall be set back a minimum of 40m from the top of the Clutha River Mata-Au bank and 5m from any mature kanuka.*
3. *The actively mined area (including pre-stripped area, overburden / top-soil windrows, mine pit and un reinstated tailings) shall be no greater than 18,000m².*
4. *A rehabilitation plan is prepared that details and provides for the following:*
 - *Removal of all structures and other elements related to the mining operation.*
 - *Reinstatement of the floodplain landforms to restore existing natural landform character, including relic river channels.*
 - *Reinstatement of pasture and fences in consultation with the landowner.*

He also promote a number of limits in relation to the temporary structures associated with the depot area. What is relevant to note (which has not influenced Mr. Moore’s thoughts on effects from temporary structures) the approved 8-lot lifestyle development will allow and provide for any number of sheds, fuel tanks and structures as of right which will continue over the long term and on that basis, I would apply some caution to the following suggestions by Mr. Moore.

To limit the visual impact of the proposed temporary structures, the following controls are proposed:

- *There shall be no more than two containers, which shall have dimensions not exceeding 12.5 x 2.5 x 2.6m.*
- *Any Portacom building shall have a footprint no greater than 10m² and shall be no higher than 2.6m.*
- *Fuel tanks shall not exceed 10,000 litres in capacity and shall be no higher than 2m above ground level.*
- *All temporary site structures are to be finished to match in the same colour, which shall be Resene colour 'Karaka' (approx. 7% LRV). or another suitable colour found in the rural environment approved by Council.*
- *Other than the temporary topsoil / overburden windrows associated with the active mining, there shall be no bunds created.*
- *Any fencing shall be confined to rural post and wire fences.*

Overall, Mr Moore concluded

"The visual effects on users of adjacent roads and walkways and on nearby residents will likewise be mitigated by the temporary, short term and spatially limited nature of the activity.

Whilst the activity overall is likely to have a duration of two years, the effects in any one part of the site are much less.

Overall, it is my assessment that effects on landscape values will be adverse / moderate-high – adverse / very low during the operation and adverse / very low following rehabilitation. Given the limited degree of adverse effects and their temporary nature, I assess the proposed mining as generally consistent with the CODP provisions relevant to landscape matters".

Overall, it is my opinion the effects on the landscape are up to minor in a RMA context, however the temporary nature of those effects and the final use of the land as a 8-lot lifestyle development soften that assessment such that they are no more than minor.

Effects on Māori Cultural Values

The Clutha River/ Mata-Au is the subject of a Statutory Acknowledgement under the Ngāi Tahu Claims Settlement Act 1998 and cultural values relate to creation traditions, mahinga kai trails and its role as a major transportation route. Māori archaeological values are often tied closely to mahikai ka and ara tawhito. Historic sites of mana whenua associations are often kept private between Iwi and may not yet be identified. That is the case for all archaeology.

A Cultural Impact Assessment for the Upper Clutha on an unrelated consent application provides some context to the high value Runaka hold to the Mata-Au, and states

'The Clutha River- Mata-au is a significant component of the Kai Tahu cultural landscape. The river provided access from the coast to the upper lakes of Wānaka, Hāwea, and Whakatipu-wai-māori. The entire system acted as a significant wāhi mahika kai. Along its length, a myriad of wāhi tūpuna are recorded, attesting to the long-standing importance of the Mata-au as a food source, a place of travel and activity, and reflecting the physical and spiritual connection between the mountains and the coast. The recorded wāhi tūpuna in the Upper Clutha reach of the river over which proposes to operate are described in the table below"³.

³ From the Cultural Impact Assessment for Cold Gold Limited in the Upper Clutha River, prepared by Aukaha Limited

Ikoa Māori	Location/Ikoa Pākehā	Description
Te Rua Tūpāpaku	Luggate	A kāika mahika kai located on the Mata-au where weka, tuna and kāuru were gathered. It is also recorded as a fortified permanent pā, and that Rāwiri Te Maire and Te Maihāroa lived there.
Autāia	Near Queensbury	A kāika mahika kai located on the Mata-au where weka, tuna, and kāuru were gathered.
Te Kōareare o Te Pāhi	Downstream from Queensbury	A wāhi mahika kai located on the Mata-au where tuna and weka were gathered.
Kā Iwi o te Weka	Downstream of Lindis Crossing	A wāhi mahika kai on the Mata-au where tuna and weka were gathered.
Mahaka Katia	Northern end of Lake Dunstan	A wāhi mahika kai located on the Mata-au where tuna and weka were gathered.
Otakihia	Northern end of Lake Dunstan	Rapids that were located at what is now the northern end of Lake Dunstan

The CIA refers to the known recorded archaeological sites in the area “which provide further evidence of connection, with finds of a rock shelter (G40/119), and an oven with moa bones (G40/67) located near Luggate. The archaeological record for this second site references moa leg bones that had been broken open for human consumption, as well as tracheal bones and eggshell fragments. These taoka signify that this area has a long history of occupation and use, including a period before the extinction of the moa over 500 years ago”. The known recorded archaeological sites are detailed in the table below.

Site number	Description	Details
G40/67	Umu	Oven with moa bones, indications of human interaction. Included large bones, tracheal bones, and fragments of eggshell mixed with ashes
G40/119	Rock shelter	A large shelter (4m x 4m x 1.3m) 10m above Luggate Creek. Charcoal stains on the ceiling. Northeast facing, likely site for habitation.
G41/10	Artefact – toki	Find of a dark grey toki with black lines running through it.
G41/283	Artefact	Find of a patu onewa.
G41/287	Umu	Find of a scattering of burnt stones and blackened soil covering about 0.2ha.
G41/288	Umu	Find of a pile of burnt greywacke boulders with large pieces of charcoal. No bone or other midden was found.
G41/298	Umu	Find of fragments of burnt greywacke pebbles in an irrigation ditch bank.

Whilst Runaka are best suited to provide their views on the proposal, it is my opinion the effects on cultural values are likely to be less than minor for the following reasons-

1. The site has no known Māori archaeological sites recorded.
2. The site is not appended in the District Plan as having any heritage values.
3. The activity will have no impact on water quality, or the life-sustaining values of the river.
4. No taonga species are at risk by the proposal.
5. There are few indigenous species remaining on the site, and they are protected by the exclusion zones.
6. The site is pastoral in nature and heavily modified by way of earthworks i.e ploughing.
7. The site will, following mining be converted to an 8-lot residential lifestyle development.

An accidental discovery protocol is the orthodox method of handling discovery of items of archaeological importance and is accepted in the consent conditions. It is noted the activity will take place within an active farm setting, where land disturbance is commonplace and any potential discoveries would likely have already been done so.

As far as the applicant is able to determine there are no archaeological sites on the property. We will defer to Runaka for their comment, however the following accidental discovery protocol is volunteered.

Accidental Discovery Protocol

1. The following archaeological discovery protocols must occur where any unidentified archaeological site, which may include suspected kōiwi (human remains), taoka, Māori artefacts, or evidence of pre-colonial occupation is encountered during the mining works:
 - a) Work must cease immediately at that place and within 20metres around the site.
 - b) The consent holder must shut down all machinery and secure the area.
 - c) The Site Manager must secure the site and notify the Heritage New Zealand Pouhere Taonga Regional Archaeologist.
 - d) If the site is of Māori origin, the Site Manager must notify the Heritage New Zealand Pouhere Taonga Regional Archaeologist and Papatipu Runanga or Iwi of the discovery and ensure site access to enable appropriate cultural procedures and tikaka to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act, Protected Objects Act).
 - e) If any kōiwi (human remains) are uncovered, the Heritage New Zealand Pouhere Taonga Regional Archaeologist, New Zealand Police and Papatipu Runaka must be advised immediately in accordance with Guidelines for Kōiwi Tangata/Human Remains (Archaeological Guideline Series No.8). Papatipu Rūnaka will be invited to lead the management of any kōiwi tangata (human remains of a Māori person) that have been uncovered, in line with Te Rūnanga o Ngāi Tahu Kōiwi Tangata policy 2019, or any other policy promoted by Iwi.
 - f) Prior to commencing ground disturbing activities, the consent holder shall ensure that all staff (including sub-contractors) involved in or supervising works on site are familiar with the Accidental Discovery Protocol.
 - g) Where Papatipu Rūnanga or Iwi so request, any information recorded as the result of the find such as a description of location and content, is to be provided for their records.

Whilst there are no known cultural records on the site, it is considered the protocol above will sufficiently provide an appropriate level of protection to any sites yet to be identified. On that basis, it is my opinion the proposed mining activity is likely to have effects considered less than minor on Māori cultural values.

Temporary Effects

It is accepted there will be temporary effects on the immediate environment by the mining activity, being a subset of primary production and anticipated in the Rural General zone. The RMA requires consideration of both temporary and permanent effects.

It has been established that mining will progressively move through the wider site and effects may be at their greatest on any one property owner a short duration and occurring during normal 'working hours' (i.e for 16-20 months), and then never to be repeated. Residential lifestyle activities will then occur on the land in perpetuity which come with effects, residential activity, earthworks, vehicle movements, glare, reflectivity, smoke from domestic burners and the suchlike.

Temporary effects were considered in *Trilane Industries*⁴ where the Queenstown Lakes District Council bundled its assessment of temporary effects with eventual mitigation of those effects, to reach the view the effects on landscape and amenity were less than minor. The Court held that QLDC was wrong to apply this view. That case is in some way relevant, however I consider the *Trilane* decision does not mean an activity cannot have temporary effects, it simply means those effects cannot be disregarded for notification purposes. I note that the resource consent at issue in *Trilane* has now been granted.

The issue relates to the temporary effects of the activity, rather than the process. The question remains, are those temporary effects on any one party cross the threshold where public notification is appropriate.

Effects on the transportation network

The proposal will have limited vehicle movements. Heavy vehicle movements will occur introducing machinery to the site, and then only sporadically i.e for refuelling. Thereafter, vehicle movements will be limited to typical vehicles used by staff.

Given the short duration of works and remediation prior to exercising the approved subdivision consent 230386, it is proposed to seek agreement with NZTA to carry out an upgrade to the access formation against State Highway 1, but not consistent with the full suite of specifications promoted in the approved subdivision.

With respect to sight lines, the existing access has ample visibility to comply with the performance standards associated with 100kph roads that are designated State Highway. With respect to road users entering and existing Pukerangi Drive immediately opposite the access, it is my opinion there is ample visibility and as the interaction would be directly opposite there will be little confusion as to whom gives way to the other. Equally other vehicles entering or existing other properties will have ample scope to observe any movements into the subject site despite the accesses being closer than the specified 200m setback in the Plan.

It is proposed the applicant will consult with NZTA and provide comment to Council as part of the pre-lodgement process.

Overall, it is my opinion that whilst the existing access does not comply with the performance standards for the Plan, there will be less than minor effects on the safe and efficient use of the roading network.

Effects on navigation and public access

The proposed will be land based within private property and will not present a hazard or impediment to navigation, nor public access along the river margin. No mining, earthworks or use of land will occur within the river margin, with the exception of a pump and soft-hose (likely to be 10cm in diameter or

⁴ *Trilane Industries Ltd v Queenstown Lakes District Council* [2020] NZHC 1647

thereabouts) crossing into the river during periodic top-ups of the screen pit with clean water. At these times, a sign will be erected to advise caution when stepping over the hose.

Fisherman and those recreating will continue to traverse around the site as they historically had done so. There will be no other restriction on public access by other people to the site and, as such, effects on public access will be less than minor.

Overall, it is considered effects on navigation will be no more than minor.

Noise

Noise has the potential to introduce nuisance effects on surrounding property owners. The applicant has several decades of mining experience and has indicated that the noise specifications can be met for the site. No noise testing has been carried out on the basis the floating plant has not yet been constructed to test.

Noise is part of the rural zone, and noise is anticipated hence the relatively permissive. The permitted baseline provides for the likes of wind machines for frost control, audible bird scaring devices or helicopters flying low over properties around dawn to manage frost.

The noise standard for the zone under (E) is

On any day 7:00am to 10:00pm	55dBA L ₁₀
10:00pm to 7:00am the following day	40dbA L ₁₀
	70dBA L _{max}

It has been assessed two properties may be exposed to noise that exceeds at any point within the notional boundary of any dwelling the daytime limits. These properties are the Landreth and Hardaker properties. Affected party approval has been sought and a written agreement has been obtained such that they are no longer considered an affected party.

There are no other properties that will be exposed to noise limits that breach the thresholds. On that basis, it is my opinion the noise effects are less than minor.

Hazard Risk

The site is not subject to a hazard overlay in the District Plan but is subject to hazards identified in the Otago Natural Hazards Database. In respect of the flood hazard risk, the Preliminary Flood Assessment associated with the approved 8-lot subdivision identified that parts of the site are susceptible to surface inundation from the Clutha River in extreme events and that modelled water velocities on the flood plain are sufficiently low that erosion.



Fig.17 Extreme Flood Model (source Otago Regional Council Natural Hazards Portal)

Hazardous Substances

Fuel tank locations are chosen to be located at one of two depot on the site. These will be outside the potential flood risk zone identified above.

The bulk tank stores 10,000L of fuel and will be double-skinned and bunded with $\geq 120\%$ of the tanks total capacity and greater than 50m from any waterbody. Fuel (3c hazardous substance) will comply with the 10,000L maximum as specified in Schedule 19.14 of the District Plan. The tank will have industry compliant hoses, and fittings, manual shutoff valves and an automatic shutoff dispensing nozzle. Refuelling is a 100% monitored procedure and spill kits are maintained at the bulk tank.

The storage of fuel will be a permitted activity.

Light Spill

The proposed activity will be carried out in a manner to ensure light spill shall result in greater than 10 lux spill (horizontal and vertical) of light onto any adjoining property or road, measured at the boundary of a road or the notional boundary of a neighbouring property.

As such, lighting will be a permitted activity and the effects on other properties is assessed as less than minor.

Economic Analysis & Contribution to Local Economy

Section 5 promotes the sustainable management of natural and physical resources by managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety.

An economic assessment has been commissioned from Benje Patterson⁵ People&Places, an expert in regional economies. This report is appended to the application. He concluded-

- *It is estimated that the Project will directly contribute an average of \$2.57 million each year to the local economy once the mine is operational, with a cumulative total direct GDP effect of \$26.46 million over the 10-year mining permit (including capital investment and start-up costs).*
- *On top of the \$2.57 million of direct GDP effects each year, there is the potential for a further \$0.53 million of GDP from economic multiplier effects, comprising:*
 - *Indirect GDP of \$0.29 million annually supported with suppliers in Otago from procurement by the mine.*
 - *Induced GDP of \$0.24 million of GDP annually in Otago supported by spending by workers to service their lifestyles (e.g. on retail, medical, education, personal services, etc).*
- *The Project will directly support an average 4 staff. On top of the jobs directly supported by the Project's mining operations, there are also employment multiplier effects that could accrue. It is estimated that up to 3.3 further jobs could be supported by the indirect effects of the mine's procurement and the induced effects of providing goods and services to meet the needs of workers.*
- *Jobs will be highly productive. The Project is estimated to contribute \$643,493 of GDP per worker on average each year. GDP per worker for the Project is 4.8 times the current average productivity across the local Inland Otago (Central Otago and Queenstown Lakes) economy of \$133,811 of GDP per job in 2024.*

The proposed mining venture will provide for the economic well-being of a New Zealand (South Island) owned company. The project and its contribution to the regional GDP, procurement of goods and services, including indirect or multiplier effects will ensure a significant contribution to the local community.

Cumulative Effects

With respect to cumulative effects, it is appropriate to recognise irrespective of the mining proposal an 8-lot rural lifestyle development will occur on the land. Whilst the proposed mining activity is temporary, the residential activity and the effects arising from that, will be in perpetuity.

In terms of the building platforms associated with the approved subdivision, the landscape assessment found

"It is important to note that other rural residential development is highly visible within the receiving landscape. This existing development is generally sited on top of terrace risers, near the base of the risers, or on the foothills of the Pisa Range. Sometimes, but not always, rural living type development is grounded in the landscape by planting around the dwellings. While this existing rural living is ever-present in views, the dominance of the wider, 'big sky' landscape of the Upper Clutha Basin and the surrounding mountains remains dominant."

Overall, that landscape assessment found that the proposed development will not be prominent in the

⁵ Benje is a member of Economic Development New Zealand and an approved All-of-Government provider of consultancy services across four sub-categories (finance and economics, human resources, procurement, and policy, research and development).

landscape and that the visual effects of the proposed subdivision are considered to be no more than low-moderate (minor). The s42A author found “the cumulative effects of the subdivision and future development on rural character and amenity, and visual amenity, will be no more than minor, and therefore acceptable”.

The proposed mining activity over a maximum of three years will result in less than minor cumulative effects to that already consented and the permanent effects associated with it. The mining proposal only defers the subdivision and residential activity on the land.

Positive Effects

The applicant will largely access the site via the State Highway. There will be no other restriction on public access by other people to the site and, as such, effects on public access will be less than minor.

Positive effects include a significant contribution to the local economy as demonstrated by the economic analysis by Benje Patterson, but will also extend to a national benefit. NZ Inc will benefit by increased productivity and a contribution to the GDP, whilst the Government will benefit from royalties associated with the sale of gold. The company is locally owned, and profit will be retained in New Zealand.

Section 3 of the Act defines the meaning of “effect”, which includes any positive effects. Whilst the consideration cannot be taken into account by a consent authority to consider positive when making a decision to notify, positive effects can be weighted as part of an overall assessment. In this case, the proposal provides for the social, economic and cultural wellbeing of the applicants and their families and provides a meaningful benefit to local contractors and businesses.

Cross Boundary Issues

Section 1.3 of the District Plan sets out processes relating to cross boundary issues that may arise in respect of adjoining territorial authorities include land use activities and development strategies which may give rise to adverse environmental effects in a neighbouring district.

The District Plan notes in dealing with potential cross boundary issues, the Council will utilise the following processes;

- Notification of adjoining territorial authorities that may be affected
- Protocols with respect to joint processing of resource consent applications
- Pre-hearing meetings pursuant to section 99 of the Act between applicants/developers, submitters, and relevant territorial authorities
- Promote and participate in joint hearings pursuant to section 102 of the Act.
- Undertake regular consultation with all agencies having responsibility for the sustainable management of the District’s environment and to promote and encourage protocols and mechanisms to address and resolve cross boundary issues where they arise.

In this case, the effects of the mining activity are relatively discrete and temporary. With respect to landscape, it is accepted the activity will be visible from the Queenstown Lakes District, however being visible or audible does not trigger the need to notify, or introduce a requirement for joint processing with QLDC. Landscape expertise from Mike Moore does not indicate the visual effects on the Queenstown Lakes District crossed any threshold where they should be involved. The 8-Lot rural lifestyle subdivision will change the visual and aural amenity in perpetuity, and in that recent subdivision QLDC were not involved in processing those applications.

It is my opinion that whilst it is reasonable to notify QLDC of the proposal, the activity does not warrant the need for joint processing. It is my opinion the effects on those within the QL District are less than minor.

Consideration of Alternatives

Where it is likely that an activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity is required (Schedule 4 clause 6 (1)(a)).

Where an activity includes the discharge of any contaminant, a description of any possible alternative methods of discharge, including discharge into any other receiving environment, is required (Schedule 4 clause 6 (1)(d)(ii)). Where it is likely that an activity will have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group) is required (Schedule 4 clause 6 (1)(h)).

The proposed activity is not expected to result in any significant adverse effects on the environment, does not include the discharge of any contaminant beyond active mine pond, where sediments are trapped in the soils and will not have any relationship with the Clutha River/Mata-Au. Access to the site will via the road and there will be no restriction on public access along the river margin and, as such, effects on public access will be less than minor.

The proposed works will not affect the exercise of a protected customary right. Therefore, no description of any possible alternative locations or methods for undertaking the proposed activity need be provided in this assessment of environmental effects.

Summary of Adverse Effects on the Environment

The assessment above demonstrates that the activity can be carried out with no physical adverse effects on the environment. There will be landscape effects which are at worst minor, however the temporary nature of those effects and the final use of the land as a 8-lot lifestyle development soften that assessment such that they are, in my view, no more than minor. The proposal will have a less than minor effects on public access and amenity, will not alter the natural character or water quality of the river. Cultural or heritage values will not be adversely impacted by the mining activity provided the applicant remains observant and complies with the requirements of the accidental discovery protocol.

Overall, it is determined that the effects of the proposal on the environment are no more than minor.

Affected Parties Assessment

Below is a list of parties we consider to be potentially affected and as such we will seek their written approvals to the applications.

- Heritage New Zealand
- Department of Conservation
- Te Runanga o Ngai Tahu
- Aukaha Limited on behalf of papatipu runaka
- New Zealand Transport Agency
- Hawea Motors Limited- Kim Landreth
- Gold View Holdings Limited –Paul & Raewyn Hardaker (3360 Luggate-Cromwell Road, Cromwell 9383)

Kim Landreth of Hawea Motors Limited owns the subject site and intends to advance the 8-lot subdivision without delay following completion of the mining activity. Kim owns the dwelling immediately adjacent to the area proposed for mining. The applicant has an agreement in place for the mining and therefore affected party approval is implied.

For 3360 Luggate-Cromwell Road, the Hardaker family resides on the terrace immediately adjacent to the mining area and will be impacted by the activity more than any other party. They have provided their agreement to the proposal.

The Department of Conservation is an affected party given the adjacent reserve. A 10m setback from that reserve will be applied as promoted by New Zealand Heritage Properties assessment. Given the history of the immediate and wider area it is appropriate that Heritage New Zealand is considered as an affected party. NZTA are an affected party on the basis the activity will be accessed from a State Highway.

There is no justification for Fish & Game to be considered an affected party given there will be no effects on the river, no sediment loss to any waterbody and any water take will fall within the permitted activity provisions of the ORC RP:W.

We do not believe any other parties are considered to cross the threshold of being potentially affected on the basis any effects on other parties will be temporary effects, and will occur during normal working hours where noise and activity is anticipated in the Rural General zone.

As detailed previously, once mining is complete, the site will be progressively be converted into an 8-lot rural lifestyle development which comes with its own suite of effects. Adjoining property owners cannot expect their open rural views remain unmodified indefinitely, and in this case, the residential development is a fair accompli. Consent is simply sought to extract the minerals within the gravels before the commencement of that subdivision and the opportunity is then lost.

No other private landholders are affected as the activity is temporary in nature and will progressively move throughout the mining permit area. The rural zone anticipates land based activities and a degree of activity. In this case, noise and lighting will be managed to ensure the effects are less than minor on adjacent landowners. The floating wash plant will be partially below existing ground level and will be in part obscured by way of bunded soils for remediation.

Term of Consents

The applicants seeks a term of consent of three years for the mining activity.

Statutory Considerations

This application must be considered in terms of Section 104 of the RMA. Subject to Part 2 of the RMA, Section 104(1) sets out those matters to be considered by the consent authority when considering a resource consent application. Considerations of relevance to this application are:

- (a) any actual and potential effects on the environment of allowing the activity; and
- (ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
- (b) any relevant provisions of:
 - (i) a national environmental standard;
 - (ii) other regulations;
 - (iii) a national policy statement;
 - (iv) a New Zealand coastal policy statement;
 - (v) a regional policy statement or proposed regional policy statement;
 - (vi) a plan or proposed plan; and
- (c) any other matters the consent authority considers relevant and reasonably necessary to determine the application.

The application is assessed as a **discretionary** activity.

Resource Management Act 1991

Resource consent applications must be considered under Part 2 of the Act. Part 2 includes the purpose and principles of the Act. As provided in Section 5, the purpose of the Act is “...to promote the sustainable management of natural and physical resources.” The Act defines the term sustainable management as follows:

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

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- (b) Safeguarding the life-supporting capacity of air, water, soil and*
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

The proposal will have a less than minor effect on the environment, subject to conditions such as those volunteered, and potential adverse effects associated with the proposal are expected to be avoided or otherwise mitigated. The proposal is considered to be consistent with Section 5.

Regard must also be had to Section 6 of the Act – Matters of National Importance. The relevant sections have been included below:

Section 6 of the Act – Matters of National Importance states:

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognize and provide for the following matters of national importance:

- (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
- (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:*
- (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:*
- (e) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
- (f) the protection of historic heritage from inappropriate subdivision, use, and development:*
- (g) the protection of recognised customary activities:*
- (h) the management of significant risks from natural hazards.*

The Clutha River/ Mata-Au is identified as a Statutory Acknowledgment under the Ngai Tahu Claims Settlement Act 1998. The river holds high natural character values, is of high cultural significance and is valued for recreation and commercial uses.

In terms of (d), public access will be maintained for all users such as people boating, camping and/or fishing in the area river or its margin. As has been detailed in assessing historic values, spiritual and cultural values including taonga species, the proposal is not inconsistent with (e), (f) and (g), and written approval will be sought from Papatipu Runaka and Iwi.

Overall, the proposal is considered to be consistent with Section 6 and pre-application written approvals are being sought.

Section 7 – Other Matters prescribes other matters to which persons shall “have particular regard”, and of relevance to the proposal are the following:

- (a) *kaitiakitanga:*
- (aa) *the ethic of stewardship:*
- (b) *the efficient use and development of natural and physical resources:*
- (c) *the maintenance and enhancement of amenity values:*
- (d) *intrinsic values of ecosystems:*
- (f) *maintenance and enhancement of the quality of the environment:*
- (g) *any finite characteristics of natural and physical resources:*
- (h) *the protection of the habitat of trout and salmon:*

The proposal will not result in any bed disturbance or the release of sediment. Written approval will be sought from the affected parties detailed above. Overall, the proposal is not considered to be inconsistent with Section 7 of the Act. The proposal is small scale over with the active mine area comprising only 2ha at any one time within a rural area where adverse effects are assessed as being no more than minor for a temporary period. The total term for the mining activity is three years before the site converts to an 8-lot residential lifestyle development.

Section 8 – Treaty of Waitangi states:

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

With regard to Section 8 of the Act, the proposal is not inconsistent with the principles of the Treaty of Waitangi. Iwi management plans provide further guidance and consultation with Runaka and Iwi will commence following lodgement. Overall it is my opinion, effects from the activity are expected to be less than minor.

Overall, the proposal is consistent with Part 2 of the Act.

National Policy Statement for Highly Productive Land

The subject site comprises a combination of LUC 4 and 6 soils with a small area identified as LUC 3 soil, and therefore an assessment against the National Policy Statement for Highly Productive Land (NPS-HPL) is appropriate.

Effects on LUC3 soils were considered during the 8-lot subdivision process where the application was supported by a report by Agronomist Ben Trotter. Mr Trotter considers that the soils are quite fragile and extremely sensitive to cultivation. The CODC GIS below identifies the LUC3 soils as being outside the area identified for mining.



National Policy Statement for Highly Productive Land permits on highly productive land in certain situations, and where there is a "functional or operational need" for that mining to occur. In this case, there is a known resource located within the existing farm. Gold is identified on the Critical Minerals list⁶ and the mining activity will provide a credible addition to New Zealand's mining inventory.

Once mining on the site is completed, there will be zero loss of productive potential on the site and the land will be converted to residential use. The benefits of the mining activity outweigh the loss of productive land over the short term and will result in zero change once completed and therefore it is my opinion the proposal is consistent with the NPS-HPL.

National Policy Statement for Freshwater Management 2020

The National Policy Statement for Freshwater Management 2020 (NPS-FM) provides local authorities with direction on how to manage freshwater under the RMA. It applies to all freshwater (including groundwater) and, to the extent they are affected by freshwater, to receiving environments (which may include estuaries and the wider coastal marine area).

The relevant policies of the NPSFM are discussed below.

- *Policy 1: Freshwater is managed in a way that gives effect to Te Mana o te Wai.*
- *Policy 2: Tangata whenua are actively involved in freshwater management (including decision making processes), and Māori freshwater values are identified and provided for.*
- *Policy 3: Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.*
- *Policy 5: Freshwater is managed through a National Objectives Framework to ensure that the health and well-being of degraded water bodies and freshwater ecosystems is improved, and the health and well-being of all other water bodies and freshwater ecosystems is maintained and (if communities choose) improved.*
- *Policy 7: The loss of river extent and values is avoided to the extent practicable.*
- *Policy 8: The significant values of outstanding water bodies are protected.*
- *Policy 9: The habitats of indigenous freshwater species are protected.*
- *Policy 10: The habitat of trout and salmon is protected, insofar as this is consistent with Policy 9.*
- *Policy 12: The national target (as set out in Appendix 3) for water quality improvement is achieved.*
- *Policy 15: Communities are enabled to provide for their social, economic, and cultural wellbeing in a way that is consistent with this National Policy Statement.*

The National Policy Statement for Freshwater Management 2020 (NPSFM) establishes Te Mana o Te Wai as a fundamental concept at the centre of New Zealand's freshwater management system. Te Mana o Te Wai as a concept is defined in the NPSFM to mean:

⁶ New Zealand Government- A Critical Minerals List for New Zealand, January 2025.

That refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o Te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.

Te Mana o Te Wai is intended to be a multi-faceted concept that includes consideration of both use and protection. It is not intended to operate as a strict hierarchy, as this would fail to achieve the purpose of the Resource Management Act. Te Mana o Te Wai recognises that protecting the health of freshwater, then protects mauri and restores balance between water, the wider environment and the community.

In the NPSFM Te Mana o Te Wai is achieved through the single objective setting out a hierarchy of priorities:

- (a) First, the health and well-being of water bodies and freshwater ecosystems.
- (b) Second, the health needs of people (such as drinking water).
- (c) Third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and into the future.

The assessments available in relation to the health and wellbeing of the water body and ecosystems conclude that effects from the proposal will be less than minor. On this basis it is submitted that the obligation of the first priority has been satisfied. There is no suggestion that the proposed activity will affect the health needs of people, so the question comes down to whether the proposal will allow people and communities to provide for their social, economic and cultural well-being. With respect to cultural wellbeing, it is appropriate to circle back to whether the proposal affects the water in way that compromises mana whenua's interests.

In the context of the NPSFM, Mauri appears twice. In the fundamental concept, as an outcome of Te Mana o Te Wai and in respect of the compulsory Mahika kai value in appendix 1A. Appendix 1A sets out what the consequence of intact Mauri is.

“customary resources are available for use, customary practices are able to be exercised to the extent desired and tikanga and preferred methods are able to be practised.”

It is submitted that the proposal implements the objective of the NPSFM and is consistent with Te Mana o Te Wai.

The relevant policies of the National Policy Statement for Freshwater Management 2020 that are relevant to this application are listed below:

- i. Water Quality: Policies 1, 5, 6, 7 and 12
- ii. Water Quantity: Policies 1, 3, 11 and 13
- iii. Integrated Management: Policies 1, 3, 11 and 13
- iv. Tangata Whenua Roles and Interests: Policies 1 and 2

Overall, the application is not inconsistent with the NPSFM. There is no direct effect on the river, with the exception of an occasional permitted water take. It also gives effect to the hierarchy of Te Mana o te Wai in as much as the health of the river is given the top priority. The mining proposal will result in less than minor effects on the waterbody and the aquatic species that occupy it.

Te Mana o te Wai, Mauri & Cultural Indicators

Environment Southland was the first regional council in the country to adopt Te Mana o te Wai in the planning architecture. As part of that process, Ngai Tahu ki Murihiku have taken the lead nationally in developing scientific and expert reports on Te Mana o te Wai. The concepts developed by Ngai Tahu ki Murihiku of mauri, te uta ki tai and indicators of health are helpful in understanding how an activity may affect values. In this case, the activity is land-based with no effect on the receiving water body.

The Te Rūnanga o Ngāi Tahu ki Murihiku report⁷ 'Wai' provides some context to the definition of mauri and notes-

“that scientifically Mauri can mean:

- *Meeting the basic health and safety needs of humans, specifically the provision of freshwater for drinking water.*
- *Continuity of flow from the mountain source of a river to the sea.*
- *Life-supporting capacity and ecosystem robustness.*
- *Protecting traditional cultural values and uses.*
- *Protecting biodiversity.*
- *Aesthetic qualities e.g. clarity, natural character, depth and velocity of flow, and*
- *Providing for economic activities.”*

No doubt the attribute list of values above is not exhaustive but it is nonetheless useful to assist in defining mauri and cultural indicators of health.

At a catchment level, the concept 'Ki Uta Ki Tai' considers a landscape in its entirety. Ki Uta Ki Tai acknowledges that rivers connect the entire landscapes from the mountains to the sea, and conversely that rivers are linked to the land. This concept acknowledges the overall health of a river can be affected by the deterioration at one point of its length i.e. what happens at one point can affect all parts of the catchment, and further, all parts of the surrounding environment⁸. Within this paradigm if one place is affected then it impacts on all parts of a catchment, just like if one part of a body is hurt then it impacts on the whole of your body⁹.

Having considered the list of Cultural Indicators of Health, it is my opinion the proposed mining by will have a less than minor effect on any of those values, either collectively or as an individual measure given the mining methodology ensuring no effects on the receiving water body or the respective values attributed to the water body.

National Environmental Standards for Sources of Human Drinking Water 2020

The Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 (NES-HDW) requires regional councils to ensure that effects of activities on drinking water sources are considered in decisions on resource consents and regional plans.

Specifically regional councils are required to:

- decline discharge or water permits that are likely to result in community drinking water becoming unsafe for human consumption following existing treatment.
- be satisfied that permitted activities in regional plans will not result in community drinking water supplies being unsafe for human consumption following existing treatment.
- place conditions on relevant resource consents that require notification of drinking water suppliers if significant unintended events occur (e.g., spills) that may adversely affect sources of human drinking water.

⁷ Wai – Ngai Tahu ki Murihiku 2019, page 11.

⁸ Corry, S. and R. Puentener. 1993. Tikanga Māori Cultural, Spiritual and Historical Values of the Waiau River. A report for the Iwi Task Group of the Waiau River Working Party. February 1993.

⁹ Kitson J, Cain A, Williams E, Blair SR, Johnstone MNTH, Davis J, Grey M, Kaio A, Anglem R, Young R, Whaanga D. 2018. Developing a Murihiku Cultural Water Classification System. Report prepared for the Ngā Kete o Te Wānanga Murihiku Rūnanga Advisory Group, Te Ao Mārama Inc and Ōraka Aparima Rūnaka. NIWA, Wellington, NZ.

The proposal is not within the vicinity of any registered surface water drinking water sites. It is considered that the proposed activity will have no more than minor effects on the environment. Overall, the proposal is not expected to adversely affect any registered human drinking water supplies.

Objectives and Policies Assessment

In accordance with Section 104(1)(b) of the Resource Management Act 1991, the objectives and policies of the Central Otago District Plan have been assessed when preparing this application.

Objectives	Supporting Policies	Assessment
<u>Objective 3.3.1- Kaitiakitanga (Guardianship)</u> To have particular regard to Kai Tahu ki Otago's concept and spirit of Kaitiakitanga in relation to managing the effects of the use, development, and protection of Central Otago's natural and physical resources. <u>Objective 3.3.2-waahi tapu)</u> To recognise and provide for the importance of waahi tapu to Kai Tahu ki Otago and the protection of waahi tapu from physical disturbance, erosion, degradation, and inappropriate land use activities. <u>Objective 3.3.3- Waahi Taoka</u> To recognise and provide for the special significance that Waahi Taoka have in the culture of Kai Tahu ki Otago. <u>Objective 3.3.4 – Wai</u> To recognise the significance of wai to Kai Tahu ki Otago's spiritual beliefs, cultural traditions and practices, and to provide for these where appropriate. <u>Objective 3.3.5 – Mahika Kai</u> To recognise and provide for the importance of mahika kai and access	<u>Policy 3.4.1 - Kai Tahu Ki Otago - Natural Resource Management Plan (1995)</u> To recognise the Kai Tahu Ki Otago - Natural Resource Management Plan (1995) as the principal Kai Tahu ki Otago resource management reference planning document for the Central Otago District and to use this document as a basis for consultation on issues of importance to Kai Tahu ki Otago. <u>Policy 3.4.3- Koiwi Tangata (Unidentified Human Skeletal remains)</u> To adopt appropriate procedures for (a) notifying Kai Tahu ki Otago of koiwi tangata finds; and (b) the appropriate management of koiwi tangata finds. <u>Policy 3.4.4 - Wai (Water)</u> To recognise and provide for the relationship Kai Tahu ki Otago have with the water resource through (a) consulting and working with Kai Tahu ki Otago and the Otago Regional Council on water quality issues that affect Kai Tahu ki Otago (b) promoting the avoidance, remedying or mitigation of significant adverse effects of activities undertaken within riparian margins and on the surface of water, and (c) ensuring the significance of water to Kai Tahu ki Otago spiritual beliefs, cultural traditions and practices are taken into account when considering resource consent applications that may have an effect on water quality. <u>Policy 3.4.5 - Mahika Kai</u> To recognise and provide for the importance of mahika kai to Kai Tahu ki Otago through; (a) consulting with Kai Tahu ki Otago on the location of mahika kai resources, (b) maintaining and enhancing mahika kai resources by ensuring that significant adverse effects of land use activities on this resource are avoided, remedied or mitigated, (c) maintaining and enhancing access to mahika kai resources where this is appropriate and practicable	The proposal recognises the awa is a statutory acknowledgement area and has a significant history to Māori. No effects on the river and water quality are anticipated and the proposal recognises the hierarchy of Te Mana o Te Wai. An accidental discovery protocol will be applied to all works and all staff will be aware of this requirement as part of the staff induction package. No interaction with, or adverse effects on waahi tapu, waahi taoka or mahika kai are anticipated by the mining proposal. The proposal is considered to be consistent with these objectives and policies.

to mahika kai to Kai Tahu ki Otago. <u>Objective 5.3.5- Cultural Values</u> To recognise and provide for Kai Tahu ki Otago's spiritual beliefs, cultural traditions and practices in the management of the surface and margins of the District's water bodies.		
<u>4.3.1 Objective - Needs of the District's People and Communities</u> To recognise that communities need to provide for their social, economic and cultural wellbeing, and for their health and safety at the same time as ensuring environmental quality is maintained and enhanced. <u>4.3.2 Objective – Outstanding Natural Landscapes and Outstanding Natural Features, and Land in the Upper Manorburn/Lake Onslow Landscape Management Area</u> To protect the Districts outstanding natural landscapes and outstanding natural features, and land in the Upper Manorburn/Lake Onslow Landscape Management Area (including landforms) from the adverse effects of inappropriate subdivision, use and development. <u>4.3.3 Objective - Landscape and Amenity Values</u> To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural	<u>Policy 4.4.1 - Outstanding Natural Landscapes and Outstanding Natural Features and Land in the Upper Manorburn/Lake Onslow Landscape Management Area</u> To recognise the District's outstanding natural landscapes and outstanding natural features and land in the Upper Manorburn/Lake Onslow Landscape Management Area which: (a) Are unique to the district, region or New Zealand; or (b) Are representative of a particular landform or land cover occurring in the Central Otago District or of the collective characteristics and features which give the District it's particular character; or (c) Represent areas of cultural or historic significance in the district, region or New Zealand; or (d) Contain visually or scientifically outstanding geological features; or (e) Have characteristics of cultural, historical and spiritual value that are significant to Kai Tahu ki Otago; (f) Have high natural character values and high landscape quality that can be distinguished from the general landscapes of the Central Otago District and provide protection for them from inappropriate subdivision, use and development. <u>Policy 4.4.2 – Landscape and Amenity Values</u> To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through: (a) The design and location of structures and works, particularly in respect of the open natural character of hills and ranges,	The proposal has been considered mindful of the landscape values of the area. Whilst the Clutha River is not part of the outstanding natural landscape or outstanding natural feature, it is however significant in itself and contributes to the wider landscape. Landscape architect Mike Moore has assessed the extent of the river margin, and determined no works or activity will occur within the river margins. The proposed mining is temporary and will move through the site over the three year term of consent. There are no permanent structures, and the offices, fuel storage will be sited in locations not visible to private property owners. Once completed, the site will revert to the approved 8-lot residential lifestyle development which will then introduce permanent structures however these effects are already approved and unrelated to the proposed activity. The proposal is therefore considered to fit within the landscape and is consistent with these objectives and policies.

character and built environment values of the District's rural environment, and to maintain the open natural character of the hills and ranges. <u>Objective 5.3.1 – Amenity Values, Environmental Quality and Natural Character</u> To maintain and enhance the amenity values and environmental quality, and to preserve the natural character of the District's lakes and rivers and their margins.	skylines, prominent places and natural features, (b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties, (c) The ability to adequately dispose of effluent on site, (d) Controlling the generation of noise in back country areas, (e) The location of tree planting, particularly in respect of landscape values, natural features and ecological values, (f) Controlling the spread of wilding trees. (g) Encouraging the location and design of buildings to maintain the open natural character of hills and ranges without compromising the landscape and amenity values of prominent hillsides and terraces. (h) Strongly discouraging buildings in the Rural Resource Area of the Wooing Tree Overlay Area to ensure a vineyard or treed park-like character with an absence of built form.	
<u>Objective 4.3.4 Recreation Resources</u> To maintain and enhance the quality of the District's recreation resources and public access to those resources. <u>Objective 5.3.2 – Recreational Values</u> To maintain, where appropriate, the recreational values of the surface and margins of the District's water bodies. <u>4.3.9 Objective – Integrated, Comprehensive Mixed-Use Development</u> To recognise and provide for an appropriately located development which integrates farming, horticulture, recreational, visitor, residential and lifestyle development and supporting infrastructure in a sustainable manner, but avoids, remedies or mitigates potential adverse effects on:	<u>Policy 4.4.8 - Adverse Effects on the Amenity Values of Neighbouring Properties.</u> To ensure that the effects associated with some activities including (but not limited to): (a) Noise (including noise associated with traffic generation, night time operations), and vibration, (b) The generation of a high level of traffic, in particular heavy vehicles, (c) Glare, particularly from building finish, (d) A reduction in visual amenity due to excessive signage and the storage of goods or waste products on the site, (e) The generation of odour, dusts, wastes and hazardous substances, and (f) The use and/or storage of hazardous goods or substances do not significantly adversely affect the amenity values and privacy of neighbouring properties or the safe and efficient operation of the roading network. <u>Policy 4.4.9 - Effects of Rural Activities</u> To recognise that some rural activities, particularly those of a short duration or seasonal nature, often generate noise and other effects that can disturb neighbours by ensuring that new developments locating near such activities recognise and accept the prevailing environmental characteristics associated with production and other activities found in the Rural Resource Area.	The mining activity will introduce a discernible presence in the immediate area. This will be a temporary effect as mining progresses through the site. Crucially, mining will occur during normal 'working hours' and not on Sundays or Public Holidays. Once complete, the site will be developed with permanent effects associated with day to day residential activities. The effects of the entire proposal are considered to be consistent with these objectives and policies.

• landscape and amenity values of the rural environment; • natural and physical resources including soils, water and groundwater resources, and existing viticultural areas; • existing lifestyle amenities; • core infrastructural resources; • the functioning of urban areas. <u>Objective 5.3.3 - Public Access</u> To maintain and enhance, where appropriate, public access, to and along the surface and margins of the District's lakes and rivers. <u>Objective 5.3.4 - Safe and Efficient Navigation</u> To ensure that the safety and efficiency of navigation is maintained on the surface of the District's water bodies.	<u>Policy 4.4.15 - Conflict between Recreation Activities Cross Reference</u> To recognise and avoid, remedy or mitigate the potential conflict between different types of recreation activities that occur within the District, whilst encouraging multiple use of public open space and recreation areas wherever this is possible and practicable. <u>Policy 5.4.5 – Recreation</u> To recognise the importance of lakes and rivers and their margins to the existing and future recreational needs of the District's people and visitors while ensuring that adverse effects on amenity values and environmental quality are avoided, remedied or mitigated by such activities and that the safety of the recreational users is not compromised. <u>Policy 5.4.6 - Public Access</u> To ensure activities make adequate provision for public access except where a restriction is necessary: (i) To protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna; (ii) To protect Kai Tahu ki Otago's cultural values; (iii) To protect public health and safety; (iv) To provide an appropriate level of security for the continued operation of existing hydroelectric power stations; or (v) In other circumstances that justify the restriction notwithstanding the national importance of maintaining public access.	
<u>4.3.5 Objective - Water Resources</u> To maintain and enhance the quality of the District's water resources by avoiding, remedying or mitigating the adverse effects of land use activities adjacent to water bodies. <u>4.3.6 Objective - Margins of Water bodies</u> To preserve the natural character of the District's	<u>4.4.4 Policy - Riparian Margins</u> To manage the effects of the use, development or protection of land within riparian margins of water bodies (including wetlands) to ensure that the natural character and amenity of water bodies and their margins are preserved, by, as far as practicable: (a) Maintaining bank stability, (b) Protecting, and where appropriate, enhancing riparian and instream habitat quality, (c) Maintaining and enhancing riparian vegetation, (d) Maintaining water quality, (e) Maintaining and enhancing public access to and along the lakes and rivers,	The proposed mining has been assessed as not being within the river or river margin. Occasional water takes will be required, however this will comply with the ORC RP:W permitted activity rules. No effects on indigenous vegetation given the proposed setbacks from establishing kanuka, wetlands or wildlife. With respect to public access and navigation, the proposal will have no effects on the river margins or marginal strip.

water bodies and their margins.	(f) Reducing the incidence and severity of flooding where this is achievable, and (g) Maintaining and enhancing the safety and efficiency of navigation on the adjacent water body where this is relevant while recognising that some activities need to locate within riparian margins to operate efficiently. <u>4.4.7 Policy – Significant Indigenous Vegetation, Wetlands and Wildlife</u> To protect areas of: (a) Significant indigenous vegetation, (b) Significant habitats of indigenous fauna, (c) Significant wetlands, (d) Indigenous vegetation or habitats that support a significant indigenous fresh water fishery, and (e) Habitats of statutorily managed sports fish and game from the adverse effects of land use activities and subdivision and to promote and encourage, where practicable, the retention, enhancement and reinstatement of indigenous ecosystems within the District. <u>Policy 5.4.1 - Water Surface and Margin Activities</u> To manage the effects of activities (including the design, location and/or operation of structures) upon the water surface and margins to ensure that: (a) The safe and efficient navigation of any powered or non-powered craft using the water surface is not compromised; (b) Ecological values including significant indigenous vegetation and significant habitats of indigenous fauna and instream values of the water body are protected and where appropriate, enhanced; (c) The protection of amenity, recreational and landscape values in or near the water body is promoted or otherwise provided for; (d) Conflict with other resource users on the water surface and adjoining land, including the effects that noise and/or wave generation may have, are avoided, remedied or mitigated; (e) The quality of the water within the water body is maintained and/or enhanced; (f) The stability of the bed and bank of the water body is maintained and/or enhanced; (g) The stability of any structure located in, on or near the water body is maintained;	The proposal is therefore considered consistent with these objectives and policies.
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	(h) The severity and incidence of flooding is not exacerbated by the activity; (i) The safe and efficient operation of the adjacent road network is maintained and enhanced; (j) Public access (where appropriate) is provided for; (k) The spread of undesirable aquatic plants is avoided, remedied or mitigated; and (l) The integrity of Kai Tahu ki Otago's spiritual beliefs, cultural traditions and practices in respect of water resources is considered.	
<u>12.3.1 Objective</u> Safe and Efficient Rooding Network To promote the safe and efficient operation of the District's rooding network	<u>12.4.1 Policy</u> Parking, Loading and Manoeuvring To avoid, remedy or mitigate adverse effects on the safe and efficient operation of the rooding network by requiring: (a) Safe and efficient access points to the rooding network, and (b) Off-road loading and manoeuvring space and facilities, and (c) Off-street parking, where these are appropriate.	The relocation of the heavy equipment will have an effect on the rooding network. It will however be a temporary effect and will be managed using appropriate road control measures. Subject to appropriate mitigations, the proposal is considered consistent with this objective and policy.

Having regard to the relevant objectives and policies individually, and considering these holistically, the above assessment indicates that the application is consistent with those provisions set out in the Plan.

Partially Operative 2019 Regional Policy Statement and the Partially Operative Otago Regional Policy Statement 2021

Section 104(1)(b)(v) of the Act requires that any relevant regional policy statements be considered. The Partially Operative 2019 Regional Policy Statement for Otago (RPS) was reviewed in respect of this proposal and must be given effect to. The Partially Operative Otago Regional Policy Statement 2021 was also reviewed and whilst not operative must be given regard to. No policies specifically relevant to this proposal were identified.

Relevant to this application are the following objectives and policies for the 2019 RPS.

Objectives	Supporting Policies	Assessment
<u>Objective 2.1</u> The principles of Te Tiriti o Waitangi are taken into account in resource management processes and decisions	<u>Policy 2.1.2 Treaty principles</u> Ensure that local authorities exercise their functions and powers, by: a) Recognising Kāi Tahu's status as a Treaty partner; and b) Involving Kāi Tahu in resource management processes implementation; c) Taking into account Kāi Tahu values in resource management decision-making processes and implementation; d) Recognising and providing for the relationship of Kāi Tahu's culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taoka; e) Ensuring Kāi Tahu have the ability to: i. Identify their relationship with their ancestral lands, water, sites, wāhi tapu, and other taoka; ii. Determine how best to express that relationship;	The mining proposal has been cognisant of Manawhenua values and heritage both within the site. The mining activity will have no effects on the river, its margins or the values associated with them. As part of the consenting process the runaka whom have an interest in the Clutha River/ Mata-Au are able to participate and provide their commentary to the proposal. The application is considered to be consistent with this objective and these policies.

	f) Having particular regard to the exercise of kaitiakitaka; g) Ensuring that district and regional plans: - Give effect to the Ngāi Tahu Claims Settlement Act 1998; - Recognise and provide for statutory acknowledgement areas in Schedule 2; - Provide for other areas in Otago that are recognised as significant to Kāi Tahu; h) Taking into account iwi management plans.	
Objective 3.1 The values (including intrinsic values) of ecosystems and natural resources are recognised and maintained, or enhanced where degraded.	<u>Policy 3.1.1 Fresh water</u> Safeguard the life-supporting capacity of fresh water and manage fresh water to: - Maintain good quality water and enhance water quality where it is degraded, including for: - Important recreation values, including contact recreation; and, - Existing drinking and stock water supplies; - Maintain or enhance aquatic: - Ecosystem health; - Indigenous habitats; and, - Indigenous species and their migratory patterns. - Avoid aquifer compaction and seawater intrusion; - Maintain or enhance, as far as practicable: - Natural functioning of rivers, lakes, and wetlands, their riparian margins, and aquifers; - Coastal values supported by fresh water; - The habitat of trout and salmon unless detrimental to indigenous biological diversity; - Amenity and landscape values of rivers, lakes, and wetlands; - Control the adverse effects of pest species, prevent their introduction and reduce their spread; - Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion; and, - Avoid, remedy or mitigate adverse effects on existing infrastructure that is reliant on fresh water. <u>Policy 3.1.2 Beds of rivers, lakes, wetlands, and their margins</u> Manage the beds of rivers, lakes, wetlands, their margins, and riparian vegetation to: - Safeguard the life supporting capacity of fresh water; - Maintain good quality water, or enhance it where it has been degraded; - Maintain or enhance bank stability; - Maintain or enhance ecosystem health and indigenous biological diversity; - Maintain or enhance, as far as practicable: - Their natural functioning and character; and - Amenity values; - Control the adverse effects of pest species, prevent their introduction and reduce their spread; and, - Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion <u>Policy 3.1.11</u> Natural features, landscapes, and seascapes Recognise the values of natural features, landscapes and seascapes are derived from the biophysical, sensory and associative attributes in Schedule 3.	No effects on the river, its margins or water quality will occur. Mining will occur within the mine pond and water will be re-circulated. Water will 'go to ground' through the gravels and any sediments will be retained in the soil profile. The will be no effect on drinking water supplies, or ecosystems. Once mining is complete, the site will revert to the residential development approved by the previous subdivision consent. The application is considered to be consistent with this objective and these policies.

Objective 3.2 Otago's significant and highly-valued natural resources are identified and protected, or enhanced where degraded	<u>Policy 3.2.4 Managing outstanding natural features, landscapes and seascapes</u> Protect, enhance or restore outstanding natural features, landscapes and seascapes, by all of the following: a) In the coastal environment, avoiding adverse effects on the values (even if those values are not themselves outstanding) that contribute to the natural feature, landscape or seascape being outstanding; b) Beyond the coastal environment, maintaining the values (even if those values are not themselves outstanding) that contribute to the natural feature, landscape or seascape being outstanding; c) Avoiding, remedying or mitigating other adverse effects; d) Encouraging enhancement of those areas and values that contribute to the significance of the natural feature, landscape or seascape. <u>Policy 3.2.6 Managing highly valued natural features, landscapes and seascapes</u> Maintain or enhance highly valued natural features, landscapes and seascapes by all of the following: a) Avoiding significant adverse effects on those values that contribute to the high value of the natural feature, landscape or seascape; b) Avoiding, remedying or mitigating other adverse effects; c) Encouraging enhancement of those values that contribute to the high value of the natural feature, landscape or seascape. <u>Policy 3.2.14 Managing outstanding freshwater bodies</u> Protect outstanding freshwater bodies by all of the following: a) Maintaining the values that contribute to the water body being outstanding; b) Avoiding, remedying or mitigating other adverse effects on the water body; c) Controlling the adverse effects of pest species, preventing their introduction and reducing their spread; d) Encouraging enhancement of those values that contribute to the water body being outstanding.	Mining will occur within a rural farming context and over a three year period, and during typical working hours for activities in a rural zone. Effects will be temporary and then fully reinstated before being converted to the residential development. There will be no effects on the receiving water body. No parties are considered to be affected by the visual or audible effects on the landscape. The application is considered to be consistent with this objective and these policies.
Objective 5.1 Public access to areas of value to the community is maintained or enhanced. Objective 5.4 Adverse effects of using and enjoying Otago's natural and physical resources are minimised.	<u>Policy 5.1.1 Public access</u> Maintain or enhance public access to the natural environment, including to the coast, lakes, rivers and their margins and where possible areas of cultural or historic significance, unless restricting access is necessary for one or more of the following: a) Protecting public health and safety; b) Protecting the natural heritage and ecosystem values of sensitive natural areas or habitats; c) Protecting identified sites and values associated with historic heritage or cultural significance to Kāi Tahu; d) Ensuring a level of security consistent with the operational requirements of a lawfully established activity. <u>Policy 5.2.1 Recognising historic heritage</u> Recognise all the following elements as characteristic or important to Otago's historic heritage: a) Residential and commercial buildings; b) Māori cultural and historic heritage values;	With the exception of the occasional pump and soft-hose water pipe extending into the river for topping up the pond water, there will be no interaction from the mining activity on the river or the river margins. Access and navigation will be unhindered. The application is considered to be consistent with this objective and these policies.

	c) 19th and early 20th century pastoral sites; d) Early surveying, communications and transport, including roads, bridges and routes; e) Early industrial historic heritage, including mills and brickworks; f) Gold and other mining systems and settlements; g) Dredge and ship wrecks; h) Coastal historic heritage, particularly Kāi Tahu occupation sites and those associated with early European activity such as whaling; i) Memorials; j) Trees and vegetation.	
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The assessment of environmental effects has established that, subject to conditions, the extraction activity will not:

- have an adverse effect on water quality, aquatic ecosystems, amenity values, public access or heritage values
- will not threaten existing defences against water;
- will not have any adverse effects on the cultural or heritage values of the area,
- will not have an adverse effect on the landscape, and
- will provide for the economic well-being of the applicant and as a result the community by providing jobs.

Overall, the proposal is assessed as **consistent** with the provisions of the RPS.

Partially Operative Otago Regional Policy Statement 2021

The relevant provisions of the PORPS include:

MW-O1 – Principles of Te Tiriti o Waitangi

The principles of Te Tiriti o Waitangi are given effect in resource management processes and decisions, utilising a partnership approach between councils and Papatipu Rūnaka to ensure that what is valued by mana whenua is actively protected in the region.

MW-P2 – Treaty principles

Local authorities exercise their functions and powers in accordance with Treaty principles, by:

- (1) recognising the status of Kāi Tahu and facilitating Kāi Tahu involvement in decision making as a Treaty partner,
- (2) including Kāi Tahu in resource management processes and implementation to the extent desired by mana whenua,
- (3) recognising and providing for Kāi Tahu values and resource management issues, as identified by mana whenua, in resource management decision-making processes and plan implementation,
- (4) recognising and providing for the relationship of Kāi Tahu culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taoka by ensuring that Kāi Tahu have the ability to identify these relationships and determine how best to express them,
- (5) ensuring that regional and district plans recognise and provide for Kāi Tahu relationships with Statutory Acknowledgement Areas, tōpuni, nohoaka and customary fisheries identified in the NTCSA 1998, including by actively protecting the mauri of these areas,
- (6) having particular regard to the ability of Kāi Tahu to exercise kaitiakitaka,
- (7) actively pursuing opportunities for:
 - (a) delegation or transfer of functions to Kāi Tahu, and
 - (b) partnership or joint management arrangements, and
- (8) taking into account iwi management plans when making resource management decisions.

MW-P3 – Supporting Kāi Tahu well-being

The natural environment is managed to support Kāi Tahu well-being by:

- (1) protecting customary uses, Kāi Tahu values and relationships of Kāi Tahu to resources and areas of significance, and restoring these uses and values where they have been degraded by human activities,
- (2) safeguarding the mauri and life-supporting capacity of natural resources, and
- (3) working with Kāi Tahu to incorporate mātauraka in resource management.

IM-O2 – Ki uta ki tai

Natural and physical resource management and decision making in Otago embraces ki uta ki tai, recognising that the environment is an interconnected system, which depends on its connections to flourish, and must be considered as an interdependent whole.

IM-P2 – Decision priorities

Unless expressly stated otherwise, all decision making under this RPS shall:

1. first, secure the long-term life-supporting capacity and mauri of the natural environment,
2. secondly, promote the health needs of people, and
3. thirdly, safeguard the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

IM-P4 – Setting a strategic approach to ecosystem health

Healthy ecosystems and ecosystem services are achieved through a planning framework that:

- (1) protects their intrinsic values,
- (2) takes a long-term strategic approach that recognises changing environments,
- (3) recognises and provides for ecosystem complexity and interconnections, and (4) anticipates, or responds swiftly to, changes in activities, pressures, and trends.

LF-WAI-O1 – Te Mana o te Wai

The mauri of Otago's water bodies and their health and wellbeing is protected, and restored where it is degraded, and the management of land and water recognises and reflects that:

1. water is the foundation and source of all life
2. there is an integral kinship relationship between water and Kāi Tahu whānui, and this relationship endures through time, connecting past, present and future,
3. each water body has a unique whakapapa and characteristics,
4. water and land have a connectedness that supports and perpetuates life, and
5. Kāi Tahu exercise rakatirataka, manaakitaka and their kaitiakitaka duty of care and attention over wai and all the life it supports.

LF-WAI-P1 – Prioritisation

In all management of fresh water in Otago, prioritise:

- (1) first, the health and well-being of water bodies and freshwater ecosystems, te hauora te wai and te hauora o te taiao, and the exercise of mana whenua to uphold these,
- (2) second, the health and well-being needs of people, te hauora o te tangata; interacting with water through ingestion (such as drinking water and consuming harvested resources) and immersive activities (such as harvesting resources and bathing), and
- (3) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

The application will not impact on water quantity. The discharge component will be solely into the mine pond that has no immediate hydraulic connection to the river body. There will be no effects on the river or its values. This application involves an activity that supports the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. To this extent, it sits third in this priority list in LF-WAI-P1. Nevertheless, since the proposal is not likely to result in any effects on the health and well-being of the resource, nor on the health needs of people, it is considered consistent with these policies.

LF-WAI-P2 – Mana whakahaere

Recognise and give practical effect to Kāi Tahu rakatirataka in respect of fresh water by:

- (1) facilitating partnership with, and the active involvement of, mana whenua in freshwater management and decision-making processes,
- (2) sustaining the environmental, social, cultural and economic relationships of Kāi Tahu with water bodies,
- (3) providing for a range of customary uses, including mahika kai, specific to each water body, and
- (4) incorporating mātauraka into decision making, management and monitoring processes.

Aukaha on behalf of the local Rūnaka will be given the opportunity to engage in the early process of this application. Therefore, we submit the proposal is consistent with the above policy.

LF-WAI-P3 – Integrated management/ki uta ki tai

Manage the use of freshwater and land in accordance with tikanga and kawa, using an integrated approach that:

1. recognises and sustains the connections and interactions between water bodies (large and small, surface and ground, fresh and coastal, permanently flowing, intermittent and ephemeral),
2. sustains and, wherever possible, restores the connections and interactions between land and water, from the mountains to the sea,
3. sustains and, wherever possible, restores the habitats of mahika kai and indigenous species, including taoka species associated with the water body,
4. manages the effects of the use and development of land to maintain or enhance the health and well-being of freshwater and coastal water,
5. encourages the coordination and sequencing of regional or urban growth to ensure it is sustainable,
6. has regard to foreseeable climate change risks, and
7. has regard to cumulative effects and the need to apply a precautionary approach where there is limited available information or uncertainty about potential adverse effects.

LF-WAI-P4 – Giving effect to Te Mana o te Wai

All persons exercising functions and powers under this regional policy statement and all persons who use, develop or protect resources to which this regional policy statement applies must recognise that LF-WAI-O1, LF-WAI-P1, LF-WAI-P2 and LF-WAI-P3 are fundamental to upholding Te Mana o te Wai, and must be given effect to when making decisions affecting freshwater, including when interpreting and applying the provisions of the LF chapter.

This application involves an activity that supports the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. To this extent, it sits third in this priority list. Nevertheless, since the proposal does not result in any effects on the health and well-being of the resource, nor on the health needs of people and is considered consistent with this policy. The proposed activity involves a (generally) non-consumptive permitted water take and therefore water will be used efficiently and sustainably. The health and wellbeing of the Clutha River/Mata-Au is not degraded by the proposed activity. The application is considered to be generally consistent with LF-WAI-P3 and LF-WAI-P4.

LF-VM-O2 – Clutha Mata-au FMU vision

In the Clutha Mata-au FMU:

- (1) management of the FMU recognises that:
 - (a) the Clutha River / Mata-au is a single connected system ki uta ki tai, and
 - (b) the source of the wai is pure, coming directly from Tawhirimatea to the top of the mauka and into the awa,
- (2) freshwater is managed in accordance with the LF-WAI objectives and policies,
- (3) the ongoing relationship of Kāi Tahu with wāhi tūpuna is sustained,

- (4) water bodies support thriving mahika kai and Kāi Tahu whānui have access to mahika kai,
- (5) indigenous species migrate easily and as naturally as possible along and within the river system,
- (6) the national significance of the Clutha hydro-electricity generation scheme is recognised,
- (7) in addition to (1) to (6) above:
 - (a) in the Upper Lakes rohe, the high quality waters of the lakes and their tributaries are protected, recognising the significance of the purity of these waters to Kāi Tahu and to the wider community,
 - (b) in the Dunstan, Manuherekia and Roxburgh rohe:
 - (i) flows in water bodies sustain and, wherever possible, restore the natural form and function of main stems and tributaries to support Kāi Tahu values and practices, and
 - (ii) innovative and sustainable land and water management practices support food production in the area and reduce discharges of nutrients and other contaminants to water bodies so that they are safe for human contact, and
 - (iii) sustainable abstraction occurs from main stems or groundwater in preference to tributaries,
 - (c) in the Lower Clutha rohe:
 - (i) there is no further modification of the shape and behaviour of the water bodies and opportunities to restore the natural form and function of water bodies are promoted wherever possible,
 - (ii) the ecosystem connections between freshwater, wetlands and the coastal environment are preserved and, wherever possible, restored,
 - (iii) land management practices reduce discharges of nutrients and other contaminants to water bodies so that they are safe for human contact, and
 - (iv) there are no direct discharges of wastewater to water bodies, and
- (8) the outcomes sought in (7) are to be achieved within the following timeframes:
 - (a) by 2030 in the Upper Lakes rohe,
 - (b) by 2045 in the Dunstan, Roxburgh and Lower Clutha rohe, and (c) by 2050 in the Manuherekia rohe.

The Applicant will engage with Aukaha on behalf of Rūnaka. It is assessed that any ecological adverse effects on the waterbody will be de minimus. The application is consistent with this policy.

LF-VM-O7 – Integrated management

Land and water management apply the ethic of ki uta ki tai and are managed as integrated natural resources, recognising the connections and interactions between freshwater, land and the coastal environment, and between surface water, groundwater and coastal water.

LF-FW-O8 – Freshwater

In Otago's water bodies and their catchments:

- (1) the health of the wai supports the health of the people and thriving mahika kai,
- (2) water flow is continuous throughout the whole system,
- (3) the interconnection of freshwater (including groundwater) and coastal waters is recognised,
- (4) native fish can migrate easily and as naturally as possible and taoka species and their habitats are protected, and
- (5) the significant and outstanding values of Otago's outstanding water bodies are identified and protected.

LF-FW-O10 – Natural character

The natural character of wetlands, lakes and rivers and their margins is preserved and protected from inappropriate subdivision, use and development.

The natural character of the Clutha and the surrounding area will not be affected from the proposed activity. There is no effects on the river, and Landscape Architect Mike Moore confirms the activity will not extend into the river margins.

LF-FW-P12 – Protecting outstanding water bodies

The significant and outstanding values of outstanding water bodies are:

- (1) identified in the relevant regional and district plans, and
- (2) protected by avoiding adverse effects on those values.

The Clutha River contains many values, however none will be affected by this application and is considered consistent with this policy.

LF-FW-P13 – Preserving natural character

Preserve the natural character of lakes and rivers and their beds and margins by:

- (1) avoiding the loss of values or extent of a river, unless:
 - (a) there is a functional need for the activity in that location, and
 - (b) the effects of the activity are managed by applying:
 - (i) for effects on indigenous biodiversity, either ECO-P3 or ECO-P6 (whichever is applicable), and
 - (ii) for other effects, the effects management hierarchy,
- (2) not granting resource consent for activities in (1) unless Otago Regional Council is satisfied that:
 - (a) the application demonstrates how each step of the effects management hierarchies in (1)(b) will be applied to the loss of values or extent of the river, and
 - (b) any consent is granted subject to conditions that apply the effects management hierarchies in (1)(b),
- (3) establishing environmental flow and level regimes and water quality standards that support the health and well-being of the water body,
- (4) wherever possible, sustaining the form and function of a water body that reflects its natural behaviours,
- (5) recognising and implementing the restrictions in Water Conservation Orders,
- (6) preventing the impounding or control of the level of Lake Wanaka,
- (7) preventing modification that would reduce the braided character of a river, and
- (8) controlling the use of water and land that would adversely affect the natural character of the water body.

LF-FW-P14 – Restoring natural character

Where the natural character of lakes and rivers and their margins has been reduced or lost, promote actions that:

- (1) restore a form and function that reflect the natural behaviours of the water body,
- (2) improve water quality or quantity where it is degraded,
- (3) increase the presence, resilience and abundance of indigenous flora and fauna, including by providing for fish passage within river systems,
- (4) improve water body margins by naturalising bank contours and establishing indigenous vegetation and habitat, and
- (5) restore water pathways and natural connectivity between water systems.

Any adverse effects on the waterbody have been assessed as de minimus. Although the proposed activity will alter the natural character of the rural land adjacent to the Clutha River/Mata-Au it will nonetheless have no interaction with the river or its values. Any effects will be temporary and less than minor. On that basis, the application is consistent with this policy.

Overall, the proposed activities associated with the mining including the water take and discharge to water are assessed as consistent with the policies within the Proposed Otago Regional Policy Statement.

Other Planning Instruments

Kai Tahu Ki Otago Natural Resource Management Plan 2005

The Natural Resource Management Plan 2005 has been reviewed in respect of this application. The following relevant issues in respect of proposal are identified:

- Cumulative effects of extraction activities in the Clutha/Mata-au.
- Effects on aquatic ecosystems.

The above issues are sought to be managed through the following policies:

To require applications to include information on the following:

- cumulative effects
- effects on aquatic ecosystems
- effects on indigenous fisheries
- proposed timing of works, and
- effects on cultural values of Kā Papatipu Rūnaka

In this instance, it is respectfully assessed that:

- The activity will be land based, entirely within private property;
- The activity will be outside the river margin;
- There will be no effects on the river, or its margin, or the values associated with them;
- There will be no discharge to water;
- There are no known Māori sites in the immediate area;
- An accidental discovery protocol is proposed to address any unforeseen discovery;
- The activity will occur for only three years before the site is converted into eight rural lifestyle properties.

Whilst Rūnaka are best placed to determine if an activity is consistent with the policies of their plan, it is the applicant's intention that they be as consistent with the plan as possible and are willing to discuss any additional matters of concern with the Rūnaka.

Offsetting or compensation measures

In accordance with Section 104(1)(ab) of the Resource Management Act 1991, there are no offsetting or compensation measures offered nor are any deemed necessary.

Notification

With regard to notification:

- The applicant does not request notification. It is accepted the site sits within a statutory acknowledgement area, it nonetheless will be consistent with Te Mana o te Wai and will not affect the Mauri of the waterbody. Iwi and Runanga who consider the Clutha River/ Mata-Au as part of their rohe will be able to participate in the consenting process.
- The proposal does not relate to the exchange of reserves land and does not involve an affected protected customary rights group.
- Given the context of the receiving environment and the land use within the landscape, there are no rules in the Plan which require notification.
- It is considered that there are no special circumstances relating to the application.
- It is assessed that the effects of the proposal on the wider environment are less than minor.

Conclusion

Resource consent is sought to carry out a small scale commercial mining venture on a farm zoned Rural General in the Central Otago District Plan. The proposed consent term sought is three years.

The application includes an assessment of the likely effects of the proposal on the environment. Overall, it is considered that these effects will be no more than minor. The reasons for the proposed consent term are:

- The effects of the proposal are well understood and, provided consent conditions are adhered to, will be unlikely to result in adverse effects; and
- Section 128 of the RMA allows for conditions of resource consents to be reviewed, it is considered any issues will be able to be dealt with through this process.

The proposal is consistent with the purpose and principles of the Resource Management Act (1991), and the relevant statutory documents. The proposal is consistent with CODC District Plan, the National Policy Statement for Freshwater Management 2014, the Otago Regional Policy Statements.

Overall, given the nature of the activities proposed, the extent of temporary effects, proposed 3-year term of consent is in my opinion subject to conditions, any adverse environmental effects will be avoided, or mitigated.

I respectfully seek consent be approved on a without notification basis.

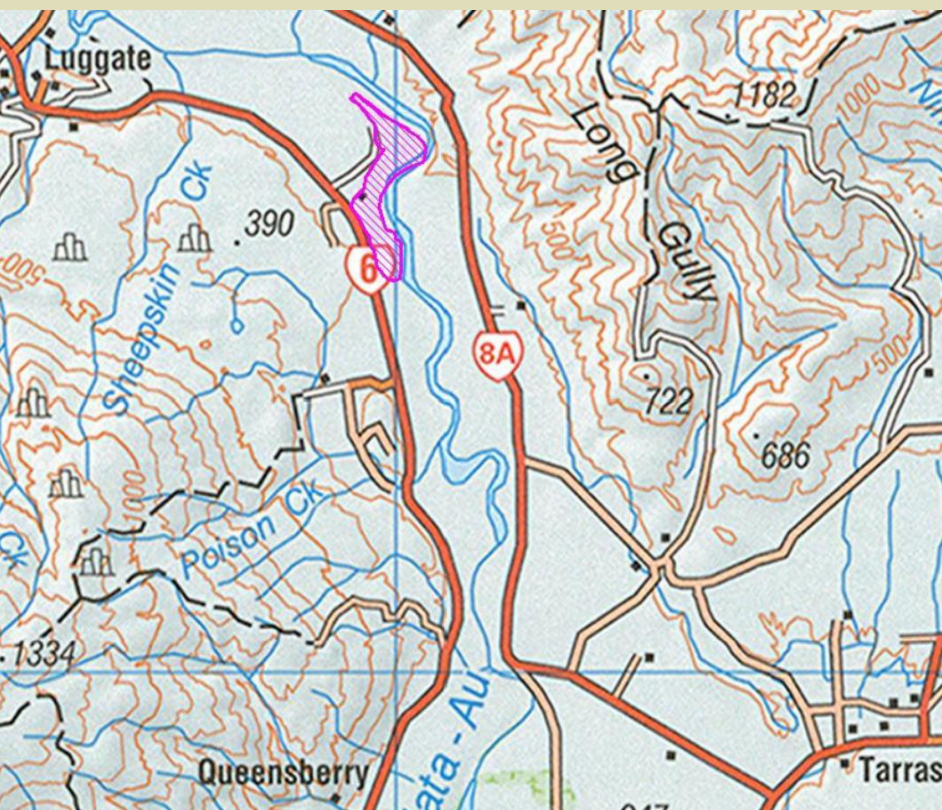
Yours faithfully
Terramark Ltd

A handwritten signature in black ink, appearing to read 'Darryl Sycamore', with a stylized flourish at the end.

Darryl Sycamore
Resource Management Planner

March
2025

Economic impacts of the Queensberry Gold Project



Report prepared for Awa Koura Mining
Limited

Prepared by: Benje Patterson
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March 2025

Version history

Report issued 28 March 2025

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1. Contents

- 2. Executive summary.....2
- 3. Background to the Project3
- 4. Direct economic impacts of the Project5
- 5. Employment directly supported by the Project.....7
- 6. Downstream effects in the rest of the local economy.....8
- 7. Concluding remarks11

2. Executive summary

This report quantifies the potential economic impacts of the Queensberry Gold Project (the Project). Awa Koura Mining Limited is seeking a Mining Permit Application (MPA) to extract alluvial gold at Queensberry on the Clutha Terraces adjacent to the Upper Clutha River/Mata-Au in Central Otago District. The project location between Cromwell and Wānaka means that the core area of economic influence is also likely to stretch beyond Central Otago District and spillover into neighbouring Queenstown Lakes District (which includes Wānaka and Queenstown).

This report shows that the Queensberry Gold Project is expected to directly add an average of \$2.57 million of GDP a year to the local economy once the mine is operational and employ an average of 4 staff. In addition to these direct effects, there could also be up to another \$0.53 million of GDP a year and up to 3.3 further jobs supported by the multiplier effects of the mine's procurement and providing goods and services to meet the needs of workers.

2.1. Key findings

- It is estimated that the Project will directly contribute an average of \$2.57 million each year to the local economy once the mine is operational, with a cumulative total direct GDP effect of \$26.46 million over the 10-year mining permit (including capital investment and start-up costs).
- On top of the \$2.57 million of direct GDP effects each year, there is the potential for a further \$0.53 million of GDP from economic multiplier effects, comprising:
 - Indirect GDP of \$0.29 million annually supported with suppliers in Otago from procurement by the mine.
 - Induced GDP of \$0.24 million of GDP annually in Otago supported by spending by workers to service their lifestyles (e.g. on retail, medical, education, personal services, etc).
- The Project will directly support an average 4 staff:
 - On top of the jobs directly supported by the Project's mining operations, there are also employment multiplier effects that could accrue. It is estimated that up to 3.3 further jobs could be supported by the indirect effects of the mine's procurement and the induced effects of providing goods and services to meet the needs of workers.
- Jobs will be highly productive. The Project is estimated to contribute \$643,493 of GDP per worker on average each year. GDP per worker for the Project is 4.8 times the current average productivity across the local Inland Otago (Central Otago and Queenstown Lakes) economy of \$133,811 of GDP per job in 2024.

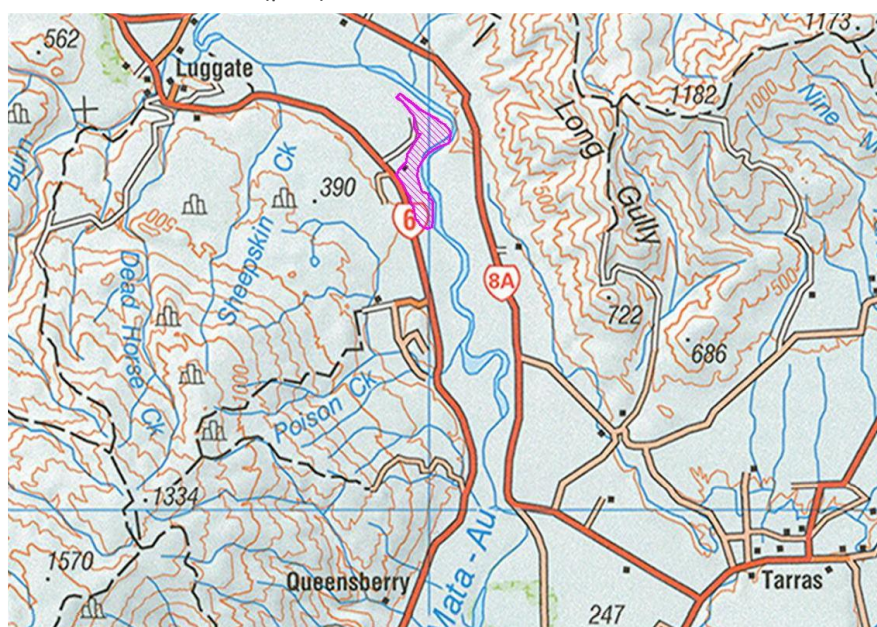
3. Background to the Project

This section provides background context to the Queensberry Gold Project (the Project), which Awa Koura Mining Limited is applying for a mining permit to develop. This context includes the location of the Project and some of the core assumptions that have informed the economic impact analysis.

3.1. Project description

Awa Koura Mining Limited is proposing to establish the Queensberry Gold Project (the Project), which is seeking to extract alluvial gold at Queensberry on the Clutha Terraces adjacent to the Upper Clutha River/Mata-Au in Central Otago District. The project site is located approximately 5km southeast of Luggate, or just over 30km north of Cromwell. The MPA area covers 103.7 hectares, although it is anticipated that the maximum disturbance footprint will be 80 hectares based on allowing for infrastructure within the MPA area and a buffer along the Clutha River.

Figure 1 – Location of the MPA area (pink)



The MPA area is known locally as Sandy Point. Access to the area is via SH6 and smaller roads, and farm tracks. Most of the land within the MPA is owned by a private company (with whom the Applicant has an access arrangement) and the rest is administered by the Department of Conservation (DOC), part as the Autaia Scenic Reserve and part is the Clutha River Marginal Strip.

3.2. Core project assumptions

Economic modelling within this report has relied on financial and operational data provided by the applicant (Awa Koura Mining Limited) as part of its MPA (released in February 2025). Project assumptions from the applicant have been supplemented with other economic modelling inputs, primarily drawn from Statistics New Zealand and Infometrics (New Zealand's leading regional economic data provider).

Summary figures for the Project are in Table 1. Economic and employment modelling in this report (in Sections 4 and 5) has relied on more detailed line-by-line inputs behind these headlines.

Table 1

Queensberry Gold Project - key production, revenue, and spending highlights	
<i>Calculated with data from the MPA of Awa Koura Mining Ltd (February 2025), 10-year time horizon</i>	
Production highlights	Total over 10 years
Gold production (total)	6,300 ounces
Mining term	10 years
Gold price (\$/oz)	\$4,500 ¹
Revenue and spending highlights	
Gold revenue	\$28.35 million
Wages	\$2.80 million
Government royalties	\$0.28 million
Landowner royalties	\$2.84 million
Other operating expenditure	\$4.00 million
<i>Total operating expenditure (OPEX)</i>	<i>\$9.92 million</i>
<i>Capital expenditure and one-off start-up costs (CAPEX)</i>	<i>\$2.21 million</i>

Project revenue is expected to be \$28.35 million, with operating (including royalties), capital, and one-off costs of \$12.13 million over a 10-year period.

3.3. Area of economic influence

The Project is 5km southeast of Luggate, and within 30-60 minutes' drive of other surrounding towns, such as Cromwell, Wānaka, Queenstown, and Alexandra. These towns sit at the heart of an area defined in this report as Inland Otago, which encompasses Queenstown Lakes District and Central Otago District.

It is assumed that workers associated with the Project (estimated in Section 5) will generally live within Inland Otago (Queenstown Lakes and Central Otago).

Figure 2 – Map showing Inland Otago (Queenstown Lakes District and Central Otago District)



With respect to procurement of goods (materials, plant and equipment) and services for the Project, it is likely the area of influence will extend into the rest of Otago, while some further procurement will also occur in other parts of New Zealand and offshore. Long-term development of local capacity, especially as there are other mining projects being proposed in the local area, could potentially lift the share of economic benefits generated locally.

¹ This \$4,500 gold price is consistent with a spot price of USD2,700 and a NZD:USD exchange rate of 0.60, which is conservative against current spot prices in gold and currency markets, and is consistent with assumptions used by sharemarket-listed goldminers (e.g. See Santana's "Bendigo-Ophir Gold Project – Pre-Feasibility Study" that was released by Santana to the Australian Stock Exchange (ASX) on 15 November 2024).

4. Direct economic impacts of the Project

This section assesses the direct economic impacts of the Project, including impacts related to mining operations, as well as value added from capital investment and other one-off startup costs.

4.1. Direct economic impacts (measured by GDP)

Direct economic impacts have been measured by GDP. Using GDP is appropriate because GDP is New Zealand's official measure of economic growth². GDP is the economics equivalent of an accounting profit. The key difference between the two is that economic profits (GDP) consider the value added widely across the economy for both labour (workers) and capital (financial, physical assets, intangible) before tax, while accounting profits only focus on returns to the owner of the business in question.

At an individual business level, the direct contribution of a business's operational activities on regional GDP can be estimated by summing EBITDA (earnings before interest, taxation, depreciation, and amortisation) with wages and salaries³. In the case of capital investment, such as investment to develop mining infrastructure and processing capacity, a share of this spending also directly contributes to GDP⁴.

It is estimated that the total direct effects of the Queensberry Gold Project to the Otago economy will be a cumulative total of \$26.46 million of GDP across the 10-year mining permit period. On average each year, once operational mining has begun, the Queensberry Gold Project is projected to contribute \$2.57 million of GDP per annum to the local economy (see Table 2).

Most GDP effects occur once the mine is operational and producing gold – over the 10-year mining period, there is expected to be \$25.74 million of GDP directly generated by mining operations.

To enable this GDP from mining operations to occur, there is expected to be \$2.21 million of capital investment and other one-off start-up costs. These upfront costs are a necessary enabler to unlock economic value added by operational mining activities, however, these one-off costs themselves also add value directly to the economy. Data from Infometrics shows that for every \$1 of capital investment and start-up costs, there is \$0.32 of economic value added (GDP) through additional demand within the infrastructure, planning, and engineering sector.

² According to [Statistics New Zealand](#). Gross Domestic Product June 2024 release.

³ Estimates of EBITDA and wages and salaries were calculated from financial and operational data provided by the applicant (Awa Koura Mining Limited) as part of its MPA (released in February 2025). In addition to incorporating EBITDA and wages and salaries into operational GDP estimates, it was also necessary to account for royalty payments that Awa Koura Mining Limited will make to the Crown and land owners – Crown royalties were added directly back in (as they are implicitly a tax), while privately-paid royalties were apportioned into GDP using a value-added ratio (GDP to gross output ratio) for property owners provided by Infometrics. The use of Infometrics value-added ratios ensures consistency with other economic datasets widely used to inform economic development analysis in Otago – Central Otago District Council, Queenstown Lakes District Council, and Otago Regional Council all subscribe to economic profiles of their jurisdictions which they make publicly available (these are available here: [Central Otago](#), [Queenstown Lakes](#), and [Otago](#)).

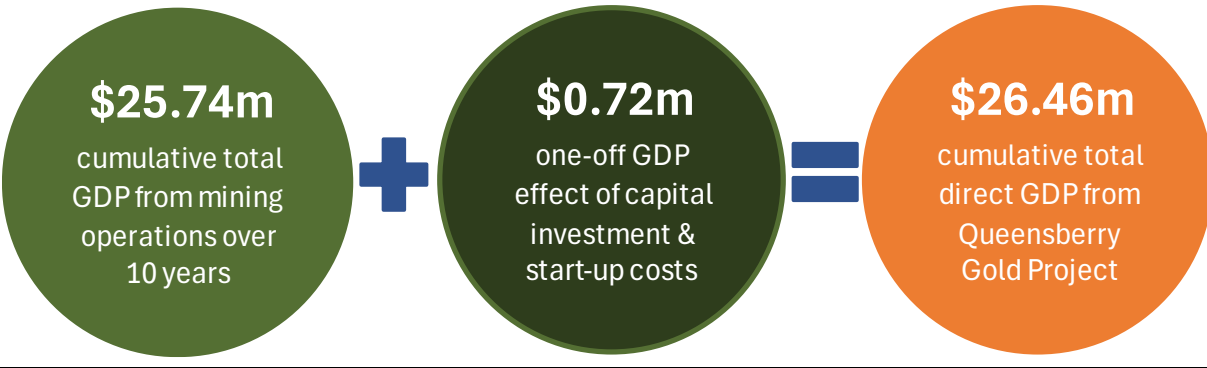
⁴ Capital investment is a necessary enabler for a business to begin its operations, so in a sense GDP from the business's operations already captures an ongoing benefit from the capital investment. But in addition to this enabling role, capital investment itself also directly generates economic activity because the investment stimulates demand as it occurs. Expected capital investment and other one-off startup costs have been apportioned into GDP using value add ratios for heavy and civil engineering for Otago, provided by Infometrics.

Given the \$2.21 million of capital investment and start-up costs, this means that GDP generated from planning and building processing capacity directly adds a further \$0.72 million of GDP, in addition to the \$25.74 million of operational mining GDP that the investment directly enables.

Table 2

Queensberry Gold Project estimated direct contribution of GDP to Otago economy			
GDP in \$ million, real 2025 pricing, author calculations from Awa Koura Mining Ltd data & Infometrics			
Type	GDP from operations	GDP from capital & start-up costs	Total Direct GDP
One-off/start-up		\$0.72m	
Annual average (pa)	\$2.57m		
Mining period (years)	10	one-off	
Total (10-year period)	\$25.74m	\$0.72m	\$26.46m

Figure 3 – Cumulative total GDP effects from Queensberry Gold Project over 10-year mining permit



5. Employment directly supported by the Project

This section introduces the potential employment directly associated with the Project. Employment is looked at from the perspective of the number of workers needed to support operations during the mine's production years.

5.1. Direct employment effects

Awa Koura Mining Limited anticipates that 4 staff will be required to operate the Queensberry Gold Project.

Over the 10-year mining permit period, it is estimated that a total of \$2.80 million of wages will be paid to staff at the Queensberry Gold Project.

Average annual wages for each worker directly associated with the Queensberry Gold Project are expected to be at least \$70,000 per annum.

Figure 4



This estimated average wage associated with the Queensberry Gold Project compares favourably to the current average wage in Central Otago District (\$66,867) and Queenstown Lakes (\$69,788)⁵.

⁵ Source: Infometrics Regional Economic Profile, available here: <https://rep.infometrics.co.nz/central-otago-district/income-and-housing/earnings?compare=queenstown-lakes-district>

6. Downstream effects in the rest of the local economy

This section provides benchmarking of the Project against the rest of the local economy. The idea is to give some perspective for how impactful the additional GDP and employment from the mining project will potentially be. Alongside the direct effects of the project estimated in the previous sections, this section also introduces the flow-on effects that occur downstream in other industries as a result money recirculating locally due to procurement by the mine and spending of wages by staff.

6.1. Potential additional multiplier effects on local economy

The Project is projected to directly generate an average of \$2.57 million of GDP per annum once it is operational. Given that the Inland Otago economy was estimated to produce \$6.6 billion of GDP in 2024⁶, this suggests the Queensberry Gold Project would directly contribute the equivalent of 0.03% of Inland Otago's current GDP each year.

Alongside the GDP directly generated by the Project's mining operations, there are also additional economic multiplier effects that will accrue. These multiplier effects include:

- Indirect economic multiplier effects which occur because of the Project's procurement of goods and services from other businesses.
- Induced economic multiplier effects which occur because direct and indirect workers will need to be provided with goods and services to support their lifestyles (e.g. supermarkets, medical, education, personal services, etc).

Table 3 below provides estimates of the potential multiplier (indirect and induced) GDP effects of the Queensberry Project on other industries across Otago. This calculation has been informed using insights from Infometrics which suggest that:

- The indirect value add in mining in Otago from Infometrics at present is 11.3% of the initial direct GDP effect.
- The induced GDP effects from mining in Otago typically totals about 8.5% of the initial direct and indirect GDP effects.

Table 3

Potential total GDP effects from Queensberry across direct, indirect, and induced channels	
<i>Total GDP effect from the Queensberry Mining Project, author calculations with Infometrics data</i>	
	GDP (average year once operational, \$m)
Direct GDP	\$2.57m
Indirect GDP	\$0.29m
Induced GDP	\$0.24m
Total GDP effect (direct + indirect + induced)	\$3.10m

These additional indirect and induced multiplier effects should be taken as a theoretical maximum and achieving them will be reliant on capacity within other industries that support the mine. Given the relatively small scale of the Queensberry Gold Project compared to the rest of the Inland Otago economy, this capacity should be easier to come by compared to much larger projects.

⁶ Source: Calculations from Infometrics Economic Profiles of [Central Otago](#) and [Queenstown Lakes](#).

In addition to the \$2.57 million of direct GDP each year, a further \$0.29 million of indirect GDP through local supplier spending could potentially be supported by the Project, as well as \$0.24 million of GDP induced annually because direct and indirect Queensberry Gold Project workers will need access to goods and services to support their lifestyles (e.g. retail, medical, education, personal services, etc).

Adding the indirect and induced GDP multiplier effects together with direct GDP from the mine suggests that the total GDP effect of the Project could be \$3.10 million per annum to the Otago economy.

6.2. Potential additional multiplier effects on local employment

The Queensberry Gold Project is expected to directly employ 4 staff. Given that the Inland Otago economy was estimated to have 49,510 filled jobs in 2024, this suggests the Queensberry Gold Project would directly contribute the equivalent of 0.01% of Inland Otago's current employment each year.

The average proportion of Inland Otago's current employment directly supported by the Project (0.01% of Inland Otago's jobs) is smaller than the mine's direct contribution to total Inland Otago GDP (equivalent to 0.03% of Inland Otago's GDP). This is because gold mining has very high levels of productivity and so generates a much higher-than-average amount of economic activity for each staff member. In the next section (Section 6.3) we will consider how the productivity of the Project compares to the rest of the economy.

Alongside the employment directly generated by the Project's mining operations, there are also additional employment multiplier effects that will accrue. These multiplier effects (highlighted in Table 4) include:

- Indirect multiplier effects on employment which occur because of the Project's procurement of goods and services from other businesses and can be calculated in a similar manner to the indirect GDP effects calculated in Section 6.1.
- Induced multiplier effects on employment which occur because direct and indirect workers will need to be provided with goods and services to support their lifestyles (e.g. supermarkets, medical, education, personal services, etc) and can be calculated in a similar manner to the induced GDP effects calculated in Section 6.1.

Table 4 below provides estimates of the potential multiplier (indirect and induced) employment effects of the Project on other industries across Otago. These calculations have been informed using insights from Infometrics which suggest that:

- The additional indirect employment effect mining within the Otago economy will be around 35.6% of the initial direct employment effect. The indirect employment effects are relatively higher than the indirect GDP effects in Section 6.1 because many of the businesses in the rest of the economy supplying the Project will generate much lower levels of GDP per worker than a gold mine.
- The induced employment effects from mining in Otago typically also total about 35.6% of the initial direct and indirect employment effects.

As with indirect GDP, these additional indirect and induced employment effects should be taken as a theoretical maximum, assuming that suppliers lift their own capacity to meet additional demand.

In addition to the 4 direct jobs, another 1.4 indirect jobs with suppliers could potentially be supported by the Project, as well as a further 1.9 jobs induced because direct and indirect Queensberry Gold Project workers will need access to goods and services to support their lifestyles (e.g. retail, medical, education, personal services, etc).

Adding the indirect and induced employment multiplier effects together with direct employment at the mine suggests that the total employment effect of the Project could be 7.3 jobs.

Table 4

Potential total employment effects of Queensberry across direct, indirect, & induced channels	
<i>Total employment effect from the Queensberry Mining Project, calculated with Infometrics data</i>	
	Jobs (average year)
Direct employment	4.0
Indirect employment	1.4
Induced employment	1.9
Total employment effect (direct + indirect + induced)	7.3

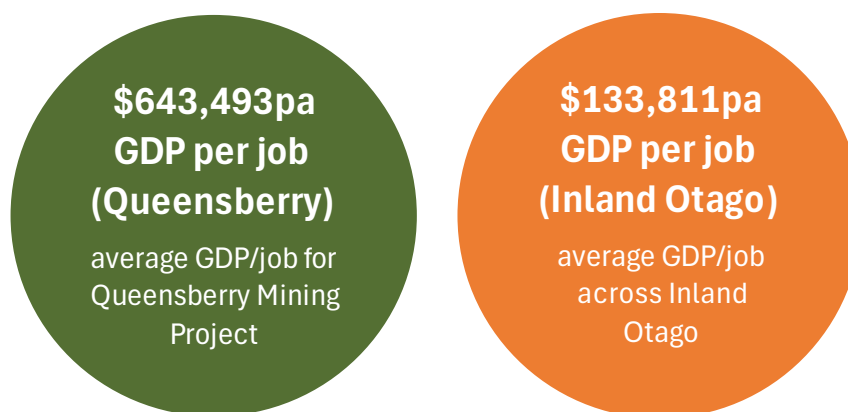
6.3. Productivity compared to other industries

Productivity is a measure of how efficiently economic activity is generated. There are many ways to measure productivity – but due to data availability the most common measures of productivity usually centre around comparing how much GDP an economy generates for each worker. Measuring productivity this way essentially tells us how effective an area is at turning the work of its people into income. If we have higher productivity, then there are opportunities for higher-paying employment.

The Project is estimated to on average contribute \$643,493 of GDP per worker each year. GDP per worker for the Project is 4.8 times the average productivity across Inland Otago of \$133,811 of GDP per job in 2024⁷.

Capital-intensive industries like mining often contribute large amounts of economic activity for each worker, which is not a surprise given workers in a mining environment are operating expensive machinery that can excavate and process large volumes of material.

Figure 5



⁷ Source: Calculations from Infometrics Economic Profiles of [Central Otago](#) and [Queenstown Lakes](#).

7. Concluding remarks

This report has highlighted the economic impacts of the Queensberry Gold Project. It is estimated that the Project will directly contribute an average \$2.57 million each year to the Inland Otago economy once the mine is operational, with a cumulative total direct GDP effect of \$26.46 million over the 10-year mining permit (including capital investment and start-up costs).

On top of the \$2.57 million of direct GDP effects each year, there is the potential for a further \$0.29 million of indirect GDP supported with suppliers in Otago from procurement by the mine, as well as another \$0.24 million of GDP induced annually in Otago from spending by workers to support their lifestyles (e.g. on retail, medical, education, personal services, etc).

The Project will support an average of 4 staff a year across the Project duration. There could also be up to 3.3 further jobs supported by the indirect effects of the mine's procurement and the induced effects providing goods and services to meet the needs of workers.

These jobs will be highly productive. The Project is estimated to contribute \$643,493 of GDP per worker on average each year. GDP per worker for the Project is 4.8 times the current average productivity across Inland Otago of \$133,811 of GDP per job.



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R.W. Muir
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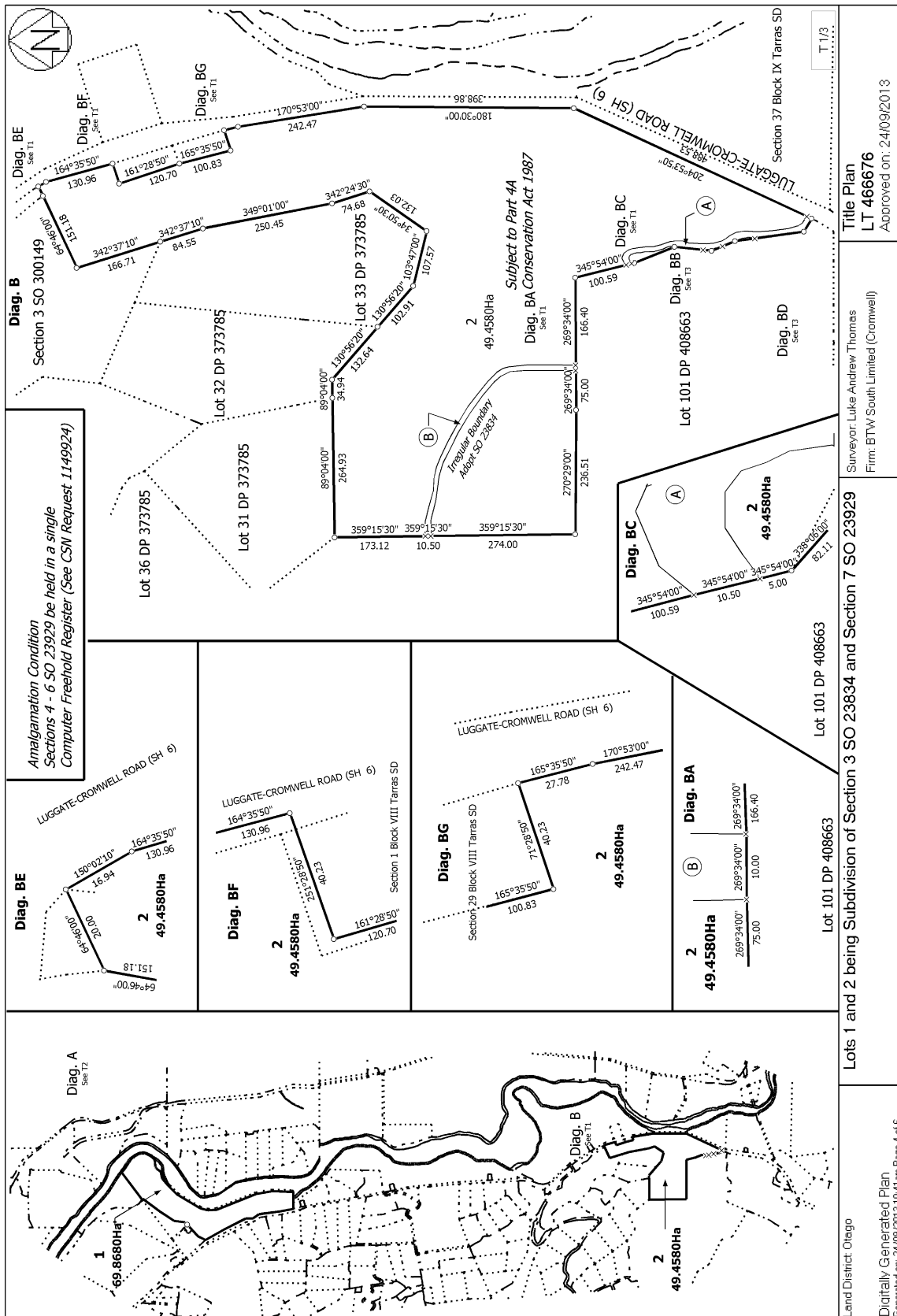
Identifier **623528**
Land Registration District **Otago**
Date Issued 27 March 2014

Prior References
636095

Estate Fee Simple
Area 69.8680 hectares more or less
Legal Description Lot 1 Deposited Plan 466676
Registered Owners
Hawea Motors Limited

Interests

Subject to Section 11 Crown Minerals Act 1991
Subject to Part IV A Conservation Act 1987
9682753.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 27.3.2014 at 11:16 am
9755044.1 Encumbrance to Contact Energy Limited - 7.7.2014 at 4:42 pm
13187219.3 Mortgage to Orgilmaa Zundui-Yondon - 19.12.2024 at 3:52 pm



Proposed Alluvial Gold Mine, Luggate Cromwell Road, Sandy Point

Landscape Effects Assessment Report

21 February 2025



Prepared by

MIKE MOORE

BSc, Dip LA, MRRP, ANZILA

LANDSCAPE ARCHITECT

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Introduction

Awa Koura Mining Ltd has applied for resource consent to undertake alluvial gold mining on an approximately 70ha rural property at Luggate Cromwell Road, Sandy Point. The land is currently used for pastoral activities and an approximately 50ha area is proposed to be mined and subsequently rehabilitated back to pastoral farmland on completion of the project. There is an existing consent for rural subdivision which is likely to be given effect to following the proposed mining rehabilitation.

The land is within the Rural Resource Area in the Central Otago District Plan (CDDP) and is not within any landscape overlays. The application for mining is a discretionary activity in terms of Rule 4.7.4.

This report addresses the landscape effects of the proposed mining, and will be structured as follows:

- Methodology.
- Site and area description.
- Landscape values.
- The proposed development
- Mitigation and rehabilitation
- Natural character assessment.
- Landscape effects assessment.
- Assessment against the relevant Central Otago District Plan provisions,
- Conclusion.

Methodology

This assessment follows the concepts and principles outlined in the New Zealand Institute of Landscape Architects (NZILA) Best practice guidelines¹, and has been

¹ Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

informed by a review of the relevant statutory provisions and a site visit on 29 November 2024.

Site and area description

The property is approximately 70ha in area and is legally described as Lot 1 DP 466676. It is located between the Clutha River / Mata-Au and Luggate Cromwell Road (State Highway 6) near Queensbury. The area is known as Sandy Point, where there is a bend in the river, as shown in **Figure 1**.

The land proposed to be mined is approximately 50 ha of river flood plain and is separated from the river by Crown land of varying width. The mining site is on recent river flood plain comprised of gravel that is defined to the west by an approximately 6 - 8m high river terrace. The topography is largely flat overall but undulating with old river channels evident. There are some small wetted areas in some of the relic channels but these do not qualify as 'natural inland wetlands' under the National Policy Statement for Freshwater Management 2020². Generally, the land is under exotic pasture cover (some irrigated) and is managed by stock grazing. There are some isolated mature exotic trees present in a few places. Several relocatable tiny homes are present on the property but otherwise the only permanent structures are a house and farm shed along with fences and farm tracks.

The wider landscape context is the Upper Clutha Valley where it narrows between the more expansive Wanaka – Hawea Basin and Tarras area. In this area the valley is defined to the west by the end of the Pisa Range, and to the east, by unnamed high hill country between the Clutha and Lindis valleys. The dominant feature in this landscape is the willow-lined Clutha River / Mata Au which has carved terraces into glacial outwash surfaces.

This landscape is predominantly agricultural in character and exhibits a gradation from modified valley floor and lower elevation areas, to more natural higher slopes on the

² Advice – D Sycamore, Planner

ranges which are predominantly managed under an extensive pastoralism regime. In recent years, the lower parts of this landscape, including Queensbury and the river terraces across the river from the site, have become significantly more settled and domesticated with subdivision into smaller rural lots. There is still significant presence of kanuka forest, which contributes to natural landscape values. More subtly, the evidence of historic gold mining (such as tailings) is still present in places.

Figures 2 - 7 illustrate the character of the site and area.

Landscape values

Landscape and landscape values are defined in the NZILA Landscape Assessment Guidelines³ as follows:

‘Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meanings associated with it’.

Landscape values are – *‘The reasons a landscape is valued. Values are embodied in certain attributes’.*

The property is not within areas mapped in the CODP as outstanding natural landscapes (ONL) or significant amenity landscapes (SAL), but the values outlined in the CODP for rural zoned areas are applicable.

The values of the Central Otago landscape, as generally discussed in the CODP and supporting landscape assessment⁴ are based on its distinctive flat topped, fault block mountain ranges, its semi-arid character expressed through extensive tussock grasslands, the powerful Clutha / Mata-au River and associated hydro lakes, and highlights of orchards, vineyards, and historic gold-mining artefacts. The area is notable for its expansive scale and legible natural landforms. The Upper Clutha / Sandy Point area has a character that aligns to a large extent, with these quintessential Central

³ ³ Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

⁴ LA4, 2008, Central Otago District Rural Review Landscape Assessment Report and Recommendations

landscape values. Values specifically articulated in the CODP relating to the rural landscape are essentially natural character (naturalness) and open space (openness), with particular emphasis on open natural character of the hills and ranges, skylines, prominent places, natural features and terraces⁵

There are no physical landscape values officially recognized in the CODP or other relevant statutory documents in the vicinity of the site but the Clutha River / Mata-Au is a major natural feature with natural character that has been assessed as 'very high' – 'high' in the Otago Regional Council Natural Character, Riverscape & Visual Amenity Assessment⁶. Other significant physical values relate to the river terrace landforms and the presence of areas of indigenous vegetation, particularly kanuka forest.

The Mata-Au is the subject of a Statutory Acknowledgement under the Ngāi Tahu Claims Settlement Act 1998 and cultural values relate to creation traditions, mahinga kai trails and its role as a major transportation route. Other associative values in the area relate to European gold mining heritage.

The river landscape has perceptual values focused on the natural, powerful river and the legibility of the landforms it has created. Naturalness values are enhanced in places by the presence of indigenous vegetation. The landscape has rural character and amenity values based on rural land use, modest impact of built form and openness and legibility of natural landforms. Recent and on-going subdivision and associated domestication are eroding these values to an extent.

The proposed development

It is proposed to mine approximately 50ha of the alluvial flats using a floating dredge mining plant. This operation involves removal and stockpiling of topsoil / overburden prior to dredging with a hydraulic digger and excavating the river gravels to a depth of approx. 3m. This material is then discharged to a hopper on the floating plant and fed to

⁵ CODP Objective 4.3,3 and Policy 4.4.2.

⁶ Boffa Miskell, 2018, Natural Character, Riverscape & Visual Amenity Assessments, Clutha / Mata-Au Water Quantity Plan Change – Stage 1

a trommel for washing and removal of larger material. The remaining gold bearing gravels are directed to sluice boxes. As the excavation proceeds, tailings are discharged behind the floating plant. These are then contoured to provide a generally level surface for re-spreading of topsoil / overburden.

The mining will take place progressively, impacting a limited area of the site at any one time, and with remediation work being undertaken as the operation proceeds. Mining is proposed to commence at the south end of the site and to take a zigzag path, culminating at the northern end of the site. Awa Koura Mining Ltd estimate that the plant will move 13m per day.

The key aspects of the proposed operation that will have visual and landscape character effects are as follows:

- Machinery will be present on the site and will move around the site as the operation proceeds. The machinery to be used will be one 50 - 60 tonne excavator and the dredge / gold screen plant. The gold screen plant is approx. 10m long and 5m high. When working it will sit low in the landscape, floating within the excavated mine pond which will be lower than the level of the surrounding river flats.
- There will be disturbed land in the area of the operation, in the form of overburden / topsoil bunds, stripped area awaiting excavation, the dredge pond, tailings piles and reinstated land not yet revegetated. The width of the swept path of the operation will be 50m, and the area actively mined will be no more than approx. 210m in length x 85m width (including overburden bunds), as illustrated in **Figure 8**. The area of soil and overburden removed in front of the dredge will be restricted to no more than 50m width and 50m long. The extent of the area of obvious disturbance behind the operation (due to absence of vegetation cover) will vary with the season.
- There will be a small depot area, from which the operation will be run. This area will host fuel tanks, two storage containers, and a small portacom building. Vehicles, including staff cars and (intermittently) a second digger, would also be

parked in this area. It is proposed that this depot area is located in two places over the life of the operation as illustrated in Figure 8.

- Lighting of the processing, depot and active work area will be present in winter months. Lighting levels will comply with the CODP standards for rural areas. As well as lighting, moving vehicles will have visual effects where visible from beyond the site.

The term sought for the consent is 3 years.

Mitigation and rehabilitation

Buffer zones and avoidance areas

To ensure that adverse effects on the natural character of the Clutha River and areas of kanuka are avoided, buffer zones are proposed as follows, with no mining to be undertaken in these areas:

- 40m from top of the riverbank
- 5m from the drip line of any kanuka

Landform remediation

Immediately following mining, the river gravels and overburden will be replaced and contoured, to as far as possible, restore the original landform. This will include the replacement of existing small-scale swale / watercourse features.

Pasture remediation

The mined areas will be remediated and restored to pasture progressively, and as soon as practicable following the mining operation. A mix of appropriate cultivars and ongoing care will ensure the site becomes stabilised from erosion, dust loss or sediment loss relatively quickly.

Controls over temporary structures (depot area)

To limit the visual impact of the proposed temporary structures, the following controls are proposed:

- There shall be no more than two containers, which shall have dimensions not exceeding 12.5 x 2.5 x 2.6m.
- Any Portacom building shall have a footprint no greater than 10m² and shall be no higher than 2.6m.
- Fuel tanks shall not exceed 10,000 litres in capacity and shall be no higher than 2m above ground level.
- All temporary site structures are to be finished to match in the same colour, which shall be Resene colour 'Karaka' (approx. 7% LRV). or another suitable colour found in the rural environment approved by Council.
- Other than the temporary topsoil / overburden windrows associated with the active mining, there shall be no bunds created.
- Any fencing shall be confined to rural post and wire fences.

The following conditions of consent are recommended to appropriately minimise adverse landscape and visual effects:

- (a) *All mining and rehabilitation works are to be complete within 3 years.*
- (b) *All works shall avoid the river terrace landform and shall be set back a minimum of 40m from the top of the Clutha River Mata-Au bank and 5m from any mature kanuka.*
- (c) *The actively mined area (including pre-stripped area, overburden / topsoil windrows, mine pit and un reinstated tailings) shall be no greater than 18,000m².*
- (d) *A rehabilitation plan is prepared that details and provides for the following:*
 - *Removal of all structures and other elements related to the mining operation.*
 - *Reinstatement of the floodplain landforms to restore existing natural landform character, including relic river channels.*
 - *Reinstatement of pasture and fences in consultation with the landowner.*

Natural character assessment

The site is close to the Clutha River / Mata-Au, potentially making RMA section 6a (*the preservation of the natural character of ... wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development*) relevant.

With regard to river margins, Te Tangi a te Manu guidance⁷ is as follows:

- *The word ‘margin’ suggests a relatively narrow area compared to ‘environment’.*
- *While the Queen’s Chain (20m) is sometimes referred to as a starting point, especially for streams, the High Country Rosehip Orchards decision says that “margins are likely to be areas beyond the wave action of a lake or extending away from the banks of a river for, depending on topography and other factors, at least 20–50 metres and sometimes more.*
- *The margins should be determined with reference to the attributes and context of the lakes and rivers themselves.*
- *The extent is likely to be influenced by the size of the feature. For example, the margins of Taupō moana are likely to be wider than those of a small lake or tarn, the margins of a river may be wider than those of a stream.*
- *The margins are also likely to be influenced by topography (for instance, the sides of a gorge) and land use (for instance, the boundary between cultivation and natural riparian vegetation).*

I understand margins to include the land between the active riverbed and the wider river landscape context. Margins include areas where river processes and patterns are evident and have some significance, such as evidence of occasional flooding, historic channel patterns or riparian vegetation. From the margin, the active riverbed is the visually dominant feature and topographic features such as historic banks or terraces typically define the margin.

⁷ See Te Tangi a te Manu paragraph 9.20

In this case and on the basis of the topography, vegetation and land use, it is my assessment that the river margins include the immediate riverbanks but do not extend significantly beyond these. I do not consider that the proposed mining activity will be within the river margin. As already noted, there are no areas that fall within the definition of ‘natural inland wetlands’ (in the National Policy Statement for Freshwater Management, October 2020) within the proposed mining area.

Given this situation it is my assessment that affects on natural character (as it applies under Section 6a RMA) are avoided by the proposed mining.

Landscape effects assessment

Landscape effects are defined in the NZILA Landscape Assessment Guidelines⁸ as follows:

‘An adverse or positive outcome for a landscape value as a consequence of changes to a landscape’s physical attributes’.

As noted in the Guidelines, visual effects are a subset of landscape effects, and a visual effect is described as *‘a consequence for landscape values as experienced in views’*.⁹

I assess the landscape effects of the development against the landscape values discussed above, and those inherent in the relevant statutory provisions. Landscape effects may be positive or adverse in nature and I rate the degree of effect in terms of the 7-point rating scale recommended in the NZILA Landscape Assessment Guidelines. The relationship of this scale to RMA terminology is illustrated below in the table copied from Te Tangi a te Manu.

⁸ Te Tangi a te Manu, Aotearoa New Zealand Landscape Assessment Guidelines, Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022.

⁹ Te Tangi a te Manu para 6.08.

Degree of effect assessment scale



Physical effects

The proposed mining will modify the existing natural floodplain landform but conditions are proposed to ensure rehabilitation restores the natural floodplain landform character as closely as possible. The natural / rural character of the site will be adversely impacted for the short duration of the works, but this will be remedied progressively and in short order following completion of the works. The scale of the mining activity disturbance will be significant but not excessively so in the scale of the floodplain. Elements of natural character significance such as terrace landform, wetlands and indigenous trees will be avoided.

In my assessment, physical effects will be as follows:

- During mining operations / prior to final rehabilitation – adverse / moderate.
- After final rehabilitation – Adverse / very low.

Visual effects

The proposed mining site is visible from State Highways 6 and 8a and from many private dwellings in the area surrounding. The following is my assessment of the visual effects of the activity from representative public viewpoints.

State Highway 6 (see Figures 2 and 3)

Relevance of viewpoint	SH6 is a major highway. Impacted viewers will be road users with effects being experienced as transient whilst they pass by.
Viewing distance (to)	Ranges from approx. 70m – 1.1km

areas to be mined)	
Existing views description	SH6 is adjacent to the property for approximately 1km on its southwestern side, on higher terraces. The area proposed for mining can be intermittently seen from the highway, where not screened by vegetation, as open, pastoral rural land on the lower terrace / floodplain with the river beyond. The background landscape is one of river terraces and high hills with a largely pastoral open character and there are a number of dwellings visible on the river terraces.
Description of visual effects	Until rehabilitation is complete the proposed mining will have adverse effects on the rural landscape values (particularly naturalness) due to the modification to the pasture cover and the natural floodplain landforms. In addition, there will be adverse effects associated with the visibility of the mining machinery and the depot facilities. The degree of these adverse effects will be mitigated by the limited extent of the disturbance area and the progressive rehabilitation. Re-establishing pasture is a characteristic element in rural landscapes. The degree of adverse effect from the State Highway will vary as the activity moves around the site with greater and lesser proximity to the viewpoint and varying degrees of screening by the intervening terrace landform and / or trees. Degree of effect is also modified by the transient nature of the views for most road users. Once rehabilitation is complete there will be little evidence that the mining has occurred except that some mature exotic trees will have been removed and the site is more open. Overall, it is my assessment that visual effects on landscape values will be as follows: - During operations: Adverse / moderate-low – Adverse / low. - After rehabilitation: Neutral

State Highway 8a (see Figure 4)

Relevance of viewpoint	SH8a is across the river from the site and over approximately 580m distant. In general, it is screened from this highway by river terrace landforms but there are a few places where views are possible such as illustrated in Figure 4. Impacted viewers will be road users with effects being experienced as transient whilst they pass by.
Viewing distance (to areas to be mined)	Approx 1.3km
Existing views description	Where visible, the site is seen as open, pastoral rural land on the river floodplain. The Pisa Range forms the background and the lower slopes of this range and adjacent river terraces are rural in character but relatively densely settled.
Description of visual effects	Until rehabilitation is complete the proposed mining will have adverse effects on the rural landscape values (particularly naturalness) due to the modification to the pasture cover and the natural floodplain landforms. In addition, there will be adverse effects associated with the visibility of the mining machinery and the depot facilities. The degree of these adverse effects will be mitigated by the limited extent of the disturbance area and the progressive rehabilitation. Re-establishing pasture is a characteristic element in rural landscapes. The degree of adverse effect from this viewpoint will be mitigated by the very limited visibility and where visible, the considerable distance. Once rehabilitation is complete there will be little evidence that the mining has occurred except that some mature exotic trees will have been removed and the site is more open. Overall, it is my assessment that visual effects on landscape values will be as follows: - During operations: Adverse / very low. - After rehabilitation: Neutral

Sandy Point Lookout (see Figure 5.)

Relevance of viewpoint	There is public access to the Sandy Point Conservation Area on the high terrace top overlooking the site across the river. Viewer numbers are unlikely to be high but motivations for viewers are likely to include landscape appreciation.
Viewing distance (to areas to be mined)	310m
Existing views description	This is an impressive lookout with views north-westward toward the Wanaka Hawea Basin. The Clutha River / Mata-Au is the most significant element in this view, but the site is in the foreground and seen as open pastoral land in a rural landscape. River edge kanuka adds natural character as does (more subtly) the relic river channel landforms.
Description of visual effects	Until rehabilitation is complete the proposed mining will have adverse effects on the rural landscape values (particularly naturalness) due to the modification to the pasture cover and the natural floodplain landforms. In addition, there will be adverse effects associated with the visibility of the mining machinery and the depot facilities. The degree of these adverse effects will be mitigated by the limited extent of the disturbance area and the progressive rehabilitation. Re-establishing pasture is a characteristic element in rural landscapes. The degree of adverse effect from this viewpoint will vary as the activity moves around the site with greater and lesser proximity to the viewpoint. The high vantage point and the location of the site in the foreground of the view will make the works a focal point when activity is in the northern part of the site. Mining at the southern end of the site will be completely screened. Once rehabilitation is complete there will be little evidence that the mining has occurred except that some mature exotic trees will have been removed and the site is more open. Overall, it is my assessment that visual effects on landscape values will be as follows:

	- During operations: Adverse / moderate – Adverse / very low. - After rehabilitation: Neutral
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Pukerangi Drive (see Figures 6 and 7)

Relevance of viewpoint	Pukerangi Drive provides access to many smaller rural properties and dwellings on the terrace landforms to the west of the site. Figures 6 and 7 are generally representative of the views from this area including residential viewpoints.
Viewing distance (to areas to be mined)	Approx. 540m – 3.3km
Existing views description	The site is visible on the valley floor below adjacent to the river as open rural farmland within a working rural landscape.
Description of visual effects	Where visible and until rehabilitation is complete, the proposed mining will have adverse effects on the rural landscape values (particularly naturalness) due to the modification to the pasture cover and the natural floodplain landforms. In addition, there will be adverse effects associated with the visibility of the mining machinery and the depot facilities. The degree of these adverse effects will be mitigated by the limited extent of the disturbance area and the progressive rehabilitation. Re-establishing pasture is a characteristic element in rural landscapes. The degree of adverse effect from this area will vary as the activity moves around the site with greater and lesser proximity to the viewpoint and varying degrees of screening by the intervening landform and / or trees. Once rehabilitation is complete there will be little evidence that the mining has occurred except that some mature exotic trees will have been removed and the site is more open. Overall, it is my assessment that visual effects on landscape values will be as follows: Closer, lower viewpoints

	- During operations: Adverse / moderate-low – Nil - After rehabilitation: Neutral Higher, more distant viewpoints - During operations: Adverse / low – Nil - After rehabilitation: Neutral
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Residential viewpoints across the Clutha River / Mata-Au

There are a number of dwellings on terraces across the Clutha River / Mata-Au which overlook the site at varying distances as close as approximately 280m (738 Luggate Tarras Road). These are private properties, and I have not visited.

On the basis of views back toward these dwellings from the site, my assessment is that the proposed mining will have adverse effects on landscape values that will vary as activity moves around the site. The current pastoral rural landscape will be modified by disturbance associated with vegetation stripping, landform modification, and machinery presence and movement. This disturbance will be relatively confined in spatial extent, short term, and temporary.

Overall, it is my assessment that visual effects on landscape values will be as follows. In assessing the nature and degree of effect I have factored in that these viewpoints are residential / living environments and particularly sensitive as a result.

- During operations: Adverse / moderate-high – Nil
- After rehabilitation: Neutral

Residential viewpoints to the north of the site

There are dwellings to the north of the property that also overlook the site, including Lot 1 DP 364424, 3364 Luggate Cromwell Road and 3396 Luggate Cromwell Rd. I understand that the owners of all these properties have provided written approval.

Landscape effects discussion and conclusion

The proposed mining will be temporary and is for a short duration. In spatial extent its effects will be contained by the intention to rehabilitate progressively. Limits and setbacks imposed will ensure that adverse effects on the Clutha River / Mata-Au margins and indigenous trees are avoided. Conditions are proposed to ensure reinstatement of floodplain landform character and pasture.

The visual effects on users of adjacent roads and walkways and on nearby residents will likewise be mitigated by the temporary, short term and spatially limited nature of the activity. Whilst the activity overall is likely to have a duration of two years, the effects in any one part of the site are much less.

Overall, it is my assessment that effects on landscape values will be adverse / moderate-high – adverse / very low during the operation and adverse / very low following rehabilitation.

Assessment against the relevant Central Otago District Plan provisions

The property is within the Rural Resource Area in the Central Otago District Plan (CODP), and the application for mining is a discretionary activity in the CODP in terms of Rule 4.7.4. The following is my assessment of the proposed activity against the objectives and policies relevant to landscape matters:

CODP objectives and policies considered relevant to landscape effects of the proposed subdivision	Comment
4.3.3 <u>Objective – Landscape and Amenity Values</u> <i>To maintain and where practicable</i>	The site is within the Upper Clutha Valley and the proposed activity does not have any impact on the open natural character of the hills and

<i>enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment, and to maintain the open natural character of the hills and ranges.</i>	ranges. The activity proposed avoids natural character effects on the Clutha River / Mata-Au and has minimal impact on open space characteristics. Adverse effects on rural character and amenity will be short term, temporary and limited in extent. I consider that the proposed mining is consistent with this objective.
4.4.2 <u>Policy – Landscape and Amenity Values</u> <i>To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through:</i> <i>(a) The design and location of structures and works, particularly in respect of the open natural character of hills and ranges, skylines, prominent places and natural features,</i> <i>(b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties, ...</i> <i>(e) The location of tree planting, particularly in respect of landscape values, natural features and ecological values, ...</i> <i>(g) Encouraging the location and design of buildings to maintain the open natural character of hills and ranges without compromising the landscape and amenity values of prominent hillsides and terraces.</i>	Structures proposed associated with the mining will be temporary and relatively small scale. In my assessment there will be effects on the amenity of adjoining properties that will be adverse in nature and up to moderate-high (more than minor) in degree. These will be short term only however (generally no more than 1 year, given the migration of mining activity around the site). In the long term any adverse effects of the activity on landscape values will be no greater than very low (less than minor).
4.4.10 <u>Policy – Rural Subdivision and Development</u>	The proposed mining does not impact the hills and ranges. Effects on rural landscape values

<i>To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies or mitigates adverse effects on:</i> a. <i>The open space, landscape and natural character amenity values of the rural environment in particular the hills and ranges,</i> b. <i>The natural character and values of the District's wetlands, lakes, rivers and their margins,</i> c. <i>The production and amenity values of neighbouring properties,</i>	including naturalness, openness and rural character will be up to moderate-high in degree in my assessment but temporary. There are no 'natural inland wetlands' on the site and effects on the natural character of the Clutha River / Mata-Au margin will be avoided. In my assessment there will be some adverse effects on the visual amenity values of nearby properties that will be up to moderate-high in degree but these will be short term and completely remedied.
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Conclusion

It is proposed to undertake alluvial gold mining on approximately 50 ha of river floodplain at Sandy Point. The mining would be for a maximum 3-year term, within which, full site rehabilitation will be completed. The actively mined area is proposed to be restricted to 18,000m² at any time with landform and pasture remediation progressively undertaken. Setbacks from the Clutha River / Mata-Au river margin and kanuka trees / stands are proposed to avoid adverse effects on natural character.

The area has rural character values associated with naturalness, openness and rural land use but there are no landscape overlays applying in the CODP.

I have assessed effects on landscape values as adverse in nature and up to moderate-high (more than minor) in degree for limited periods during the operational phase of the mining. These effects include visual effects experienced from nearby properties. Following final rehabilitation however, any adverse effects will be very low (less than minor).

Given the limited degree of adverse effects and their temporary nature, I assess the proposed mining as generally consistent with the CODP provisions relevant to landscape matters.

Mike Moore

Registered NZILA Landscape Architect

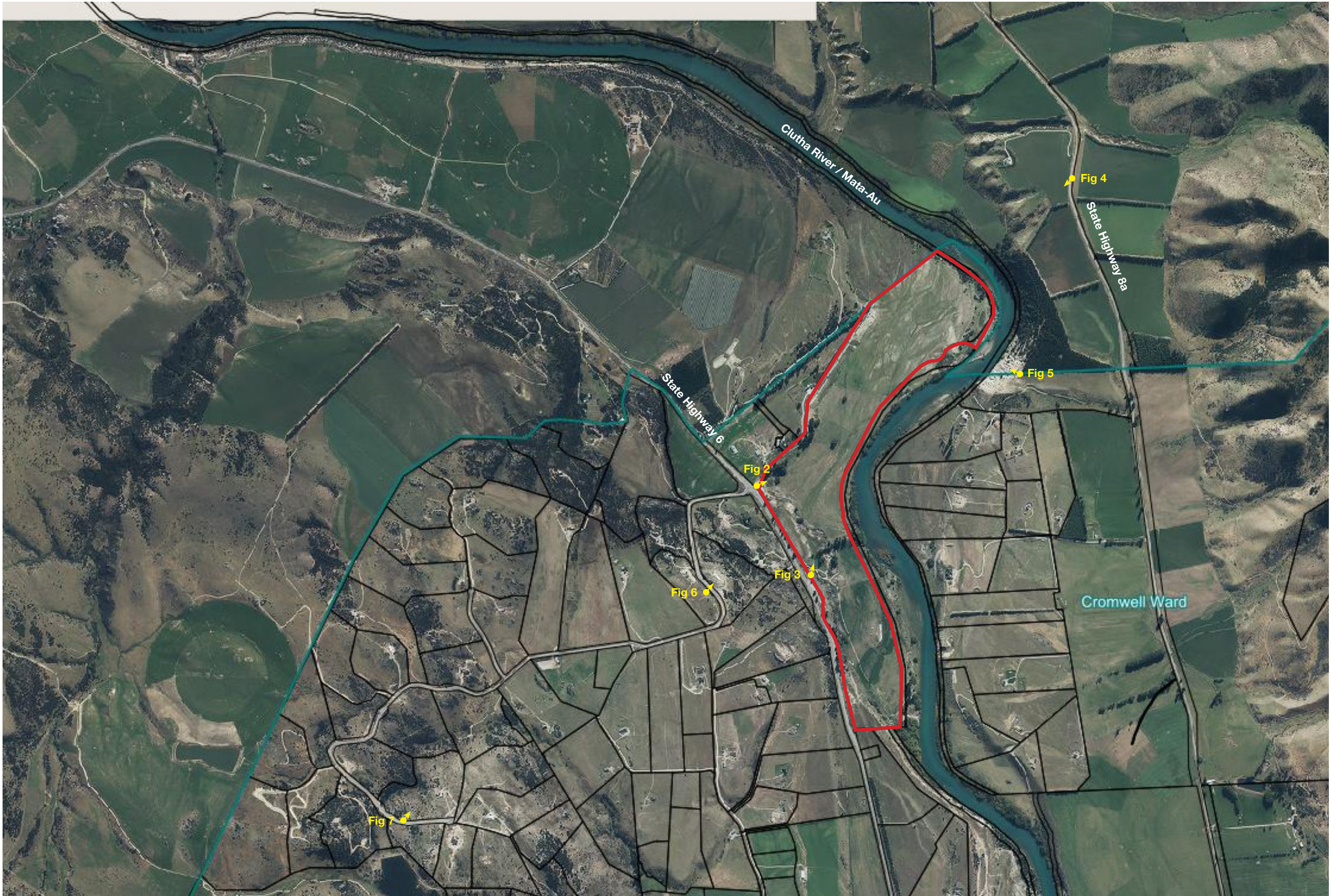


Figure 1: Proposed Alluvial Gold Mine, Sandy Point – Site and photo-points location plan



Figure 2: View eastward across the site from State Highway 6 near its intersection with Pukerangi Drive

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 50mm



Figure 3: View north-eastward across the site from State Highway 6 approximately 440m south of its intersection with Pukerangi Drive.

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 50mm



Figure 4: View south-westward toward the site from State Highway 8a

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 50mm



Figure 5: View across the site from Sandy Point Lookout.

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 27mm

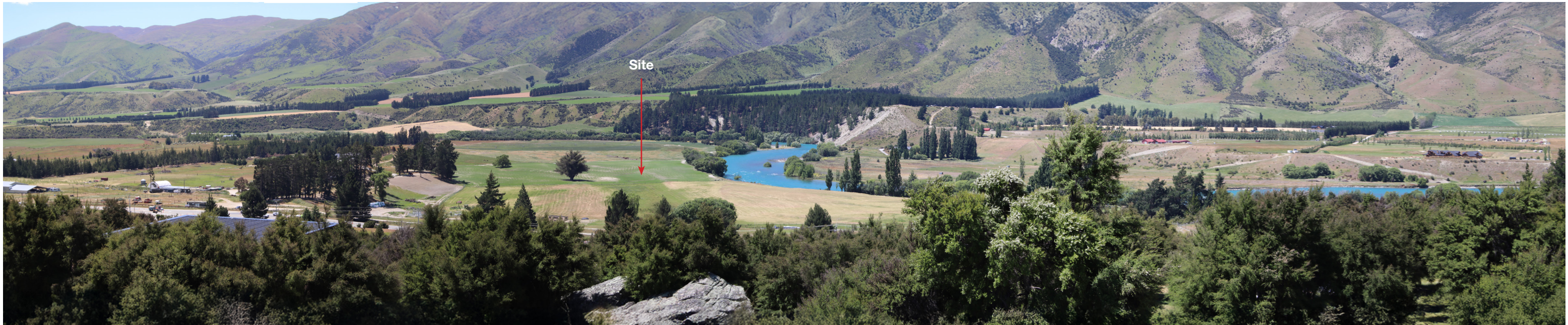


Figure 6: View toward the site from adjacent to 71 Pukerangi Drive

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 50mm



Figure 7: View toward the site from adjacent to 347 Pukerangi Drive

Camera: Canon EOS 80D
Image: Stitched photographs – focal length 50mm

Mining Method Concept

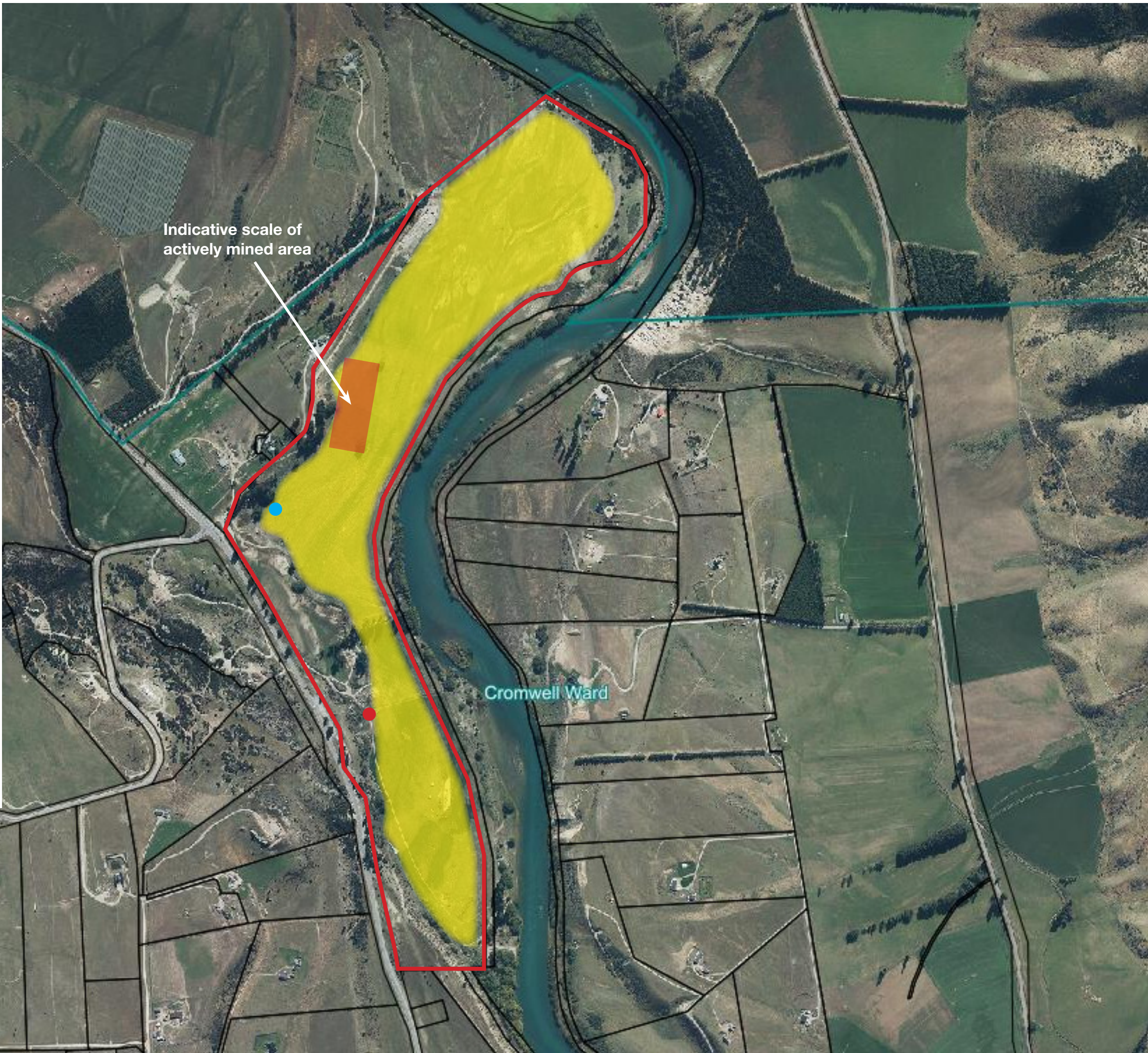
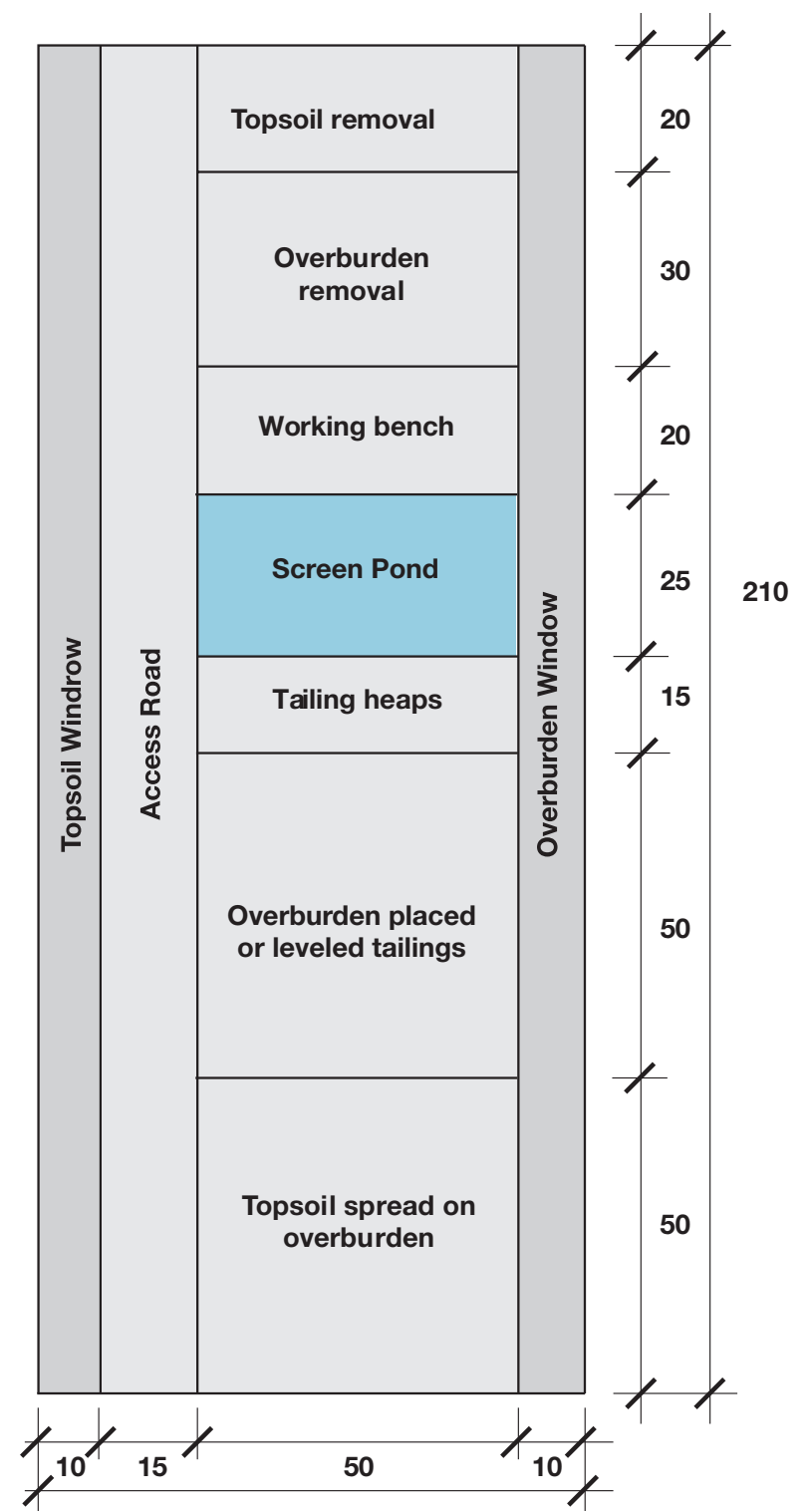


Figure 8: Proposed mining site plan



New Zealand
Heritage Properties Ltd
Investing In Our Heritage

Sandy Point, Luggate

A Heritage Assessment for Site G40/148 and G40/149

Report Prepared for Awa Koura Mining Ltd

Author: Blair McPhee

Reviewed by: Dawn Cropper, Megan Lawrence

Sandy Point, Luggate

A Heritage Assessment for Site G40/148 and G40/149

Prepared by New Zealand Heritage Properties Ltd
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Project Details

Archaeological Site No.	G40/174, G40/147, G40/148, G40/149, G40/150
Site Address	0 Luggate-Cromwell Road, Central Otago (Lot 1 DP 466676)
Client	Awa Koura Mining Ltd
Client Contact	Darryl Sycamore
Client Address	330 Moray Place, Central Dunedin, Dunedin 9016
Report Authors	Blair McPhee
Reviewed By	Dawn Cropper, Megan Lawrence
Nominated s45 Approved Person	TBC
Report Submitted To	Client, HNZPT, Aukaha
Document Control ID	J011998_HA_REV A

Document Control

Revision No.	Date Submitted	Description	Prepared By	Reviewed By
A	5/02/2024	Initial draft submitted to client	Blair McPhee	Dawn Cropper, Megan Lawrence

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Cover Photo: Gold Dredging. Anon. (1900). Hocken Snapshot, <https://hocken.recollect.co.nz/nodes/view/16661>

Executive Summary

Awa Koura Mining Ltd are proposing to establish a gold mining operation at Sandy Point (Luggate-Cromwell Road), Queensberry, Central Otago, within Lot 1 DP 466676, Tarras SD. New Zealand Heritage Properties Ltd (NZHP) has been commissioned by Darryl Sycamore on behalf of Terramark to undertake a heritage assessment of the proposed mining operations for an archaeological authority application and resource consent. This heritage assessment has been prepared to assess the heritage potential of the project area and to consider the impact that the proposed works will have on any heritage sites within the project area.

The historical research undertaken for this assessment has identified two recorded sites which will be potentially impacted by the proposed works, **G40/148** and **G40/149**, both tailings/mining-gold sites. A further four mining-gold sites were originally recorded as being in the project area; however, research conducted as part of this assessment has demonstrated that G40/147 and G40/161 are outside of the project area, whereas G40/150 and G40/174 – in addition to having been heavily modified by modern development of the site – are outside of the scope of works and will not be affected. The concentration of gold mining sites is not surprising given that Sandy Point appears to have been the site of regular mining activities (mostly alluvial/slucio mining) since at least 1863, when the area became a short-lived congregation point for miners following the establishment of a ferry and general store at the site. The project area was also occupied by at least one pre-1900 farmhouse with associated gardens. As such, there is the potential to encounter additional unrecorded mining-gold sites as well as unrecorded commercial and agricultural/pastoral sites, with the overall heritage values for these sites ranging from **low-moderate** to **moderate** depending on the location and condition of traceable subsurface remains.

G40/148, which represents the best-preserved archaeological site within the project area, is considered to have **low-moderate** heritage values; however, the overall archaeological and heritage values of **G40/149** are **considered to be low**, given its lack of direct association with known historic personages and limited amenity values. If the recommendations presented within are followed, the magnitude of impact on **G40/148** and **G40/149** are likely to be minor. However, the magnitude of impact on unrecorded sites is **likely to be major**, given the extent of earthworks necessitated by the proposed mining works. As such, a targeted, exploratory excavation strategy is recommended in order to mitigate the degree of information loss resulting from large scale mining of the project area.

Recorded sites affected by the proposed gold dredging of Sandy Point.

NZAA Site Id	Site Type	Brief Description
G40/148	Mining-gold	Tailings and tail races
G40/149	Mining-gold	Tailings

On the basis of this assessment, NZHP makes the following recommendations:

1. **Authority Application:** As the proposed works described in Section 1.2 will affect sites G40/148 and G40/149, in addition to potential unrecorded sites, an archaeological authority under Section 44 of the HNZPTA 2014 must be obtained from HNZPT prior to any modification of the site.
 - a. If development plans are altered from those reviewed for this assessment (Appendix A), then HNZPT and NZHP must be alerted, as any changes may alter the assessment of effects or invalidate the authority.
2. **Resource Consent:** Conditions of the resource consent should include archaeological recording and analysis of any archaeological features impacted by the proposed works.
 - a. This recording and analysis should be reported on following HNZPT guidelines and submitted to the HNZPT and the Central Otago District Council.

3. **Protection of sites/features:** As a first principle, every practical effort must be made to avoid damage to any heritage site, whether known, or discovered during any redevelopment of the site.
 - a. An exclusion zone should be established to protect the known extent of G40/148 and G40/149.
4. **Archaeological Management Plan (AMP):** All works must be carried out in accordance with AMP. Any amendments to the AMP will require prior written approval from HNZPT.
5. **Contractor Briefing:** All contractors working on the project must be briefed by the s45 approved person (or person nominated on their behalf) on the possibility of encountering archaeological evidence, how to identify possible archaeological sites/features during works, the archaeological work required by the conditions of the authority, and contractors' responsibilities with regard to notification of the discovery of archaeological evidence to ensure that the authority conditions are complied with.
6. **Recording of Structures:** Any structures encountered, such as water races or building remains, are to be recorded to a Level III standard as defined in HNZPT's guide, *Investigation and Recording of Buildings and Standing Structures* (HNZPT, 2018). Details of the recommended recording are provided in the AMP.
7. **Archaeological Monitoring:** It is recommended that archaeological monitoring follow a targeted approach in order to mitigate loss of information for those sites (both recorded and unrecorded) most likely to be affected (Figure 10-1):
 - a. Immediately outside the 10m exclusion zone to the rear/south of **G40/149** and **G40/148**, two trenches are to be excavated in order to determine if traceable, subsurface remains of these features extend back into the ploughed farmland behind. The first trench will run on the northwest-southeast alignment directly behind the respective exclusion zones. The second trench will run perpendicular to the first, extending southwest back into the paddock. The placement of the second trench will likely be contingent on the findings of the first trench, i.e., the location and extent of observable archaeology. These trenches should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).
 - b. The area in the vicinity of the house and gardens depicted on the 1883 survey map (SO 7374) should be excavated to natural ground (NB: this has been expanded to account for potential inaccuracies regarding the placement of these features in SO 7374). This can be done in ~100mm spits via hydraulic excavator; however, should archaeological features and/or deposits be encountered, these may require hand-excavation for all/part of their extents.
 - c. Although the location of the 1863 general store is not known, it is considered to have been positioned in proximity to the ferry. Given the steepness of the sandy bluff opposite the northernmost bend in the river adjacent to the project area, the ferry is reasoned to have been positioned within the flat area bounding the gentler, more southern bend. Moreover, as the majority of gold workings were on the western side of the river (within the project area), it is likely that the majority of the camp was congregated on this side. Therefore, it is recommended an exploratory trench be excavated along the flattened area bounding the southern river bend in order to determine the presence of subsurface archaeology. This trench should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).
 - d. The above earthworks must be monitored by the s45 approved person (or person nominated on their behalf) in accordance with the AMP. Any archaeological features and material encountered

- shall be recorded, analysed, and interpreted in accordance with current archaeological practice and as outlined in the AMP.
- e. All remaining work outside of the above investigatory recommendations can be conducted under the OCP.
8. **Archaeology of Māori origin:** If archaeological material of Māori origin is discovered at any stage, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all relevant parties including takata whenua via Aukaha and HNZPT and in accordance with the AMP.
 - a. Any taoka tūturu are *prima facie* the property of the Crown who will be notified of the find. Taoka tūturu will be registered with the Ministry for Culture and Heritage. NZHP, in collaboration with manawhenua, shall notify the Ministry of Culture Heritage and establish the most appropriate temporary storage, management and care for taoka tūturu, until such time as traditional or actual ownership is determined, with an appropriate institution or kaitiaki.
 9. **Kōiwi (human remains):** Should kōiwi be encountered, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all affected parties as soon as practicable, including [takata whenua via consulting company], HNZPT, and the police. The Ngāi Tahu policy for kōiwi takata shall also be followed (Te Rūnanga o Ngāi Tahu, 2019).
 10. **Reporting:**
 - a. Within 20 working days of the completion of on-site archaeological work, the site record forms must be updated or submitted to ArchSite.
 - b. Within 6 months of the completion of on-site archaeological work, a final report on any archaeological material that is found must be prepared in accordance with *ASG12 Archaeological Report Guideline* (HNZPT, 2023) and submitted to HNZPT for inclusion in the digital library and to Aukaha.

Abbreviations

Abbreviation	Definition
DoC	Department of Conservation
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA 2014	Heritage New Zealand Pouhere Taonga Act 2014
NZAA	New Zealand Archaeological Association
NZHP	New Zealand Heritage Properties Limited
CODC	Central Otago District Council
RMA 1991	Resource Management Act 1991
SRF	Site Record Form

Glossary

The following terms were sourced from the Kāi Tahu Ki Otago Natural Resources Management Plan (Kāi Tahu Ki Otago, 2005) and Heritage New Zealand Pouhere Taonga (HNZPT, 2014).

Te Reo Māori	English
Hapū	Sub-tribe, extended whānau
Iwi	Tribe
Kāi Tahu ki Otago	The four Papatipu Rūnaka and associated whānau and rūpū of the Otago Region
Kāika/Kaik/Kāinga	Settlement, place of residence
Karakia	Prayer, incantation
Kaumatua	Respected elder
Kōiwi / kōiwi	Human remains
Mahika kai/ Mahinga kai	Places where food is produced or procured
Mahika toi/ Mahinga toi	Places where non-food resources were gathered
Manawhenua	Those who exercise customary authority or rakātirataka
Papatipu	Original/traditional Māori land
Rakātira/Rangatira	Chief
Rakātirataka/Rangatiratanga	Chieftainship, decision-making rights
Rohe	Boundary
Rōpū	Group
Rūnaka/Rūnanga	Local representative group or community system of representation
Takata whenua/Tangata whenua	The iwi or hapū that holds mana whenua in a particular place
Takiwā	Area, region, district
Taoka/Taonga	Treasured object
Tapu	Sacred
Tikaka/Tikanga	Lore, customary values and practices
Tūpuna/Tīpuna	Ancestor
Umu	Earth oven
Umu-tī	Earth oven used for cooking cabbage tree (tī)
Urupā	Burial place
Wāhi Tapu	Places sacred to takata whenua
Whakapapa	Genealogy
Whānau	Family

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Table of Contents

Project Details	i
Document Control	i
Ownership and Disclaimer	i
Executive Summary	ii
Abbreviations	v
Glossary	v
Acknowledgements	v
Table of Contents	vi
List of Figures	vii
List of Tables	viii
1 Introduction	1
1.1 Project Area	1
1.2 Proposed Activities	1
2 Statutory Requirements	3
2.1 Heritage New Zealand Pouhere Taonga Act 2014.....	3
2.2 Conservation Act 1987.....	4
2.3 Resource Management Act 1991	5
2.4 Protected Objects Act 1975	6
3 Methodology	7
3.1 Research to Inform Heritage Value	7
3.2 Assessment of Heritage Values.....	7
3.3 Assessment of Effects	10
4 Physical Environment and Setting	11
5 Historical Background	14
5.1 Māori Occupation of Sandy Point and the Surrounding Area	14
5.1.1 Pā and Kāika	14
5.1.2 Mahika Toi	15
5.1.3 Mahika Kai	16
5.1.4 Ara Tawhito and Nohoaka	16
5.2 Contact and Post-Contact Period Occupation of Central Otago	17
5.2.1 Treaty of Waitangi/ Te Tiriti o Waitangi	17
5.2.2 Land Purchases	17
5.2.3 Māori and Pākehā: Guides and Explorers	17
5.2.4 Runholders	18
5.2.5 Gold Mining	18
5.2.6 Flooding of the Clutha	21
5.3 History of Project Area	21
6 Previous Investigations and Heritage Context	29
6.1 Previous Research and Investigations within the Project Area	29
6.2 The Wider Heritage Context	33
6.3 Mining-Gold Sites in the Archaeological and Heritage Record	34
6.4 Agricultural – Pastoral Sites in the Archaeological and Heritage Record	35
6.5 Commercial Sites in the Archaeological and Heritage Record	35
7 Results of the Site Survey	36

7.1	Setting	36
7.2	Pedestrian Survey	0
8	Research Results	7
8.1	Constraints and Limitations	8
9	Heritage Values of Sandy Point	9
9.1	Heritage Values of G40/148.....	9
9.2	Heritage Values of G40/149.....	10
9.3	Heritage Values of Unrecorded Sites.....	10
10	Assessment of Effects and Other Considerations	14
10.1	Assessment of Effects on Heritage Values.....	14
10.1.1	Assessment of Effects on Recorded Sites	14
10.1.2	Assessment of Effects to Subsurface Archaeology for Unrecorded Sites.....	14
10.2	Recommendations to Avoid, Minimise and/or Mitigate Adverse Effects.....	15
10.2.1	Sites and Features to be Avoided or Protected.....	15
10.2.2	Mitigation for Information Loss	15
10.3	Summary of Effects on Heritage Values.....	17
11	Conclusions and Recommendations.....	0
12	References	3
Appendix A	Development Plans	A-1
Appendix B	Site Record Forms.....	B-1

List of Figures

Figure 1-1.	Map showing location of project area.	2
Figure 4-1.	1956 aerial demonstrating the prominent terracing and escarpment features within Clutha River Valley in vicinity of Luggate (Whites Aviation Ltd, 1956).	11
Figure 4-2.	The broader geographical setting of the Sandy Point project area (in red).	12
Figure 5-1	Detail of 1798 engraving of the map Tuki Tahua sketched in 1793 for Philip King, showing lake feature in the South Island interior (Tahua, 1798).	15
Figure 5-2	Detail of Mantell’s 1848 map titled ‘Hand Sketch of the South part of Middle Island’ showing “Native Paths” following the Mata-Au and other waterways associated with the region’s main lakes (Mantell, 1848). Approximate location of project area in red.	17
Figure 5-3.	A view of Gabriels Gully in 1862, showing a pitted landscape with various mound and pothole features (Gore, 1862). Also note the frequency of tent sites.	19
Figure 5-4.	SO 7374, showing 1883 subdivision (agricultural lease) of small section of Block VII, Tarras SD. Note exiting presence of water race, house, and garden. Project area in red.	22
Figure 5-5.	1933 Crown Grant Index map for Tarras.....	22
Figure 5-6.	Detail of SO 7433, showing 1902 occupation lease for Rosa Scheib, Section 30, Block VII, Tarras SD, SO 7433. Project area in red.....	23
Figure 5-7.	Possible locations of Hassing’s ferry/punt.....	24
Figure 5-8.	Detail of 1870 (SO 8873) topographical map of Tarras District. Gold workings in project area in orange. Note water race extending westwards from Sandy Point towards Luggate.....	25
Figure 5-9.	Detail of Vliestra’s 1900 mining lease survey (SO 7423). Note residential area (“R.A.”) to northwest of project area (shown in red)).	26
Figure 5-10.	1956 (left) and 1976 (right) aerials of project area, showing extent of ploughing.....	28
Figure 6-1.	Location of previously recorded archaeological sites identified during Ritchie’s 1979 Survey (Neville Ritchie, 1980a). Sites mentioned in following text are highlighted in red.	29
Figure 6-2.	Previously recorded archaeological sites within the vicinity of the project area.....	30

Figure 6-3. NZAA site record form sketches of (top left) G40/147 and (top right) G40/148; bottom: 1976 aerial showing location of G40/147 (blue) and G40/148 (yellow). Red line roughly denotes project area boundary.....	32
Figure 6-4. Left: G40/150, site record sketch; right: Site as seen in 1976 aerials, around the time of original recording. Approximate edge of project area in red.....	32
Figure 6-5. Approximate locations of (left) G40/174 (1956 aerial) and (right) G40/149 (1976 aerial). Edge of project area in yellow.....	33
Figure 7-1. “Lagoon” located at southern end of project area, facing northwest.	36
Figure 7-2. Results of site survey, showing location of archaeological sites discussed in the text. Historic features geo-referenced from SO 7374.....	37
Figure 7-3. Upper terrace in general proximity of G40/174 Left, the upper terrace facing northwest. Right: detail of the low bund which has been shaped along the edge of the terrace, next to spoil from recent building activities, facing northwest.....	0
Figure 7-4. Location of house in SO 7374 (Figure 5-4), facing north.	1
Figure 7-5. Photograph facing southeast towards the recorded location of G40/150, showing extent of modification.....	1
Figure 7-6. Cobbled surface showing remnants of potentially highly modified tailings, facing southeast.....	2
Figure 7-7. Left: modern stone road, facing north; Right: stones lining base of fence line, facing southeast.	2
Figure 7-8. Top: G40/149 facing west, with possible subtle row traces; bottom left: large tailings mound, facing southeast; bottom right: more tailing mounds associated with G40/149, facing north. Note modern rubbish pit.	3
Figure 7-9. Western extent of G40/149, large area of tailings amongst mauka growth, facing southwest.	4
Figure 7-10. Rows of tailings (G40/148), facing north.....	5
Figure 7-11. Possible tail race separating tailings within G40/148, facing north.	6
Figure 7-12. Sluiced area recorded as archaeological site G40/161 on the opposite side of the Clutha River to the project area.	6
Figure 10-1. Map of project area showing monitoring recommendations. NOTE: The trench locations and widths are a visual guide only (see text), with the actual width and placement subject to in-field discussion and topographic considerations.....	0

List of Tables

Table 1-1. Summary of project area.	1
Table 3-1. Criteria for the assessment of heritage values as defined in HNZPT’s <i>Significance Assessment Guidelines</i> (O’Brien & Barnes-Wylie, 2019).	8
Table 3-2. Levels of overall heritage value (adapted from DoT, 2008).	9
Table 5-1. Summary of land transactions and key events records for the project area.	21
Table 6-1. Previously recorded archaeological sites within the project area. Based on examination of the detailed ArchSite records, Ritchie’s (1980a, 1980b) reports, historical aerials and NZHP site surveys, the sites determined to be within or potentially extend into the project area are highlighted red. Those determined to be outside the project area are highlighted blue.	29
Table 6-2. Previously recorded archaeological sites within 1km of the project area.....	33
Table 9-1. Summary of heritage values for G40/148.....	9
Table 9-2. Summary of heritage values for G40/149.....	10
Table 9-5. Summary of heritage values for unrecorded gold-mining sites.....	11
Table 9-6. Summary of archaeological value for unrecorded agricultural-pastoral sites.....	11
Table 9-7. Summary of heritage values for unrecorded commercial sites.	13
Table 11-1. Sites affected by the proposed gold dredging of Sandy Point.	0

1 Introduction

Awa Koura Mining Ltd are proposing to undertake goldmining at Sandy Point (0 Luggate-Cromwell Road), Queensberry, Central Otago. New Zealand Heritage Properties Ltd (NZHP) has been commissioned by Darryl Sycamore on behalf of the client to undertake a heritage assessment of the project area. This report has been prepared to assess the heritage potential of the project area and to consider the impact that the proposed works will have on any archaeological and heritage sites. Archaeological sites are areas that witnessed human occupation prior to the year 1900 and can provide information on the history of New Zealand through archaeological investigation; archaeological sites are protected under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014). Under the Resource Management Act 1991 (RMA), the definition of historic heritage is broader, extending to include post-1900 heritage resources.

1.1 Project Area

The project area does not have a formal address and is currently defined as Lot 1 DP 466676. While the project area is nominally regarded as encompassing the entirety of the modern land parcel, mining and associated sediment disturbance will not extend to the narrow upper terrace closest the main highway (Figure 1-1). Within the project area there six recorded archaeological sites; however, as will be discussed in Sections 6 and 7, only two of these sites extend into the project area. While there are no heritage sites, statutory acknowledgment areas, covenant or heritage orders, or customary marine titles within the project area, the property is subject to Part IV A Conservation Act and Section 11 Crown Minerals Act 1991 (CT 623528). Moreover, the site borders a DoC conservation area, representing a marginal strip of the banks of the Clutha River. The project area does not, however, extend into the marginal strip. A summary of the project area is provided in Table 1-1.

Table 1-1. Summary of project area.

Site Address	0 Luggate-Cromwell Road, Central Otago
Legal Description	Lot 1 DP 466676
Landowner	Hawea Motors Ltd
Territorial Authority	Central Otago District Council
Archaeological Site No.	G40/148, G40/149
Previous Archaeological Authorities	N/A
New Zealand Heritage List/Rārangi Kōrero	N/A
Covenant, Heritage Order, or Other Protection	Part IV A Conservation Act (Marginal Strips); Section 11 Crown Minerals Act 1991 (Minerals reserved to Crown)
Scheduled on District Plan	N/A
Reserve Status	Borders protected DoC conservation land – “Marginal Strip – Clutha River”.
Statutory Acknowledgement Area	The Clutha/ Mata-Au is a statutory acknowledgement area, although this is outside of the project area.
Customary Marine Title	N/A

1.2 Proposed Activities

The client is proposing to establish a gold-mining operation within the lower river terraces at Sandy Point, Luggate, representing an area roughly 2.3km long by 300-400m wide (Figure 1-1). A mechanical trommel will be used for the extraction of placer gold and will be assisted by upwards of two mechanical excavators and a bulldozer, with the latter primarily used for the purposes of earth moving. Mining will commence at the southern end of the site and proceed in a zig-zagging manner northwards between the main road and the river.

All topsoil will be stripped in front of the mine face as it progresses forward, with the mined sediments excavated to a depth of 3-4m. Mined spoil will sit to the side of the operational area, with all disturbed soil progressively rehabilitated as the project proceeds. Some disturbed soil may be reserved in the form of a low bund around just within the perimeter of the site, wherein it borders the marginal strip. Although awaiting confirmation from the landscape gardener, this bund will also be used for the purposes of landscape rehabilitation.

Ponds for sediment management will also be established on-site, with hoses and associated pumps organised within a closed system with no intended interaction with the river. However, if river-water is required to top-up internal water levels, then an access agreement from the DoC will be sought. Once mining has been completed, the land will be subdivided for future sale (Resource Consent Application RC230386); however, this application pertains exclusively to the proposed mining project.

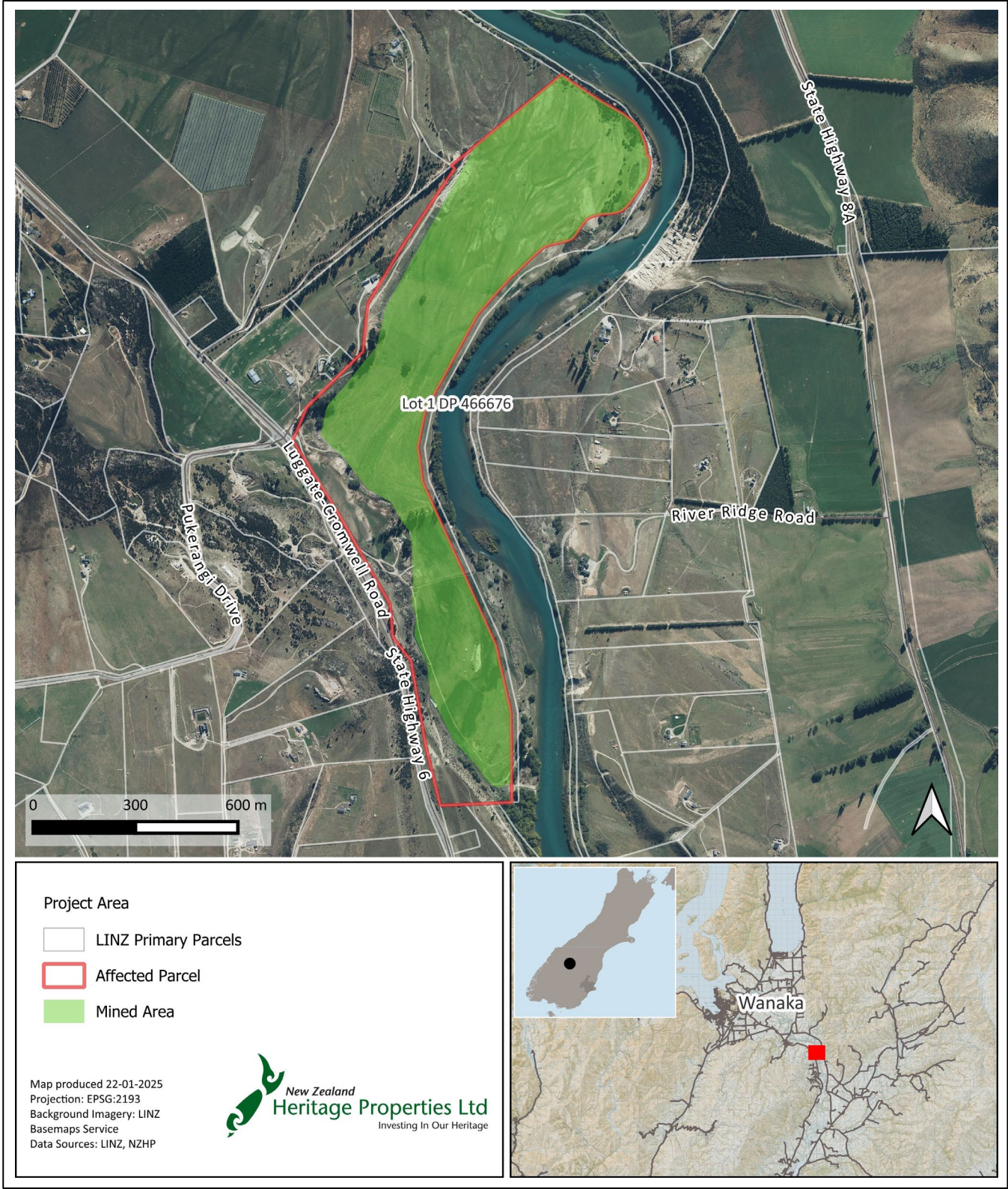


Figure 1-1. Map showing location of project area.

2 Statutory Requirements

The legislative requirements relating to heritage are provided below, including the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014), Conservation Act 1987, Resource Management Act 1991 (RMA), and Protected Objects Act 1975. It is important to note that archaeological sites are defined in the HNZPTA 2014 primarily as sites associated with human activity prior to 1900; however, the RMA 1991 and Conservation Act 1987 take a more holistic approach to heritage that has no age limit.

2.1 Heritage New Zealand Pouhere Taonga Act 2014

The HNZPTA 2014 came into effect in May 2014, repealing the Historic Places Act 1993. The purpose of this act is to promote identification, protection, preservation, and conservation of New Zealand's historical and cultural heritage. HNZPT administers the act and was formerly known as the New Zealand Historic Places Trust (Pouhere Taonga). The act provides definitions of archaeological sites, historic areas, and historic places.

An **archaeological site** is

- (a) any place in New Zealand, including any building or structure (or part of a building or structure), that--:
 - (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
 - (ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
- (b) includes a site for which a declaration is made under section 43(1)

Additionally, HNZPT has the authority (under section 43(1)) to declare any place to be an archaeological site if the place

- (a) was associated with human activity in or after 1900 or is the site of the wreck of any vessel where that wreck occurred in or after 1900; and
- (b) provides, or may be able to provide, through investigation by archaeological methods, significant evidence relating to the historical and cultural heritage of New Zealand.

A **historic area** is an area of land that

- (a) contains an inter-related group of historic places; and
- (b) forms part of the historical and cultural heritage of New Zealand; and
- (c) lies within the territorial limits of New Zealand.

A **historic place**

- (a) means any of the following that forms a part of the historical and cultural heritage of New Zealand and that lies within the territorial limits of New Zealand:
 - (i) land, including an archaeological site or part of an archaeological site;
 - (ii) a building or structure (or part of a building or structure);
 - (iii) any combination of land, buildings, structures, or associated buildings or structures (or parts of buildings, structures, or associated buildings or structures); and
- (b) includes anything that is in or fixed to land described in paragraph (a).

Archaeological sites are protected under Section 42 of the act, and it is an offense to carry out work that may “modify or destroy, or cause to be modified or destroyed, the whole or any part of that site if that person knows, or ought reasonably to have suspected, that the site is an archaeological site”, whether or not the site has been previously recorded. Each individual who knowingly damages or destroys an archaeological site without having the appropriate authority is liable, on conviction, to substantial fines (Section 87).

Any person wishing to carry out work on an archaeological site that may modify or destroy any part of the site, including scientific investigations, must first obtain an authority from HNZPT (Sections 44(a,c)). The act stipulates that an application must be sought even if the effects on the archaeological site will be no more than minor as per Section 44(b). A significant change from the Historic Places Act (1993) is that “an authority is not required to permit work on a building that is an archaeological site unless the work will result in the demolition of the whole of the building” (Section 42(3)).

HNZPT will process the authority application within five working days of its receipt to assess if the application is adequate or if further information is required (Section 47(1)(b)). If the application meets the requirements under Section 47(1)(b), it will be accepted and notice of the determination will be provided within 20 to 40 working days. Most applications will be determined within 20 working days, but additional time may be required in certain circumstances. If HNZPT requires its own assessment of the Māori values for the site, the determination will be made within 30 working days. If the application relates to a particularly complex site, the act permits up to 40 days for the determination to be made. HNZPT will notify the applicant and other affected parties (*e.g.*, the landowner, local authorities, iwi, museums, *etc.*) of the outcome of the application.

Once an authority has been granted, modification of an archaeological site is only allowed following the expiration of the appeals period or after the Environment Court determines any appeals. Any directly affected party has the right to appeal the decision within 15 working days of receiving notice of the determination. HNZPT may impose conditions on the authority that must be adhered to by the authority holder (Section 52). Provision exists for a review of the conditions (see Section 53). The authority remains current for a period of up to 35 years, as specified in the authority. If no period is specified in the authority, it remains current for a period of five years from the commencement date.

The authority is tied to the land for which it applies, regardless of changes in the ownership of the land. Prior to any changes of ownership, the landowner must give notice to HNZPT and advise the succeeding landowner of the authority, its conditions, and terms of consent.

An additional role of HNZPT is maintaining the New Zealand Heritage list, which is a continuation of the Register of Historic Places, Historic Areas, Wāhi Tapu, and Wāhi Tapu Areas. The list can include archaeological sites. The purpose of the list is to inform members of the public about such places and to assist with their protection under the Resource Management Act 1991.

2.2 Conservation Act 1987

The Conservation Act 1987 defines **conservation** as “the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations.” This provides for the protection of historic resources, a wide definition, where **historic resource** means a historic place as per the HNZPTA 2014 (see Section 2.1); and includes any interest in a historic resource.

The Act sets out the majority of DoC’s responsibility and roles. Under Section 6, DoC has a particular responsibility to interpret and administer the act to give effect to the principles of the Treaty of Waitangi and build effective conservation relationships with mana whenua. Section 6 sets out the functions of DoC which includes but is not limited to, in relation to historic resources:

- to manage for conservation purposes, all land, and all other natural and historic resources, for land managed by DoC and for land whose owner agrees with the Minister they should be managed by DoC
- to advocate the conservation of natural and historic resources generally:
- to promote the benefits to present and future generations of—the conservation of natural and historic resources generally and the natural and historic resources of New Zealand in particular; and the conservation of the natural and historic resources of New Zealand’s sub-antarctic islands and, consistently

with all relevant international agreements, of the Ross Dependency and Antarctica generally; and international co-operation on matters relating to conservation:

- to the extent that the use of any natural or historic resource for recreation or tourism is not inconsistent with its conservation, to foster the use of natural and historic resources for recreation, and to allow their use for tourism.

The public conservation land DoC administers has different layers of protection, depending on which category or land status it holds under various legislation, which is complex often with additional or multiple layers of protection overlaying each other. Categories or land status may include, but are not limited to, National Parks, specially protected areas, wilderness areas, amenities area, reserves (e.g., historic, scientific, recreation as per Reserves Act), marginal strips, stewardship areas and DoC is also party to land covenants. To implement conservation, the protection of historic resources within public conservation land is guided by DoC's general policy, conservation management strategies (CMS) and conservation plans as statutory documents and may differ between the category or land status of public conservation land. This means that for projects planned on public conservation land, DoC must be contacted to determine their requirements for assessment of effects on historic resources, any requirements such as CMS or conservation plans, for managing historic resources when identified during assessments. Assessments of historic resources may be required for landowner or affected party consultation and consent for the archaeological authority process under the HNZPTA 2014, Resource Consent, or obtaining a concession or access agreement from DoC.

2.3 Resource Management Act 1991

The RMA 1991 defines historic heritage as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, and it may include historic sites, structures, places, and areas; archaeological sites; and sites of significance to Māori. It should be noted that this definition does not include the 1900 cut-off date for protected archaeological sites as defined by the HNZPTA 2014. Any historic feature that can be shown to have significant values must be considered in any resource consent application.

The heritage provisions of the RMA 1991 were strengthened with the Resource Management Amendment Act 2003. The Resource Management Amendment Act 2003 contains a more detailed definition of heritage sites and now considers historic heritage to be a matter of national importance under Section 6. The act requires city, district, and regional councils to manage the use, development, and protection of natural and physical resources in a way that provides for the well-being of today's communities while safeguarding the options of future generations.

Under the RMA 1991, local authorities are required to develop and operate under a district plan, ensuring that historic heritage is protected. This includes the identification of heritage places on a heritage schedule (or list) and designation of heritage areas or precincts and documents the appropriate regulatory controls. All heritage schedules include, but are not limited to, all items on the New Zealand Heritage List/Rārangi Kōrero. Additional sites of significance to the local authority may also appear on the schedule.

The regulatory controls for historic heritage are specific to each local authority. However, most local authorities will require resource consent under the RMA 1991 for any alterations, additions, demolition, or new construction (near a listed place) with HNZPT being recognised as an affected party. Repair and maintenance are generally considered permitted activities.

The RMA 1991 requires local authorities to develop and operate under a district plan. The Central Otago District Council (CODC) District Plan identifies the significance of historic buildings to the character of region. The heritage resources identified by the council are included in Schedule 19.4: Register of Heritage Buildings, Places, Sites and Objects and Notable Trees. The register includes all HNZPT Category 1 and Category 2 listed sites, which have been evaluated according to criteria outlined in the HNZPTA 2014.

Iwi/hapu management plans are planning documents that are recognised by an iwi authority, relevant to the resource management issues, including heritage, of a place and lodged with the relevant local authority. They have statutory recognition under the RMA 1991. Iwi Management Plans set baseline standards for the management of Māori heritage and are beneficial for providing frameworks for streamlining management processes and codifying Māori values. Iwi Management Plans can be prepared for a rohe, heritage inventories, a specific resource or issue or general management or conservation plans (NZHPT, 2012).

The rūnanga Te Rūnanga o Moeraki, Kāti Huirapa Rūnanga ki Puketeraki, Te Rūnanga o Ōtākou and Te Rūnanga o Hokonui are collectively involved in the protection/promotion of the Otago region's natural and physical resources by providing input into the processes required by the RMA and other relevant legislation. *Kai Tahu Ki Otago Natural Resource Management Plan* (Kāi Tahu Ki Otago, 2005) has been collectively developed by the rūnanga and supporting councils.

While the CODC has not individually supported this management plan, it is a signatory to the Te Rōpu Taiao Governance Charter. This is a formal agreement between Otago rūnanga and Otago local authorities to work together at both a collective and individual council level and is acknowledged as a core relationship in both management plans.

The management plan is recognised by iwi authority Te Rūnanga o Ngāi Tahu. The plan provides explanation of kaitiakitanga, outline cultural values and places of significance, identify primary issues, and provides policy and management guidelines. Several rūnanga and Ngāi Tahu Whānui (of Murihiku and Otago) share an interest in the lakes and mountains near Whakatipu-wai-māori (Lake Wakatipu).

2.4 Protected Objects Act 1975

The Protected Objects Act 1975 was established to provide protection of certain objects, including protected New Zealand objects that form part of the movable cultural heritage of New Zealand. Protected New Zealand objects are defined by Schedule 4 of the act and includes archaeological objects and taonga tūturu. Under Section 11 of the Protected Objects Act 1975, any newly found Māori cultural objects (taonga tūturu) are automatically the property of the Crown if they are older than fifty years and can only be transferred from the Crown to an individual or group of individuals through the Māori Land Court. Anyone who finds a complete or partial taonga tūturu, accidentally or intentionally is required to notify the Ministry of Culture and Heritage within:

- (a) 28 days of finding the taonga tūturu; or
- (b) 28 days of completing field work undertaken in connection with an archaeological investigation authorised by HNZPT.

3 Methodology

In preparing this assessment, guidance has been taken from *Writing Archaeological Assessments. Archaeological Guidelines Series No. 2* (HNZPT, 2019) with additions to consider the wider definition of historic heritage under the RMA and Conservation Act in consultation with DoC. Presented below are the methods used to gather information to identify the heritage potential of the project area, determine the archaeological significance, and assess the effects of the proposed work on heritage values.

3.1 Research to Inform Heritage Value

Documentary research was undertaken to inform on the heritage resources within the project area, including consideration of the physical environment, historical background, previous investigations, and heritage context. The physical environment and setting section considers the geomorphology and land use, and identifies environmental factors that may influence how the site was occupied through time. The historical background first provides an overview of human history for the wider area before narrowing down on evidence that is specific to the project area itself to determine the nature and significance of the archaeology and heritage sites. Previous research and investigation for the project area provide an understanding of research results, areas of modification, and informs on the potential for the proposed works to affect heritage sites. This section also considers the wider context, including the consideration of sites recorded near the project area and how such sites are represented in the heritage and archaeological record at the local, regional, and national level. Sources utilised for this research include:

- Published primary and secondary sources for Sandy Point,
- Ka Huru Manu,
- Historic newspaper articles through PapersPast,
- Historic photographs from Hocken Library, National Library of NZ,
- Historic maps accessed via Prover and from Archives New Zealand,
- TLA archives,
- ArchSite, and
- The HNZPT archaeological reports digital library,

A site visit provides the opportunity to identify archaeological features that are present within the project area along with their condition. The site visit also notes any disturbances to the site that may affect the distribution or preservation of subsurface features.

A pedestrian survey was conducted by Blair McPhee and Heath Lie-Olesen on 29 October, 2024, and Megan Lawrence on 6 January 2025. The results of this survey are given in Section 7. Particular attention was focused on the area bordering the Clutha River which, in addition to being considered the point of highest archaeological visibility/density, has also been less impacted by ploughing, farming-related, viticulture, residential construction, and landscaping activities over the past century. Although the precise location of archaeological sites within the project area was not known prior to the survey, a concerted attempt was made to locate all relevant sites and map their visible extent via a mobile GNSS unit. The location of features/structures depicted on historic survey maps was also investigated for evidence of above surface remains.

3.2 Assessment of Heritage Values

The assessment of heritage values follows the criteria established by HNZPT in *Significance Assessment Guidelines* (O'Brien & Barnes-Wylie, 2019), as requested by the DoC. This guideline was intended to provide standardised assessment criteria for considering historic places and areas for inclusion on the New Zealand Heritage List/Rārangī Kōrero. The guideline requires a twofold assessment, firstly considering the nature of the ascribed heritage value, and secondly the degree of their significance. The degree of significance is not rigorously defined

in the guideline, but examples include ‘special’ or ‘outstanding’ for the highest values, and at the other end of the spectrum there may be ‘little’ to ‘no heritage value’ or even ‘adverse’ or ‘negative value’.

Table 3-1. Criteria for the assessment of heritage values as defined in HNZPT’s *Significance Assessment Guidelines* (O’Brien & Barnes-Wylie, 2019).

Criteria	Threshold for Inclusion	Key Questions
Aesthetic significance or value	The place has, or includes, aesthetic qualities that are considered to be especially pleasing, particularly beautiful, or overwhelming to the senses, eliciting an emotional response. These qualities are demonstrably valued, either by an existing community or the general public, to the extent that they could be expected to experience a sense of loss if the qualities which evoke the aesthetic value were no longer there.	1. What aesthetic qualities is the place recognised for? 2. How has the importance of the aesthetic qualities of the place been acknowledged or acclaimed by the community or group? 3. How do the aesthetic qualities compare with other places with similar qualities?
Archaeological significance or value	The place provides, or is demonstrably likely to provide, physical evidence of human activity that could be investigated using archaeological methods. Evidence obtained as a result of an archaeological investigation could be expected to be of significance in answering research questions, or as a new or important source of information about an aspect of New Zealand history.	1. Is the place likely to contain physical evidence of human activity that archaeological methods could locate or identify? 2. What aspect of New Zealand history could this evidence provide information about? 3. Is the physical evidence, located through archaeological methods, likely to provide significant evidence about this aspect of New Zealand history? 4. Is this place the only, or one of a very few, sites that can provide this evidence about New Zealand history?
Architectural significance or value	The place reflects identifiable methods of construction or architectural styles or movements. When compared with other similar examples, or in the view of experts or relevant practitioners, it has characteristics reflecting a significant development in this country’s architecture. Alternatively, or in conjunction with this, the place is an important or representative example of architecture associated with a particular region or the wider New Zealand landscape.	1. What method of construction or architectural style or movement does the place reflect? 2. Why is this construction method, style or movement of importance in New Zealand history? 3. How well does the place represent this method, style or movement compared to other places?
Cultural significance or value	The place reflects significant aspects of an identifiable culture and it can be demonstrated that the place is valued by the associated cultural group as an important or representative expression of that culture.	1. What culture is associated with this place? 2. How does this place reflect that culture? 3. How has the significance of the place as an important or representative expression of the culture been demonstrated?
Historical significance or value	The place contributes towards the understanding of a significant aspect of New Zealand history and has characteristics making it particularly useful for enhancing understanding of this aspect of history, especially when compared to other similar places.	1. What significant aspect of New Zealand history is the place related to? 2. What does the place contribute to the understanding of that aspect of New Zealand history? 3. How does the place’s ability to contribute to the understanding of this aspect of history compare with other similar places?
Scientific significance or value	The place includes, or is demonstrably likely to include, fabric expected to be of significance in answering research questions or a new or important source of information about an aspect of New Zealand’s cultural or historical past through the use of specified scientific methods of enquiry.	1. What information could be obtained through scientific methods of enquiry? 2. What fabric exists at the place that might help to provide this information? 3. How does its ability to provide information through scientific methods compare with other similar places?
Social significance or value	The place has a clearly associated community that developed because of the place, and its special characteristics. The community has demonstrated that it values the place to a significant degree because it brings its members together, and they might be expected to feel a collective sense of loss if they were no longer able to use, see, experience or interact with the place.	1. Is this a place that brings people together? 2. Is there an existing community associated with the place? 3. How has the community demonstrated that they value the place?
Spiritual significance or value	The place is associated with a community or group who value the place for its religious, mystical or sacred meaning, association or symbolism. The community or group regard the place with reverence, veneration and respect, and they might be expected to feel a collective sense of loss if they were no longer able to use, see, experience or interact with the place.	1. Is there a community or group who value the place for its religious, mystical or sacred meaning, association or symbolism? 2. How is the community or group’s shared belief, faith or spiritual experience demonstrated at this place?
Technological significance or value	The place includes physical evidence of a technological advance or method that was widely adopted, particularly innovative, or which made a significant contribution to New Zealand history	1. What technological advance or method does the place demonstrate? 2. What physically demonstrates the technology used?

	OR The place reflects significant technical accomplishment in comparison with other similar examples, or in the view of experts or practitioners in the field, and has characteristics making the place particularly able to contribute towards our understanding of this technology.	3. Why is this technology of importance in New Zealand history? 4. How well does the place represent this technology compared to other places?
Traditional significance or value	The place reflects a tradition that has been passed down by a community or culture for a long period, usually generations and especially since before living memory, and has characteristics reflecting important or representative aspects of this tradition to a significant extent.	1. What community or culture has practised, or is the custodian of, the tradition that is associated with this place? 2. What tradition is associated with this place? 3. What physical aspects of the place reflect the tradition? 4. How is this place an important or representative expression of the tradition?

The assessment of archaeological values take into account the criteria established by HNZPT (2019):

- The **condition** of the site(s).
- Is the site(s) unusual, **rare or unique**, or notable in any other way in comparison to other sites of its kind?
- Does the site(s) possess **contextual value**? Context or group value arises when the site is part of a group of sites which taken together as a whole, contribute to the wider values of the group or archaeological, historic or cultural landscape. There are potentially two aspects to the assessment of contextual values; the relationship between features within a site, and the wider context of the surroundings.
- **Information potential**. What current research questions or areas of interest could be addressed with information from the site(s)? Archaeological evaluations should take into account current national and international research interests, not just those of the author.
- **Amenity value** (e.g. educational, visual, landscape). Does the site(s) have potential for public interpretation and education?
- Does the site(s) have any special **cultural associations** for any particular communities or groups (e.g., Māori, European, Chinese.)

The criteria outlined above help to build an overall assessment of significance of a site, and NZHP have adopted the following levels of overall heritage value (Table 3-2). These levels of significance follow the recommendations proposed by Department for Transport (2008); although, this steers away from the use of local, regional, and local importance, which Kerr (2013) argues is irrelevant to the assessment process. It is important to note that it is not possible to fully understand the significance of subsurface sites, and that the significance of a site may change on the basis of what is found during the work programme.

Table 3-2. Levels of overall heritage value (adapted from DoT, 2008).

Level of Significance	Criteria
Very High	• World Heritage Sites (and proposed sites) • A heritage site of acknowledged international importance
High	• Listed heritage sites, including those of listing quality and importance ◦ Category 1: places of special or outstanding historical or cultural heritage significance or value; ◦ Category 2: places of historical or cultural heritage significance or value; and • Scheduled heritage sites, including those of scheduling quality and importance • Heritage sites with exceptional values
Medium	• Heritage sites that can be shown to have moderate values
Low	• Heritage sites with limited value, including those that are highly represented, have low information potential, have poor preservation, and/or poor survival of contextual association
Negligible	• Sites with very little surviving heritage interest
Unknown	• The importance of the site is not yet known

3.3 Assessment of Effects

After determining that there is evidence that archaeology is present within the project area and evaluating its archaeological value, an assessment of the effects of the proposed work on those values was completed. Specifically, consideration was given to the following matters as outlined by HNZPT (2019):

- How much of the site(s) will be affected, and to what degree, and what effects this will have on the values of the site(s).
- Whether the proposed work may increase the risk of damage to the site(s) in future. For example, change from farming to residential use may make sites vulnerable to increased pedestrian and vehicular activity.
- Whether a re-design may avoid adverse effects on the site(s). It is recognised that detailed evaluation of alternatives may be beyond the scope of the heritage assessment, however, some consideration of alternatives should be considered where possible.
- Possible methods to protect sites, and avoid, minimise or mitigate adverse effects should be discussed. These will form the basis of any recommendations in the final section.

The magnitude of impact on archaeology is defined below with a scale ranging from no impact to major impact. In most instances these impacts are adverse; however, there may also be positive impacts on the site.

- **Major** - impact to the archaeological site, such that the asset is totally altered (*e.g.*, a site is totally destroyed).
- **Moderate** - impact to the archaeological site, such as the asset is significantly modified (*e.g.*, at least half of a site is affected)
- **Minor** - impact to the archaeological site, such that the asset is slightly different (*e.g.*, a small portion of the site is affected).
- **Negligible** - slight changes to archaeological site that hardly affect it.
- **No impact** - the works will not affect the site.

4 Physical Environment and Setting

Sandy Point is predominantly represented by a low outwash terrace of the Clutha River/ Mata-Au, roughly 10km downstream of Luggate Township. With a length of ~ 340 km and a catchment area of nearly 22000 km², the Clutha River is one of the largest rivers in New Zealand and the largest by volume (Murray, 1975). Situated on a basement almost exclusively composed of Otago Schist, the river drains high mountains in the west, passing through arid valleys and gorges and restricted fertile terraces before entering the basins and coastal plains of eastern Otago, ultimately discharging 6% of the South Island's freshwater into the South Pacific at Molyneux Bay (Craw et al., 2012).

Sourced directly by Lake Wānaka, the major Clutha tributaries include the Hāwea and Kawarau Rivers, with the river south of its junction with the Kawarau historically referred to as the “Molyneux”, whereas the northern stretch was typically regarded as the “Upper Clutha”. The landscape of the upper Clutha was formed by periodical glacial advances from the high mountain areas. These advances left a sequence of morainic deposits – characterised mainly by Pleistocene-age gravels of schist, greywacke, quartz and basalt alluvium – which were later dissected by rivers to form the flights of terraces characteristic of the area (Ritchie, 1980a) (Figure 4-1). The lower terrace of the Sandy Point project area represents a classic exemplar of this phenomenon, and is bounded at its south by an alluvial escarpment that extends from the foot of the Grandview Range (Boffa Miskell Limited, 2018).



Figure 4-1. 1956 aerial demonstrating the prominent terracing and escarpment features within Clutha River Valley in vicinity of Luggate (Whites Aviation Ltd, 1956).

The sediment profile of Sandy Point is a relatively thin Fraser soil, which is typical of the low terraces and floodplain benches of Otago. This soil is characterised by a fining-upward sequence of medium-large river cobbles and finer river sands within a gently undulating slope (Fs3aG: (Otago Regional Council, 2024). Historically, the area surrounding Sandy Point had a tendency to be regularly inundated with aeolian sand drifts blown up from the surrounding bluffs and terraces. However, twentieth century irrigation practices have been largely successful in converting the lower terrace to cultivated agricultural land, with grasses now extending across the majority of the project area and exotic willows lining its eastern bank.

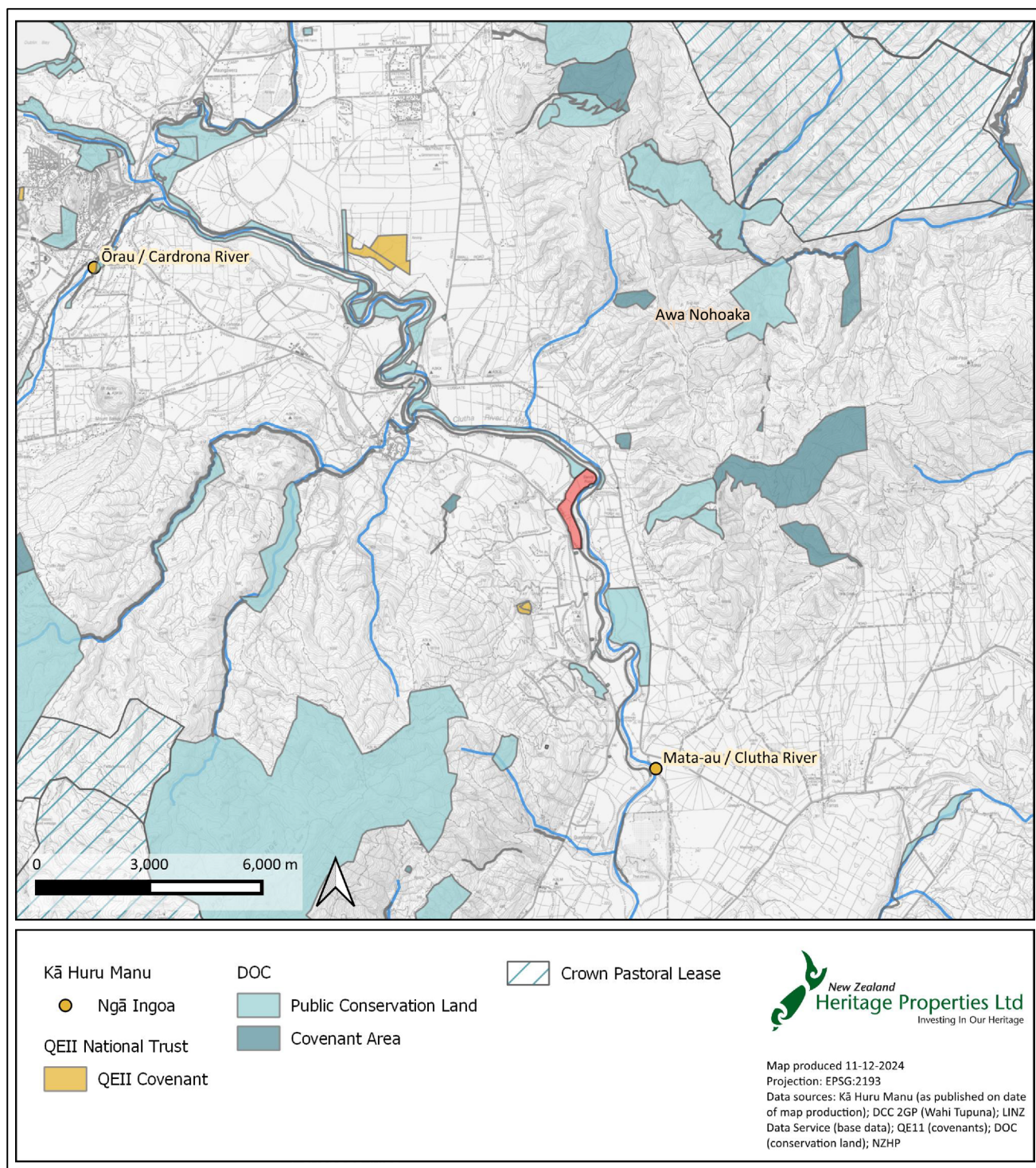


Figure 4-2. The broader geographical setting of the Sandy Point project area (in red).

These changes reflect the major landscape alterations of the larger Clutha River valley, with much of the native tussock grassland converted to high producing exotic grassland and orchards, supporting a wide variety of grazing, farming, viticulture, and fruit-growing enterprises (Central Otago produces around 45% of the nation's stone fruit). Damming of the river, particularly at Clyde, has also intensely modified the Clutha landscape, resulting in artificially regulated lake levels and impacting on levels of sediment and downstream river flow (Boffa Miskell Limited, 2018). The Clutha River catchment also yielded most of the gold associated with Otago's Gold rush, with upwards of 240 tonnes (~8 million ounces) mined from its alluvial sediments (Williams, 1974). This left an indelible mark on the river's edge, with hundreds of historic mining sites still identifiable via the scouring caused by sluicing and by the location of stone tailings and cottage remnants.

As an area of statutory acknowledgement for Ngāi Tahu, the Clutha River/ Mata-Au is also of particular geographical, economic, and genealogical significance to manawhenua. In addition to representing part of a mahika kai trail leading inland from the eastern coast, the river was also instrumental in the transportation of pounamu from inland areas down to settlements on the coast, from where it was traded north and south. It was also utilised as the original tribal boundary between Ngāi Tahu and Kāti Mamoe, prior to the integration of the two iwi (Ngāi Tahu Claims Settlement Act 1998).

5 Historical Background

The Otago region has a diverse history of both Māori and Pākehā settlement. Though some areas were more intensively occupied than others, the region has been subject to extensive settlement from the initial arrival of Māori communities. Through historical research, it is possible to identify what types of physical, cultural, and social processes have shaped the form and distribution of archaeological material. Additionally, historical background can be used to inform the interpretation of archaeological contexts and material whenever they are encountered. The following section discusses first the general history of the wider Central Otago district, before focusing specifically on the area around Sandy Point.

5.1 Māori Occupation of Sandy Point and the Surrounding Area

The Otago region was first settled and navigated by Māori communities descended from some of the earliest Polynesian settlers to Aotearoa, with archaeological evidence showing that people had settled the Otago interior by the fourteenth century (Anderson *et al.*, 1996; Ritchie, 1980). There is some debate about when the first Māori communities came to the area, but umu (ovens) around the Dart River, beyond the north-western end of Lake Wakatipu, have been radiocarbon dated to 1227AD, 1363AD, 1508AD and 1613AD. While archaeological evidence for long-term Māori settlement is present in Central Otago, settlement patterns are more indicative of migratory routes through the region, specifically for seasonal hunting, fishing, and maintaining long-distance trade networks (Parcell, 1951; Peat, 2002; Roxburgh, 1957, 1990; Veitch, 2003). Throughout the region, artefact assemblages and animal butchery sites (including moa) suggest that early Māori communities were utilising seasonal nohoaka (McCraw, 2007). While it has been argued by some that there is a lack of evidence for any permanent early Māori settlements having been established within Central Otago (Parcell, 1951; Veitch, 2003), this claim is disputed by early Pākehā accounts of older Māori villages no longer in use by the time of European arrival (Atholl Anderson, 1983). At the very least, the record of Māori placenames and places of significance recounted in local tradition attest to these early periods of settlement, reinforcing the rich history of Māori communities in the region (Potiki & KTKO Consultancy Ltd, n.d.).

This importance of the Mata-Au/Clutha River to Māori is underscored by the statutory acknowledgment of Ngāi Tahu's cultural, spiritual, historic, and traditional association with the river. Taking its name from a Ngāi Tahu whakapapa that traces the genealogy of water, the Mata-Au is viewed as a direct descendant of the creation traditions. As such, the Mata-Au/Clutha River is part of a tradition connecting the cosmological world of the gods with present generations, providing a physically accessible history that reinforces tribal identity and continuity between generations. The following sections discuss Māori occupation through Sandy Point/Luggate and the wider surrounds, emphasising the widespread significance of the Mata-Au/Clutha River to early Māori.

5.1.1 Pā and Kaika

Northeast of the project area, tradition holds that a settlement was established at the southern end of Lake Wānaka, close to the head waters of the Mata-Au/Clutha River. This was Take Kārara/ Takikarara which, during the 1879 Smith-Nairn Royal Commission of Inquiry into the Ngāi Tahu land claims, Ngāi Tahu kaumātua recorded as a kāinga nohoanga, a pā, and a kāinga mahinga kai, where pora (Māori turnip), mahetau, tuna (eels), and weka were gathered (Te Rūnanga o Ngāi Tahu, 2024b). Several archaeological sites recorded at the entrance to the Mata-Au/Clutha River are reflective of this occupation, including an oven (F40/10: exposed during road grading) and two artefact findspots (F40/11: a green argillite adze, and F40/6: a greenstone).

Slightly further north, a well-known settlement – Manuhaea – was located at the “The Neck” – the narrow isthmus of land separating lakes Hāwea and Wānaka. Manuhaea, traditionally regarded as a kāinga mahinga kai (food-gathering place) and kāinga nohoanga (settlement), was particularly renowned for a small lagoon where eels were gathered. Other food gathered in the vicinity of Manuhaea included weka, kākāpō, kiwi, kea, kākā, kererū, and tūi; there were also potato, turnip, and kāuru māra (gardens). Manuhaea was one of the settlements attacked by Ngāti Tama leader Te Pūoho during his 1836 southern attack on Ngāi Tahu, with some of the inhabitants managing to

escape over Ōmakō (the Lindis Pass) and down the Waitaki River (Te Rūnanga o Ngāi Tahu, 2024a). Te Pūoho absconded with his captives into Southland where he was promptly killed and his war party destroyed by the southern Ngāi Tahu leader Tūhawaiki (Atholl Anderson, 1990).

5.1.2 *Mabika Toi*

Stone was an important material for the day to day lives of Māori throughout the country, with stone source locations being one of the driving forces for settlement and travel. In the Otago region, silcrete and porcellanite raw materials were particularly important during periods of early Māori settlement, with over 300 outcrops mapped in the south-eastern districts of the South Island (Hamel, 2001). One of the most prized stones for Māori throughout Aotearoa was pounamu (nephrite), considered a taonga to Māori due to its rarity and strength when used for tools. Nephrite sources in New Zealand are contained mainly to the west coast of the South Island, with the main sources being found around Lakes Wānaka and Whakatipu-wai-māori (Beck & Mason, 2002) (Figure 5-1). The importance of local pounamu sources in the Central Otago area is demonstrated by an early 1798 engraving of Aotearoa originally drawn in charcoal on the deck of the *Endeavour* by Māori rakatira at Whitianga, and reproduced more permanently by the Northland Māori rakatira, Tuki Tahua and Ngahuruhuru (or Te Hurukokoti). This engraving shows Aotearoa with two main islands, ‘Te Aho no Maui’ (The Fish of Maui) and ‘Pounamu’ (Greenstone) (Binney, 2004). The primary feature within the smaller and less detailed South Island is a large lake with the annotation “Lake, where Stones for Hatchets are got” (Figure 5-1).

The Mata-Au/Clutha River played a central role in the distribution of this prized resource around the wider country, with the river representing one of the main means of accessing the interior and the resources found therein. This is evidenced by the numerous artefact findspots recorded in proximity to the upper Mata-Au/Clutha, typically representing adzes/blades of various materials, including greenstone (F40/6), quartzite (F40/2), and argillite F40/4). Dedicated quarries have also been recorded in proximity of the Mata-Au/Clutha River. G43/4, just north of Roxburgh on Mount Benger, represented a porcellanite outcrop quarried by Māori, then damaged during damming of the area. The site record form (SRF) records that cores in various stages of working were scattered across the site.



Figure 5-1 Detail of 1798 engraving of the map Tuki Tahua sketched in 1793 for Philip King, showing lake feature in the South Island interior (Tahua, 1798).

5.1.3 *Mahika Kai*

Though permanent settlements often focused on the coastal regions, Central Otago was utilised during seasonal expeditions for the collection of food resources and raw materials from seasonal settlements known as *kāika mahika kai*. The settlements are referred to as *mahika kai*, being “places at which resources were obtained” and being often associated with seasonal camping sites or *nohoaka* (Potiki & KTKO Consultancy Ltd, n.d.; J. Williams, 2010). *Mahika kai* includes marine resources, freshwater fishing, fowling, plants for consumption and trees and plants for material production (Atholl Anderson, 1998). As part of a *mahika kai* trail that led inland, the Mata-Au/Clutha River facilitated access to a range of seasonal and year-round resources, including eel, lamprey (*kanakana*), *Kōkopu*, *īnanga* (whitebait) and *weka* (Kāi Tahu Ki Otago, 2005).

Only tentative details are known about the earliest periods of occupation in the Central Otago area near Sandy Point, but from the archaeological and ecological evidence available it appears the first Māori in this region took advantage of the abundant moa, small birds and tuna (eels) which lived in the beech forests that once covered the area (Hamel, 2001). Evidence for this can be seen in numerous oven/midden sites recorded along and proximate to the shores of Lake Wānaka (e.g., F40/1, F40/3, F40/7, F40/8, F40/10). Although most of these sites were recorded based on second-hand anecdote, at least one published testimonial (Gilkison, 1958) gives account of moa bones of the “largest size” discovered “in a Maori oven near Luggate” (later approximated as site G40/67), showing that the valley close to the project area was also utilised *mahika kai* for moa.

5.1.4 *Ara Tawhito and Nohoaka*

Otago is crossed by a complex network of *ara tawhito* (traditional travel routes), the knowledge of which was passed down from generation to generation and inherited as groups moved south across Te Waipounamu (Kā Huru Manu, 2018). These routes over land and along rivers were utilised to access important food and material resources, and to travel between established communities (Kā Huru Manu, 2018). *Ara tawhito* followed food resources to sustain their travellers over large distances and the knowledge of local resources came with the knowledge of the routes (Waitangi Tribunal, 1991).

On summarising the traditional *ara tawhito* of the South Island interior, Anderson (1982: Figure 2) identifies the Mata-Au (Clutha River), immediately adjacent to the project area, as an important traditional routeway. The Mata-Au connected the southeastern coast of Te Waipounamu to the interior, carving a path from the coast to some of the great lakes of Otago, including Whakatipu-wai-māori (Lake Wakatipu) Wānaka, and Hāwea (Ka Huru Manu, 2021). One early depiction of *ara tawhito* in the interior is shown on Mantell’s 1848 map of the South Island (Figure 5-2). This map illustrates several trails that connect the coast to the interior. On this map, Mata-Au is shown as ‘S. Dart’ (the southern Dart River). Tributaries of the Mata-Au were well known to early Māori, with one river, the Teviot River, leading to the Mata-Au near Roxburgh. The wider area is also recorded as a location for food resource collection, specifically for accessing freshwater mussels from connecting tributaries of the Mata-Au, and crayfish from Lake Onslow to the northeast (G43/47).

The large conservation area Awa Nohoaka is located 5km to the northeast of the project area (Figure 4-2). The term ‘*nohoanga/nohoaka*’ translates as meaning “a place to sit” and traditionally refers to the seasonal occupation sites (Te Rūnanga o Ngāi Tahu, 2025). Its association with the word for river/stream (“*awa*”) underscores the importance of the regions many waterways to early manawhenua – offering both a place of respite and potential resources as they made their way across the island’s interior.

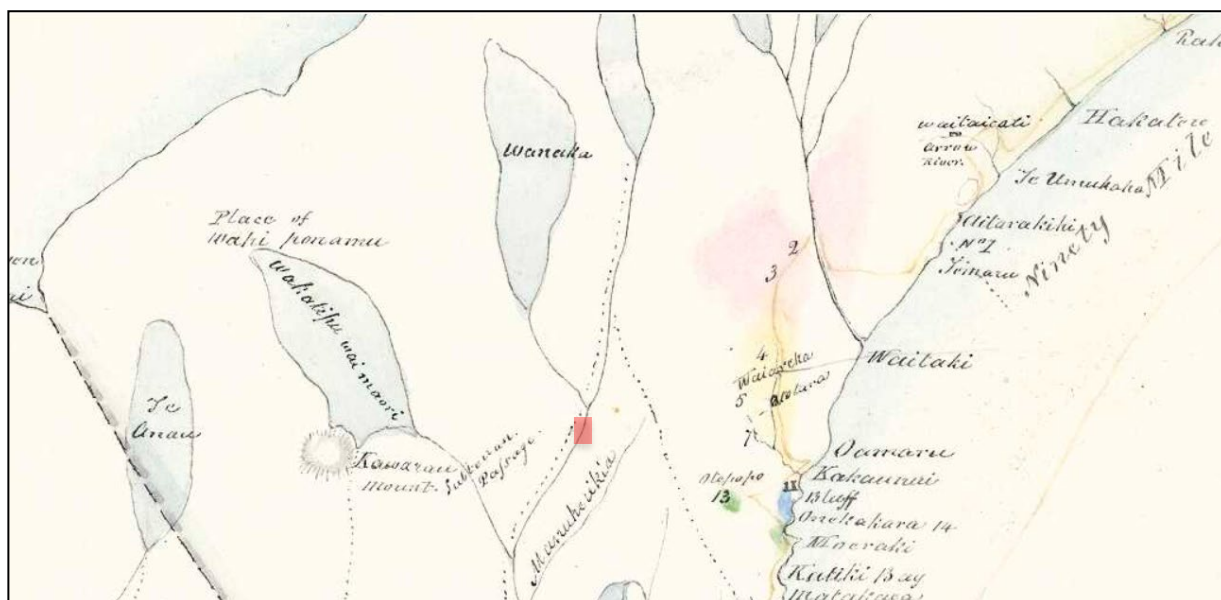


Figure 5-2 Detail of Mantell's 1848 map titled 'Hand Sketch of the South part of Middle Island' showing "Native Paths" following the Mata-Au and other waterways associated with the region's main lakes (Mantell, 1848). Approximate location of project area in red.

5.2 Contact and Post-Contact Period Occupation of Central Otago

The following sections examine the changes that occurred with the arrival of Pākehā to the inland area. Explorers gave way to run holders, who were quickly overtaken by the gold rush. Reasserting pastoral dominance after the first flush of gold fever, run holders fought to purchase the lands they held in lease from the Crown based on pre-emptive rights.

5.2.1 Treaty of Waitangi/ Te Tiriti o Waitangi

The arrival of Pākehā led to the establishment of Treaty of Waitangi/Te Tiriti o Waitangi. The treaty was first signed on 6 February 1840 at Waitangi and on 13 June 1840 Kāi Tahu chiefs signed the Treaty of Waitangi on board the *HMS Herald*. The ship was anchored off Pukekura (Te Runanga o Ngāi Tahu, 2023). It was to guarantee manawhenua continued authority of chiefs' ownership over their land and resources as well as rights as British subjects (Smith, 2019). The treaty stated that would have kāwanatanga. Kāwanatanga was understood by manawhenua as New Zealand Governance, while the British understood it as New Zealand Sovereignty, a difference that has influenced New Zealand's history ever since (Smith, 2019). The biggest immediate impact of the treaty was the surge of immigration to New Zealand, and the establishment of towns and cities far larger than any Pākehā settlement that had come before.

5.2.2 Land Purchases

From 1844 to 1863 the Crown purchased 34.5 million acres of the land in the South Island, almost 80% of the total land area of the South Island, as part of ten land purchases. In the years following the purchases, the Crown failed to meet their obligations established in the purchase agreements. This included not reserving one-tenth of the land purchased for manawhenua; poorly defined boundaries of purchased land; a lack of schools and hospitals provided; unfair prices for land purchased; and increasingly limited access to mahika kai. For over a hundred years Kāi Tahu fought for recognition and compensation of the wrongdoings (Te Runanga o Ngāi Tahu, 2023; Te Rūnanga o Ngāi Tahu, 1997).

5.2.3 Māori and Pākehā: Guides and Explorers

In 1853 a young Scot, Nathaniel Chalmers, helped drive a herd of cattle from Southland to Dunedin. On the overland trip he met Reko, a Kāi Tahu kaumātua who lived at Tuturau. At Chalmers request to explore inland Otago to the north, Reko agreed to guide him in return for a three-legged pot. In September 1853, Chalmers,

Reko, and another Māori companion travelled north from Tuturau. Chalmers found the journey more arduous than anticipated - his clothes were torn to shreds and his boots had to be replaced by sandals made from flax (New Zealand Historic Places Trust Pouhere Taonga, 2009). Chalmers was the first recorded Pākehā to see Lake Whakatipu-wai-māori and the valleys of the Upper Mata-Au (Crawford, 2006); however, while he could see Lake Whakatipu-wai-māori, he never made it to the shores. Chalmers was so sick and exhausted from his journey thus far, that he had to be carried back to friends and he never reached the lake shores (Frazer, 1990). The infamous stock thief James Mackenzie, namesake for the Mackenzie Country, also saw the Mata-Au as he would have had to cross the river after stealing mobs of sheep from the Rhodes Brothers Station in South Canterbury (Crawford, 2006).

5.2.4 *Runholders*

Following a brief period of ad hoc exploration throughout the Central and Lakes regions, by the late 1850s most European explorers were looking for land to claim for farming. Pastoral rights were issued by the Waster Lands Office on the principle of 'first come, first served'. The claim had to be identified by a sketch map of the area showing hills, rivers and lakes. Grazing rights were then issued on the condition the property was stocked within 12 months (Knudson, 2009). Early run boundaries relied on natural features such as waterways with wire fencing becoming more common in the 1860s. In Central Otago, the prevalence of schist meant that it was also used for fencing. Station buildings were often constructed near streams or in places with natural shelter from the weather. The early buildings then gave way to a larger complexes centred on the station's homestead. Smaller huts were also found on the further reaches of the station's boundaries that would house shepherds and musterers, the huts were usually constructed of easily accessible material such as stone (McIntyre, 2007).

Farming was of central importance within the Tarras District, particularly in the region that the township of Luggate would eventually be settled. Both small farming and larger pastoral stations were established in the area, with the construction of a flour mill in the early 1880s further cementing Luggate as an agricultural hub (Cromwell Argus, 1878). This building joined the Albion Hotel, opened in 1869 to service the many bullock teams passing through the area, as one of the few notable buildings within the early township (Upper Clutha Historical Records Society, 2021). Farming would continue to be of primary importance to the region following the other major pursuit that typified much of Central Otago during the 1860s through the 1870s: gold mining.

At the beginning of 1860, an expedition left Dunedin to find pastoral land west of Lake Wanaka. Soon after seeing the Whakatipu area for the first time, William Gilbert Rees described his explorations in a letter to the *Otago Witness*. Based on Rees' letter, the editor wrote an article on Whakatipu-wai-māori and, with remarkable accuracy, guessed at the future rich rewards that might be offered by the district:

"[t]he information indicates the country around the Wakatipu is in all probability a gold bearing district ... and should the precious metal be discovered the 65 miles of inland water carriage [the Kawarau River] would be such an immense advantage that in all probability the country would be extensively wrought. But apart from any consideration of wealth to be derived from the mineral resources of the country, the existence of such lakes as are to be found in Otago will we have no doubt, at some future date, cause this part of New Zealand to be extensively visited for the mere purpose of viewing the grandeur of the scene" (Otago Witness, 1860).

5.2.5 *Gold Mining*

Small-scale gold findings were documented intermittently in Otago during the 1850s, but it was not until the 1860s that gold fever began to spread through the South Island. A find near Lindis Pass in 1861 prompted a small gold rush involving 300 miners over a few months, followed by the larger rush that resulted from Gabriel Read's reporting of gold in Gabriels's Gully in July 1861. According to Hamel (2001), the first men to arrive at Otago gold fields were assigned small land areas (8 x 8 yards) with the earliest diggings on river beaches and low terraces. Topsoil and overburden were removed and piled up in heaps next to prospecting pits. Alluvial gold-bearing gravel was lifted out using a whip (a counterbalanced pole swivelled on a post with a bucket on the end). Gravel was then

processed for gold, with material washed in pans or wooden mining cradles, using buckets of water or an early hand-cranked machine known as a Californian pump¹ (Hamel, 2001: 127). Unlike the stacked mounds of stone tailings seen at subsequent gold workings, early tailings were generally disposed of into the river. The physical remnants of these early mining activities (paddockings) left pitted landscapes with scattered mound and pothole features. Hamel (2001) states that the miners lived in tents associated with low sod or stone walls, sod chimneys and bunks of manuka poles. Shopkeepers also followed the miners, setting up tents near the gold workings. These activities are demonstrated in an 1862 photograph of Gabriels Gully (Figure 5-3).



Figure 5-3. A view of Gabriels Gully in 1862, showing a pitted landscape with various mound and pothole features (Gore, 1862). Also note the frequency of tent sites.

In many areas, the use and re-use of goldfield landscapes has resulted in a palimpsest of mining activities and technologies. Many gold fields were worked over an extended period from the 1860s through to the early twentieth century. Several forms of gold mining technology evolved over this time, with contemporary landscapes leaving traces of complex workings and activities. It is important to recognise that most goldfields were not discrete sites but large integrated systems created by small groups of men (Hamel, 2001). On describing the workers of the Otago gold fields, Hamel states: “these groups range[d] from partnerships of two friends, to registered companies employing dozens of people. Linked to them is an infrastructure of storemen, packers, government officials, road makers, pub keepers, and others, who leave lesser traces of their activities on the landscape” (Hamel, 2001: 135).

5.2.5.1 Early Goldfields

According to Hamel (2001), the first men to arrive at Otago gold fields were assigned small land areas (8 x 8 yards) with the earliest diggings on river beaches and low terraces. Topsoil and overburden were removed and piled up in heaps next to prospecting pits. Alluvial gold-bearing gravel was lifted out using a whip (a counterbalanced pole swivelled on a post with a bucket on the end). Gravel was then processed for gold, with material washed in pans or wooden mining cradles, using buckets of water or an early hand-cranked machine known as a Californian pump² (Hamel, 2001: 127). Unlike the stacked mounds of stone tailings seen at subsequent gold workings, early tailings were generally disposed of into the river.

² A California pump describes an early processing device with an inclined wooden trough and moving canvas rope (or leather belt) between two wheels. Tight-fitting wooden slats were attached to the belt and a manual crank handle attached to the upper wheel to cycle water from the lower level to the upper level (N. Ritchie & Hooker, 1997).

The physical remnants of these early mining activities (paddock) left pitted landscapes with scattered mound and pothole features. Hamel (2001) states that the miners lived in tents associated with low sod or stone walls, sod chimneys and bunks of manuka poles. Shopkeepers also followed the miners, setting up tents near the gold workings. Many of these early river workings have likely been destroyed by flooding or subsequent sluicing and dredging, this includes working in the Clutha/Mata-Au gorges. The first gold-prospecting activities in the general region of the upper Clutha related to the minor rush that accompanied rumours of gold in the Lindis Pass at the outset of 1861, with upwards of 300 miners ultimately making their way overland to the diggings (Otago Witness, 1861). However, it was April 1862 before gold was reported nearer the project area at southern end of lake Wānaka, just north of the mouth of the Clutha River at Quartz Creek – by a sawyer digging a hole in the banks of the creek prior to leaving the district for winter (Otago Witness, 1862). By November of that year a handful of miners were active in the Cardrona Valley (Otago Daily Times, 1862), with a “rush” to Lake Wānaka reported a few months later in early 1863 (Otago Daily Times, 1863). Active mining in the area around Sandy Point appears to have begun around this time (see Section 5.3 below).

5.2.5.2 *Evolving Technologies*

As the early gold deposits were exhausted, miners looked to new methods and technology to find further gold (Webster, 1948). With ground and hydraulic sluicing, the construction of water races quickly developed to bring water to sluicing claims. The technology of race design was introduced from the goldfields of California and Australia, but local innovations occurred rapidly in Otago, leaving a distinct mark on the landscape.

The primary function of the races was to bring water to the goldfields although the races were often only one component of a complex hydraulic system that served different functions over time. For example, the water channelled along the races could be used for ground sluicing, the removal of tailings and waste, and later, the operation of hydraulic elevating technology and other machinery used for ore processing (Hamel, 2001). For the most part, many of the water races were initially constructed for ground sluicing, with hydraulic nozzles used for directing powerful jets of water. One important aspect of race technology was that individual races could be modified, enlarged, and rerouted as needs changed. They required regular maintenance, and “race men” were important members of the work force. The huts of the race men and wider work force are often another landscape feature near water races and gold workings.

Generally, races were unpredictable economic ventures. Some were planned, financed, and built by investors, but others were constructed by parties of men coming together to invest their own time and labour. Once construction was completed, races formed a reliable stream of income with companies competing for the water market. As alluvial gold near the surface fell into decline, the demand for water grew and larger races were utilised to feed hydraulic elevating and other complex extraction technologies (Hamel, 2001). After the boom of the gold rush some of the water races were used for irrigation (McIntyre, 2007).

One of the most significant changes for mining along the Clutha River/Mata-Au was the introduction of dredging. Dredging began along the Clutha river/Mata-Au around 1882, though earlier attempts in the 1860s had been made with a spoon dredge, upstream of the Millers Flat Bridge (Brown, Jacombs, & Brooks, 2011; Webster, 1948). The late 1880s was a turning point for dredging in New Zealand, spurred by the success of Choie Sew Hoy, and the Shotover Big Beach Gold Mine. Looking to dredge the deeper deposits along the Shotover river, Sew Hoy had a local Dunedin firm adapt a similar design used for Dunedin Harbour Dredge for this purpose, and by the end of the 1880s the Sew Hoy Dredge was seeing impressive returns on their innovations.

Over the next ten years various claims were made and investments into what became Otago’s first dredging boom, with the designs refined and improved (Ballantyne, 2015). The first dredges of the upper Clutha were established by 1890, with several dredges operating simultaneously between Queensberry and Albert Town (Otago Witness, 1899). By 1900 there were 228 dredges working in Otago and Southland, with all claims available along the Clutha River having been made by this time (Moyle, McPherson, & Cawte, 2013; Webster, 1948).

5.2.6 Flooding of the Clutha

It is worth briefly noting the occurrence of two major flooding events, both of which would have had a major impact on the area surrounding Sandy Point and the physical evidence of the early mining activities that took place there. The first event (the Old Man Flood), which took place in July 1863, was part of a compounding series of natural disasters that struck the region between July and September of that year. Long and sustained snowfall in the mountains was followed by unseasonably warm rains, which precipitated a swift and continuing thaw. The Clutha rose 20ft in a night, while many of the region's other rivers jumped dramatically above normal levels. Many miners, who tended to camp close to the riverbanks, were caught unawares. Although the precise number of fatalities remains unknown, dozens of men appear to have been swept to their deaths (McLintock, 1966a).

The second - the great Clutha flood of 1878 - is regarded as the most catastrophic flooding event in the Clutha's history. A particularly severe winter, followed by hard frosts, had left an unprecedented depth of snow on the hillsides, with the snowfields consolidated to over 100 ft deep in places. September arrived with warm winds followed by 36 hours of continuous warm rains. Another 24 hours of rain at the start of October hastened the dramatic thaw. At Cromwell the river swelled to 35–40 ft above normal, while bridges as Clyde, Roxburgh, Beaumont, and Balclutha were swept away by the debris-laden waters (McLintock, 1966b). Thankfully, fatalities were relatively minimal, no doubt due to the dramatic decline in miners inhabiting the region's riverbanks by this time.

5.3 History of Project Area

The project area is part of historic Block VII, Taras SD (Table 5-1). The part of this block coincident with the project area remained un-subdivided Crown Land for most of the nineteenth and twentieth centuries; however, in 1883 a small portion was subdivided as part of an occupation/agricultural lease (Section 15, Block VII, Tarras SD: SO 7374), likely to formalise an already-established occupation of the land (see below) (Figure 5-4). This subdivision is shown in the 1933 survey map for the Tarras District, with an amendment that it had been "Transferred to the King" (Figure 5-5). This transferral, dating to 1923 (CT132/66), absorbed the parcel within the Crown-owned Mt Pisa Run 626 (SO 1174). A subsequent subdivision of the narrow, southern leg of the project area occurred in 1902, also representing an occupation lease (Section 30, SO 7433: Figure 5-6), with this also returned to the Crown in 1923. In 1992 the modern parcel was subdivided from Run 626 as Section 7 SO 23929. This (unaltered) section is currently grouped (as Lot 1) with another land parcel further to the south within DP 466676.

Table 5-1. Summary of land transactions and key events records for the project area.

Year	Event	Source
1863	G. M. Hassing and partner William Ellacott established ferry and general store at Sandy Point, informally sell it in latter half of that year to "Chief Patu".	Otago Witness, 1920
1883	Subdivision of Section 15, Block VII Tarras SD, agricultural lease to John Vliestra. House, garden, and water races present on property.	SO 7374
1900	Vliestra formally purchases Section 15 from Crown.	Otago Witness, 1900a
1900	Mining lease to Vliestra (north end project area), no evidence of its being implemented.	SO 7423
1903	Conveyance of Section 15 to William Alfred Henry Scheib, Queensbury hotelkeeper	CT 132/66
1902	Subdivision of Section 30, Block VII Tarras SD, occupation lease to Inez Rosa Scheib	SO 7433
1907	Conveyance Section 15, William Scheib to Inez Rosa Scheib, his wife	CT 132/66
1911	Section 30 exchanged from occupation lease to renewable lease	(Otago Witness, 1911)
1912	Conveyance Section 15, Inez Rosa Scheib to Charles Olaf Markland	CT 132/66
1912	Transfer Section 30, Inez Rosa Scheib to Isabel Markland	(Otago Witness, 1912)
1919	Conveyance Section 15, Charles Markland to Thomas Cherton McKay	CT 132/66
1923	McKay bankrupt, attempted auction of both Sections 30 and 15	CT 132/66, (Otago Daily Times, 1923)
1923	Transfer of Section 15 and 30 back to Crown as part Run 626.	CT 132/66

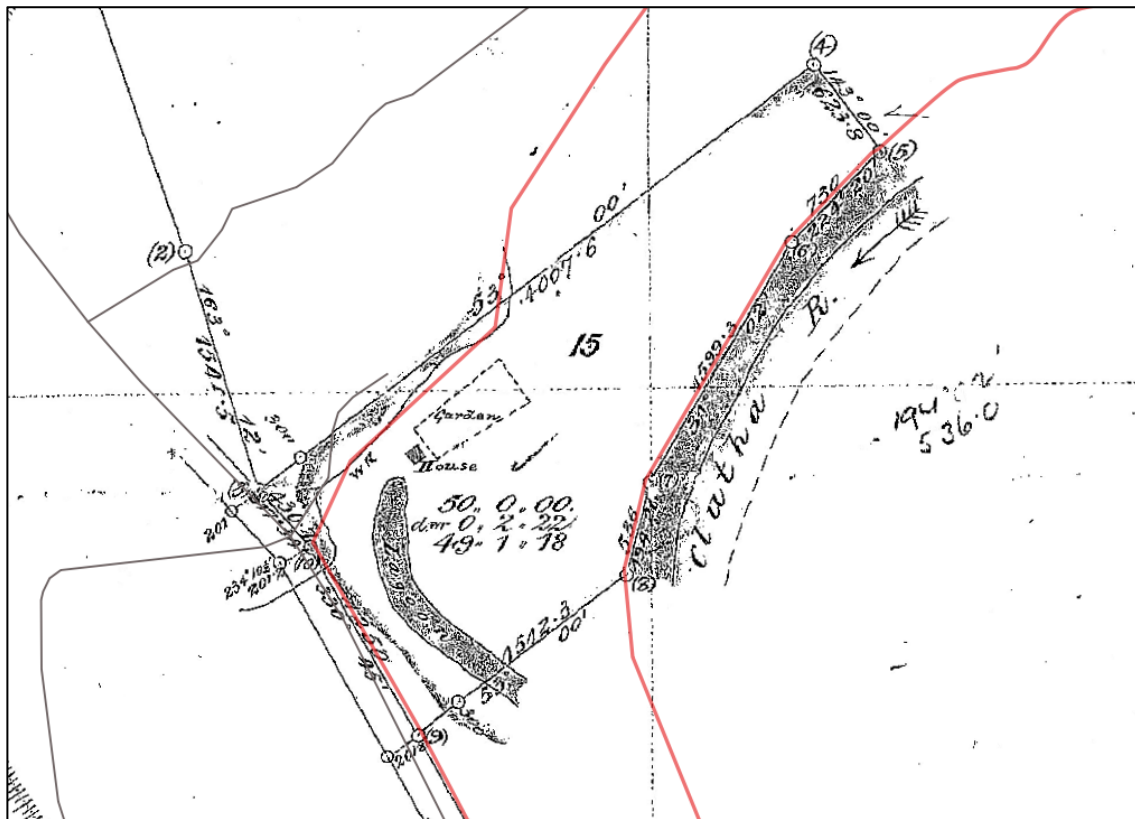


Figure 5-4. SO 7374, showing 1883 subdivision (agricultural lease) of small section of Block VII, Tarras SD. Note exiting presence of water race, house, and garden. Project area in red.



Figure 5-5. 1933 Crown Grant Index map for Tarras.

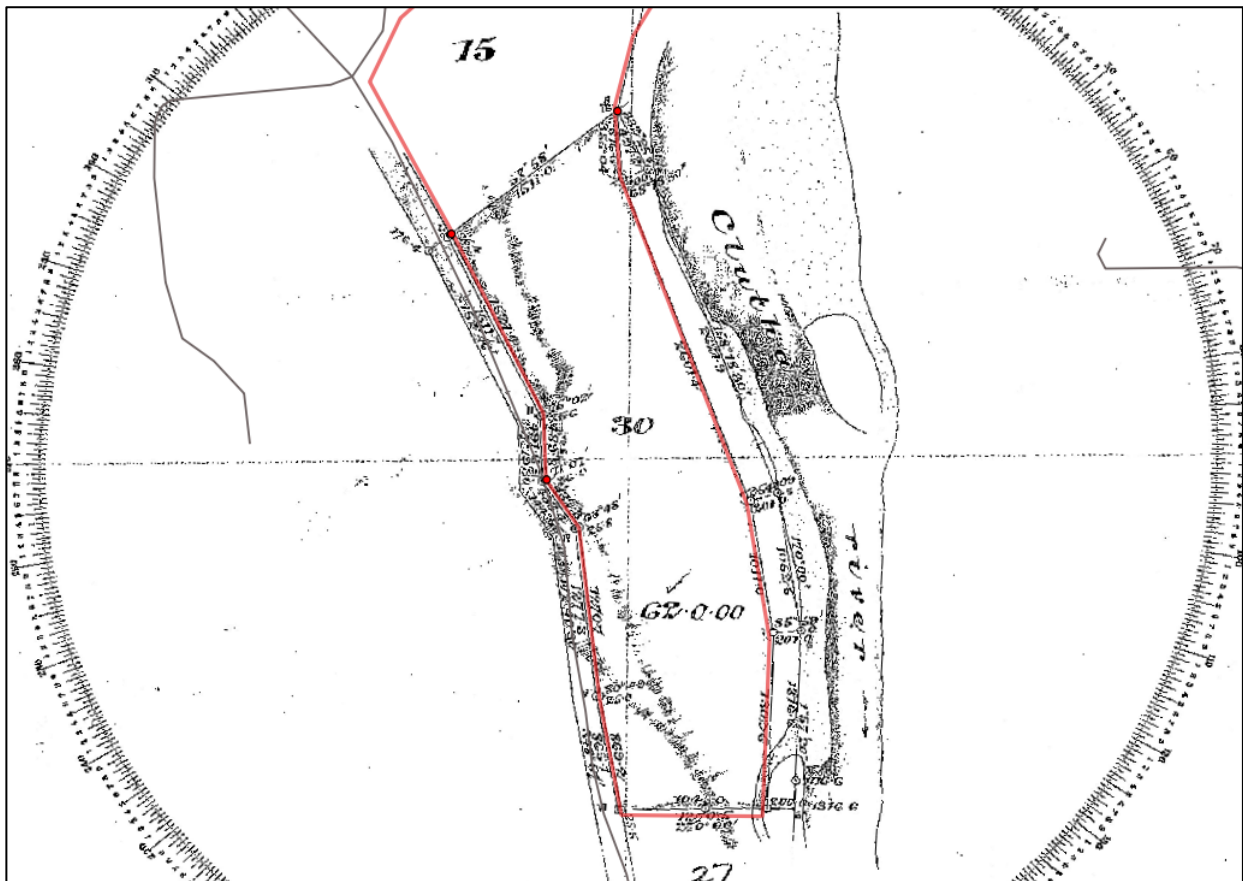


Figure 5-6. Detail of SO 7433, showing 1902 occupation lease for Rosa Scheib, Section 30, Block VII, Tarras SD, SO 7433. Project area in red.

Lot 1 DP 466676 largely coincides with an elbow of the Clutha riverbank historically known as Sandy Point. The best general history of Sandy Point was recounted by G. M. Hassing, who in 1863 established a ferry and general store at this location (Otago Witness, 1920a). Hassing already had experience running a ferry at Albert Town (Wānaka) which, in the absence of any bridge north of Dunstan/Clyde, turned a lucrative trade escorting the influx of prospectors arriving from Oamaru to their respective diggings. This traffic typically followed the east side of the Clutha heading north from Clyde – a journey of roughly forty miles. Hassing astutely figured that a ferry located at Sandy Point’s right-angled bend in the river would shave some 15 miles off the journey. The decision proved prescient, and on his return trip from advertising the venture in Clyde, Hassing already had “about 40 packers, pack-horses, and miners following me to the new crossing” (Otago Witness, 1920a). Albert Town thusly became “deserted”, with Sandy Point briefly becoming:

“a flourishing gold mining bend in the Upper Clutha. The gold was obtained by box-slucing and cradling on the river banks and beaches; and as I kept the store well supplied and also purchased gold, Sandy Point became the rendezvous of some 50 or 60 gold miners from the confluence of the Luggate Stream to the bottom of Maori Gorge”³ (Otago Witness, 1920a).

It is also worth noting that, upon his arrival at Sandy Point, Hassing is reported to have discovered the skeleton of a moa “close by lying in the tussocks” (Otago Witness, 1903b). Unfortunately, the precise location of the ferry and Hassing’s store can only be speculated upon, with the former unlikely to have been represented by more than a punt anchored to poles driven into the riverbank, with any physical evidence likely to have been long washed-away or buried. Nonetheless, given the steep bluffs on the opposite side of the river, the ferry was likely to have been positioned within the areas indicated in Figure 5-7, where there are gentle approaches to and from the river. Between these, the southernmost area is perhaps the more likely given (a) this represents a more direct crossing

³ “Maori Gorge is located roughly 9.5km downriver from the confluence of Luggate Creek with the Clutha (Otago Witness, 1920b).

assuming traffic headed north from Dunstan, and (b), it is more consistent with Hassing's 1909 (see below) reflection that the mining camp should have been observable from the main (Luggate-Cromwell) road. The store presumably would have been located close-by (see below for discussion of other known historic structures that may potentially represent a repurposing of the store).



Figure 5-7. Possible locations of Hassing's ferry/punt.

Hassing's general store became the focal point for life within the bustling camp, and it was something of a custom for men to assemble there on Saturday evenings to converse and trade stories. Some of these stories were enthralling enough to invoke a silence of such magnitude that "the dropping of a pound note on the clay floor would strike the ear with a dull thud" (Otago Witness, 1920a). Incidentally, mention of the "clay floor" is the only information regarding the store's construction to make it down to us. In the latter half of 1863 Hassing sold the ferry and general store venture to the "Māori chief Patu", who "with his tribe arrived from Maori Point, Shotover River, where they had struck it heavy and accumulated a little pile" (Otago Witness, 1920a). On the opening night of their proprietorship, "[they] performed a grand haka, which was kept going merrily till dawn" (Otago Witness, 1920a). In addition to his family who accompanied him from Māori Point, Patu also sent for the remainder of his tribe at Moeraki, and it was not long before they turned up and "proceeded to have a wonderful time at Patu's expense" (Roxburgh, 1957). By Roxburgh's (1957) account, "Things soon got out of hand, and Robert Kidd, of Cromwell, was appointed managing director." Kidd apparently owned the venture "Inside 12 months" while the "[Māori] had the experience." (Otago Witness, 1920a).

It is not known when precisely the general store and ferry operated until. Roxburgh (1957) claims that the store along with entire bustling mining settlement it serviced were swept away by the Old Man Flood of 1863. However, this is inconsistent with Hassing's own account of having been nearly drowned in the same churning flood waters of the Cardrona River while making his way back (from Albert Town) to Sandy Point, of which he was still based prior to his selling the business (Otago Witness, 1927). Nonetheless, it is clear that by the end of 1863 business had slowed considerably due to the establishment of similar ferrying operations servicing alternative paths to the goldfields (Roxburgh, 1957). The establishment of Hill's footbridge at Cromwell (Doctor's Point) in mid-1863 also

meant that traffic was longer restricted to traversing the eastern side of the Clutha. Although this bridge and subsequent replacements were prone to being swept away during flood events, in 1866 a proper bridge was opened across the Clutha at “The Point”, 4km north of Cromwell Junction, which likely sounded the death knell of any tottering ferry crossings still taking place at Sandy Point. (Dunstan Times, 1886). In any case, Hassing himself did not return to Sandy Point until 1909, and his bittersweet observations of the landscape from this time bear repeating in full:

“When opposite Sandy Point, where the coach road skirts the river, I asked the driver to halt a moment while I keenly surveyed the scene. I looked carefully across for some traces to mark the old mining camp of '63, but absolutely nothing remained to indicate that human beings had ever visited the spot, not even the familiar heaps of bleached stones. The place seemed to have been swept by a mighty deluge. Everything was levelled and covered with sand, presenting a picture quite in harmony with the deserted and desolate surroundings. Alas! the loneliness of all around, Bespoke the remembrance, only too profound” (Otago Witness, 1920a).

While the “mighty deluge” that Hassing mentions possibly chronicles the long-term effects of the 1878 Great Flood (and other lesser flooding events), other indications of what transpired between the early goldrush days and his 1909 observation comes to us in glimpses via cadastral records and the odd newspaper article. An 1870 topographical sketch of the Tarras District (SO 8873: Figure 5-8) shows evidence that alluvial mining was still occurring at this point in time, with the banks of the river roughly correspondent with the northern end of the project area dotted with gold workings. It also indicates the presence of several structures to the immediate northwest of the project area, presumably representing informal miners’ huts/sheds (see below). These operations were likely facilitated by a water race that extended back to either Sheepskin Creek and/or Dead Horse Creek to the west near Luggate (this is presumably the same race as depicted in SO 7374: Figure 5-4). Two water race applications associated with Dead Horse Creek, and terminating at Sandy Point, were lodged with the Cromwell Warden’s Court in 1864. One was submitted by John McDonald and Hugh Jones (R24122499), and the other by Allan, Angus, and Archibald McMaster and Robert Bryden (R24122411). A later 1896 race application terminating “at the river flat opposite Sandy Point” was submitted by John Anderson. Unfortunately, minimal additional information regarding these personages and their activities at (or occupation of) Sandy Point could be located.

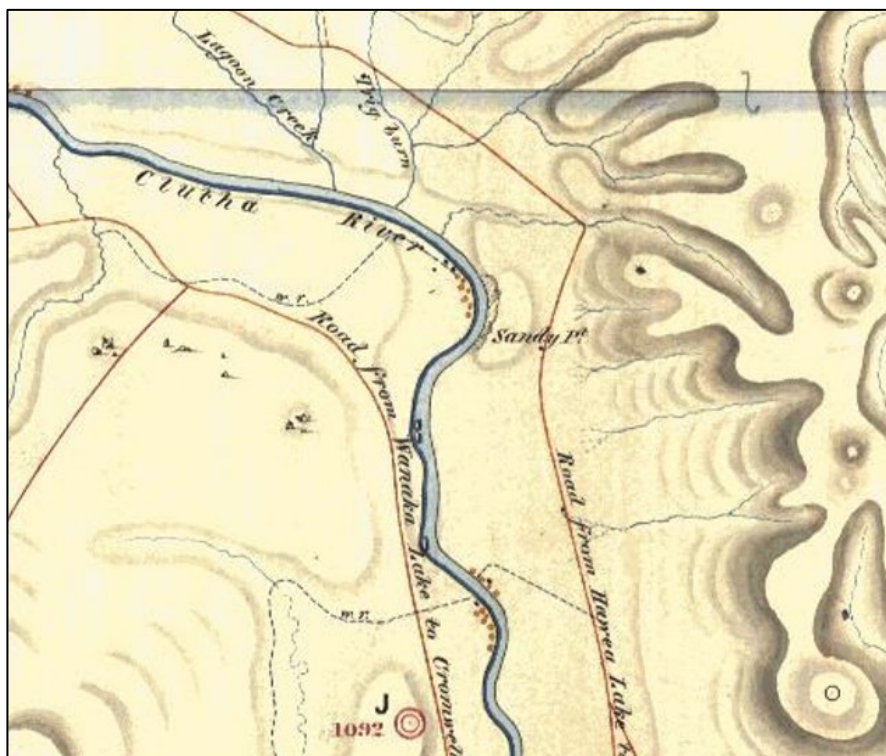


Figure 5-8. Detail of 1870 (SO 8873) topographical map of Tarras District. Gold workings in project area in orange. Note water race extending westwards from Sandy Point towards Luggate.

In 1883 part of the project area was subdivided in provision of an agricultural lease for John Vliestra (Otago Witness, 1894). The plans (Section 15, SO 7374) for this lease show an established house and gardens on the section, as well as the aforementioned water race which appears to have skirted the ridge above the lower terrace (the “lagoon” in these plans possibly represents a relict branch of the river) (Figure 5-4). It is likely that Vliestra was occupying the section (including the house and garden) prior to its subdivision and may have had an established orchard and/or market garden there. Nonetheless, although Vliestra’s occupation of Section 15 was clearly of an agricultural nature, there is ample evidence that his interests also extended to mining. While his name does not appear on any of the applications/claims associated with the race that presumably transacted the top his property, the Warden’s Court notices for May 1885 report that Vliestra’s application for a water race at Poison Creek, Wanaka Road (south of project area), was approved (Cromwell Argus, 1885b). His interest in mining is further underscored by a 1900 survey he commissioned for a mining lease encompassing the territory to the north of the project area (SO 7423). This plan shows a residential area (RA, outside of project area) in the general vicinity of the structures depicted in Figure 5-8, likely representing a miner’s abode (Figure 5-9). It is also possible that this structure(s) represented a continuation of the store originally established by Hassing, although there is no way to confirm this. SO 7423 also depicts an “EC” within the northeast corner of the project area. This presumably represents an “Extended Claim”, typically granted when old previously-worked ground was reallocated to groups of miners to sluice, with a larger but specified claim area (Lewis, n.d.).

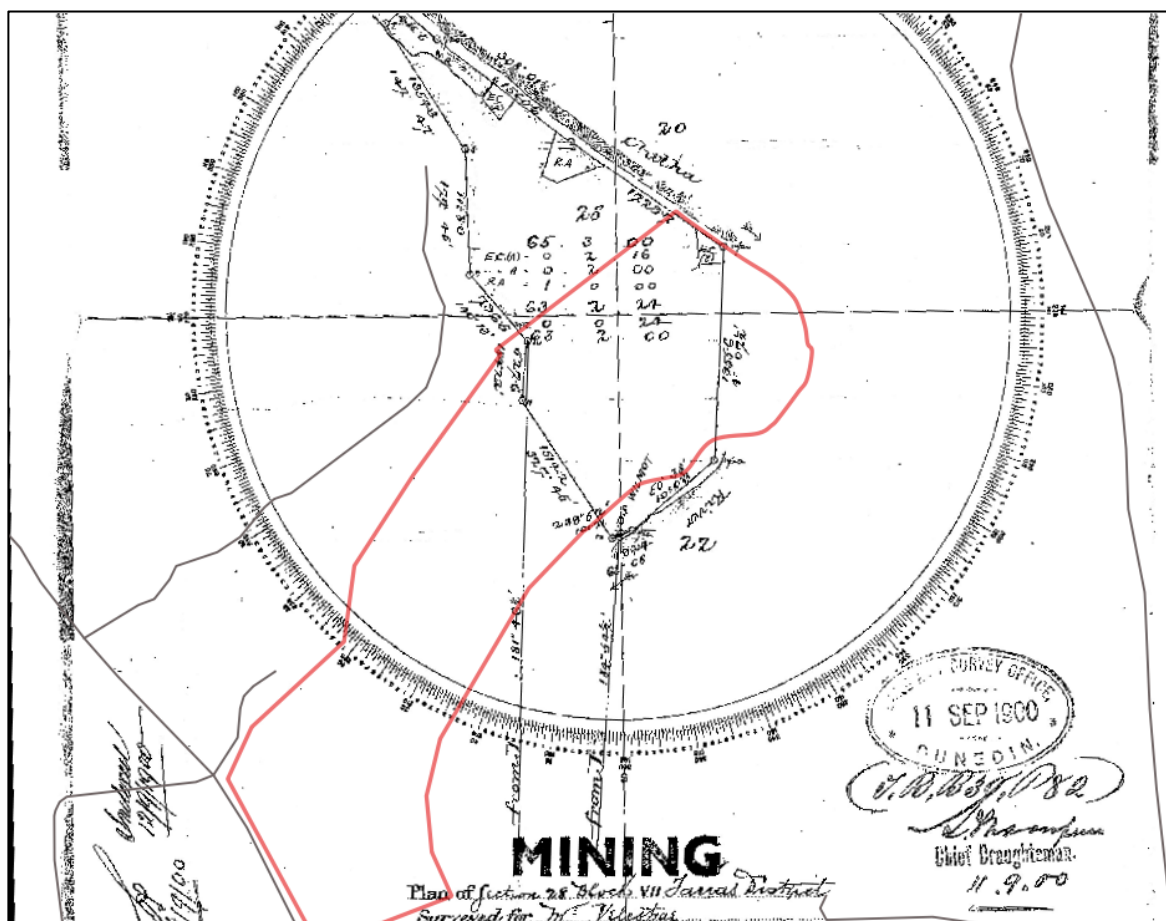


Figure 5-9. Detail of Vliestra’s 1900 mining lease survey (SO 7423). Note residential area (“R.A.”) to northwest of project area (shown in red)).

In 1900, John “Wiestra’s” (Vliestra) application to purchase Section 15, Block VII, Tatas SD was approved (Otago Witness, 1900a). In 1903 this section was conveyed to William Alfred Henry Scheib, who owned it through to 1907 before transferring it to his wife, Inez Rosa. After 1912 it passed through another couple of hands before being transferred back to the Crown in 1923 (as part of Run 626). Although Scheib had some experience with mining, his obituary lists him primarily as having been (in order) a tailor, hotelier (in Luggate and Queensberry), farmer, and property investor (Cromwell Argus, 1932). Nonetheless, reported litigation in 1908 regarding the

installation of a water race 200 yards above the intake of “Scheib’s race” at Dead Horse Creek suggests that Schieb may have wished to at least retain the option of mining the area, although it is also possible the race was useful for irrigation (Cromwell Argus, 1908). Further evidence of the Scheib’s’ interest in mining is indicated by Inez Rosa’s 1902 application for an occupation lease of over 100 acres adjoining Section 15, under The Mining Districts Land Occupation Act, 1894 (Cromwell Argus, 1902). This lease was granted as Section 30 (SO7433), representing the narrow, southern leg of the project area (Figure 5-6). Mrs Scheib had also previously applied for a licence for special dredging claim at “Manuka Flat”, likely to the south of the project area (Cromwell Argus, 1899b). The 1902 lease does not appear to have yielded much in terms of marked dividends, with Mrs Scheib transferring the (now renewable) lease for Section 30 to Isabel Markland in 1912 (Otago Witness, 1912). In 1923 both Section 15 and 30 are listed as part of the to-be-auctioned bankrupt estate of farmer Thomas McKay (Otago Daily Times, 1923). Clearly, a lack of interested buyers resulted in the sections being absorbed into Run 626 that year.

With respect to the above, mining activities at Sandy Point after the initial gold rush period appear to have been relatively limited. In 1899 the Maori King Gold Dredging Company published a prospectus to establish a “powerful” dredge upon the Clutha River at Sandy Point (Cromwell Argus, 1899a). In support of this prospectus George McLay, dredgemaster, wrote that on the flats of Sandy Point “two brothers worked for over twenty years” and, although only having turned over about two acres the whole time, were “reported to have done well.” The brothers in question were possibly John and Peter Vliestra, with the latter occupying a homestead on the opposite side of the main road; however, this can only be speculated upon. While any potential friction between the Maori King Gold Dredging Company’s plans and Vliestra’s 1900 survey (or Mrs Scheib’s 1902 lease) are unknown, the former went into liquidation in 1904 having sold off their dredge the year prior (Otago Daily Times, 1904). Intriguingly, a dredging company associated with John Vliestra – “The Welcome Dredging Company” – also went into liquidation around the same time (Evening Star, 1904), implying competing (and ultimately mutually-defeating) claims for the same area. Given the absence of physical evidence for industrial-scale dredging at Sandy Point – both in historic aerials and the present day – it is certainly possible that these operations were never fully actualised. It is also worth noting that the Maori King company did not appear to have been the first to attempt dredging the river at Sandy Point, with another claim application being lodged in 1885, although the success of this earlier venture is not known (Cromwell Argus, 1885a). Finally, an 1885 article also mentions that a special claim had been taken up by the Sandy Point Dredging Company “Two miles above Queensberry”, with a dredge “put on most probably during the next 12 months.” This company (or a company of the same name) was generally associated with the “Sandy Point” between Clyde and Alexandra, and it is not known where precisely they established their Queensberry dredge, or the ultimate success (or reality) of this endeavour.

The final word, therefore, on mining at Sandy Point most likely belongs to one Hans Perean, who in 1903 was reported as living (possibly in a hut within the “RA” of SO 7423, outside the project area) in a state of aged decrepitude at Sandy Point, eking out “an existence by cradling on the river” (Cromwell Argus, 1903).

Back from the immediate riverbank/terraces where the majority of mining activity was concentrated, there is some indication that general farming/gardening attempts were made within the broader area. In addition to Vliestra’s initial lease being described as “agricultural” in nature, the “crop” (possibly fruit) of Sandy Point resident Mrs McLeod (opposite side of river) was described as looking well in 1900. However, this came with the caveat that “The sand is not nearly so bad this year at her farm as it has been” (Otago Witness, 1900b). The bankruptcy auction of Thomas McKay’s property also mentions numerous animal stock (horses, cattle, pigs, poultry) and farm equipment, providing some sense of the activities occurring across Sections 15 and 30 prior to their dissolution (Otago Daily Times, 1923). As mentioned, persistent sand drift appeared to be the major obstruction of any undertaking within proximity of Sandy Point, “which during the high winds in Summer time [sent] enormous clouds of dust past Tanas and over the mountain past Thompson’s Gorge, destroying much land” (Otago Witness, 1903a). Grass and bracken planting operations appeared to have mitigated the issue to some degree, with these initially needing to be wire-netted in order to deter the ever-present rabbit nuisance (Otago Witness, 1897). More recent history of the project area attests to its eventual transformation into arable farming land, with aerial images

from the 1970s through to the present day indicating the extent to which the project area has been regularly ploughed (Figure 5-10).

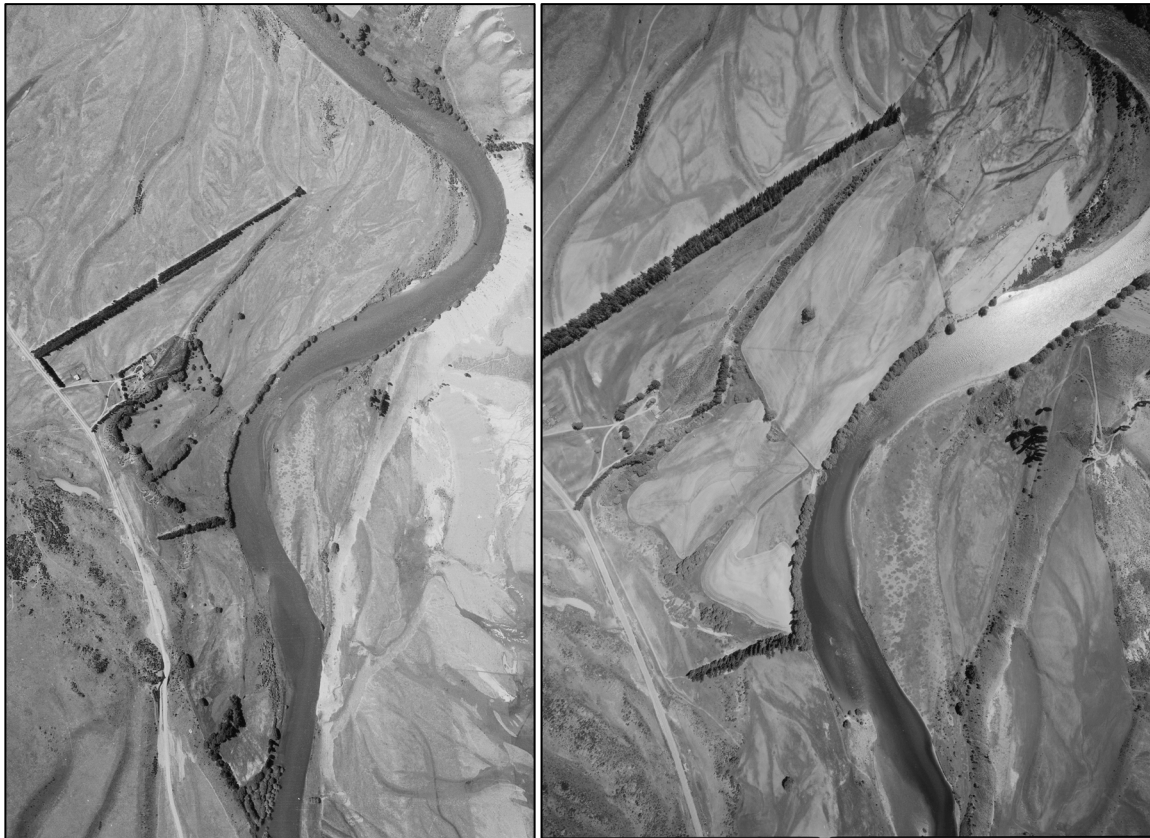


Figure 5-10. 1956 (left) and 1976 (right) aerals of project area, showing extent of ploughing.

6 Previous Investigations and Heritage Context

This section examines the broader archaeological and heritage context of the project area, considering the previously recorded archaeological sites as well as other archaeological and heritage sites within the vicinity. The locations of previously recorded sites near the project area are detailed in Figure 6-2. However, it is important to note that the recorded sites only reflect those identified to date and thus are not a true representation of the distribution of sites in the area.

6.1 Previous Research and Investigations within the Project Area

There are six previously recorded archaeological sites within the project area (summarised in Table 6-1), all of which were recorded in 1979 by archaeologist Neville Ritchie during a survey for the Clutha Valley Development project (Figure 6-1). All recorded sites relate to gold mining activities within the project area and represent sluicings and tailings interspersed with the odd equivocal race or tailing race. Although the precise age of these sites is not known, we know from the above history that mining took place within the project area over a forty-year period from at least 1863 to 1903. As modern geospatial recording equipment was not readily available at the time, the locations of the archaeological sites were only roughly sketched out, with all sites only provisionally placed with accuracy polygons on the National Site Recording Scheme, ArchSite. However, examination of the Queensbury and Luggate archaeological reports (Ritchie, 1980b, 1980a) provides a general sense of where the sites are/were located. As will be discussed below, examination of historic imagery and archaeological survey has placed many of these sites outside the project area.

Table 6-1. Previously recorded archaeological sites within the project area. Based on examination of the detailed ArchSite records, Ritchie's (1980a, 1980b) reports, historical aerals and NZHP site surveys, the sites determined to be within or potentially extend into the project area are highlighted red. Those determined to be outside the project area are highlighted blue.

NZAA ID	Imperial Site No.	Site Type	Site Feature/s
G40/147	S124/114	Mining - gold	Tailings
G40/148	S124/115	Mining - gold	Tailings
G40/149	S124/116	Mining - gold	Tailings
G40/150	S124/117	Mining - gold	Tailings
G40/161	S124/128	Mining - gold	Sluiced gulley
G40/174	S124/141	Mining - gold	Tailings

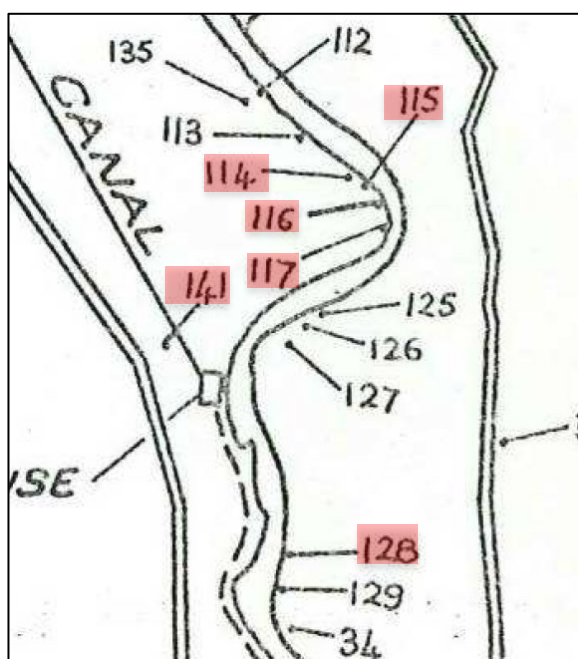


Figure 6-1. Location of previously recorded archaeological sites identified during Ritchie's 1979 Survey (Neville Ritchie, 1980a). Sites mentioned in following text are highlighted in red.

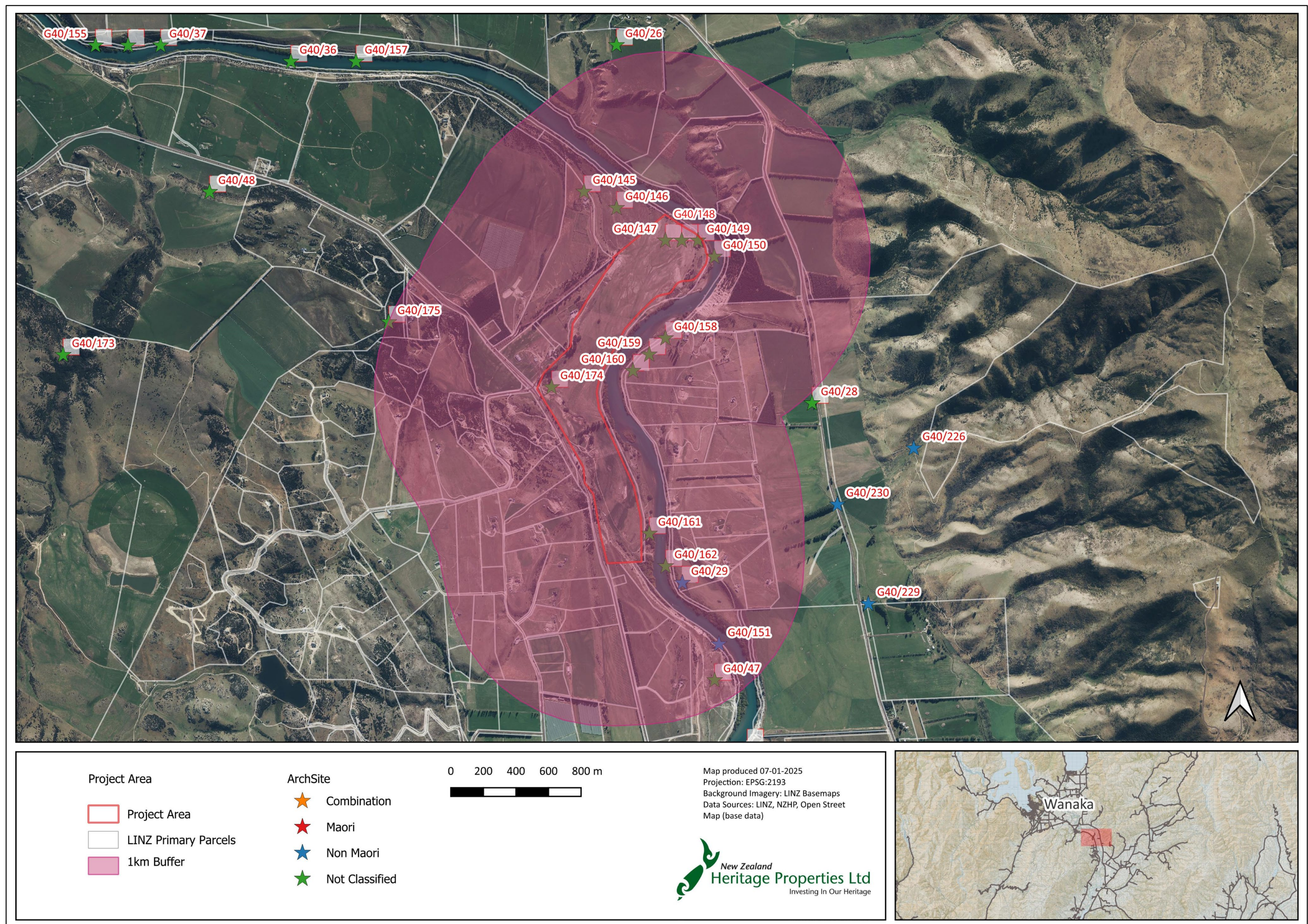


Figure 6-2. Previously recorded archaeological sites within the vicinity of the project area.

G40/148 (S124/115) is located ~100m to the east of G40/147, within the northwest corner of the project area (Figure 6-3). It represents a large area of parallel sluice tailings, 50m long by 20m wide, with two sections of head race. At the time of recording, Ritchie noted the southwestern extension of the races had been destroyed by ploughing, although faint traces of these features are still visible in the 1970s aerial.

G40/149 (S124/116) represents a more amorphous scatter of tailing mounds extending over an area of 200m by 25m along the northeastern edge of the river terrace (Figure 6-5). Ritchie described some visible lines of tailings; however, most were scattered in low heaps (up to 1m) with spaces of 2 to 3m between them. It was suggested that the tailings towards the southern end of the site were subject to frequent washing-away during high river flows, with areas between the mounds being infilled by sediment.

G40/150 (S124/117) consists of an area of parallel tailings that appears to have been located along the eastern edge of the terrace, at roughly the north-south halfway point of the project area (Figure 6-4). The site record form indicated that the paddock to the rear had been ploughed, likely resulting in the loss of races or head races.

G40/174 (S124/141) is the only recorded archaeological site in the project area located away from the immediate bank of the Clutha (Figure 6-5). This site was described as an area of largely amorphous tailings (resulting from sluicing) roughly parallel with the motorway, at a distance of ~20m. Parallel tailings were observed at the southern extent of the site, representing approximately 20% of the overall area of the site. A secondary area of tailings, 150m to the south, was identified, which again had linear patterning; refuse dumping was noted in this area. The southern end had been truncated by a farm track and it was noted that ploughing likely damaged the full extent of the site. Based on Ritchie's original SRF, this site appears to have been located within the upper western terrace and therefore is unlikely to be impacted by the proposed mining activities.

G40/147 (S124/114) represents an area of parallel tailings, 40m long by 15m wide, located along the northern edge of the river terrace. Examination of the site record form in conjunction with mid-century aerials indicates that this site is in fact located 50m to the west and outside of the project area (Figure 6-3). Consequently the site record form has been updated to reflect the true location of G40/147.

G40/161 (S124/128) represents a small, sluiced gully containing three tailing mounds and a single tailing race of neatly stacked cobbles. While the accuracy polygon for the site extends into the project area, examination of the site record form as well as Ritchie's original survey map indicates that the site is located on the eastern bank of the Clutha and is hence outside of the project area (Figure 6-3). The location of this site was confirmed during the archaeological survey, and thus the site record form has been updated to reflect the site's true location.

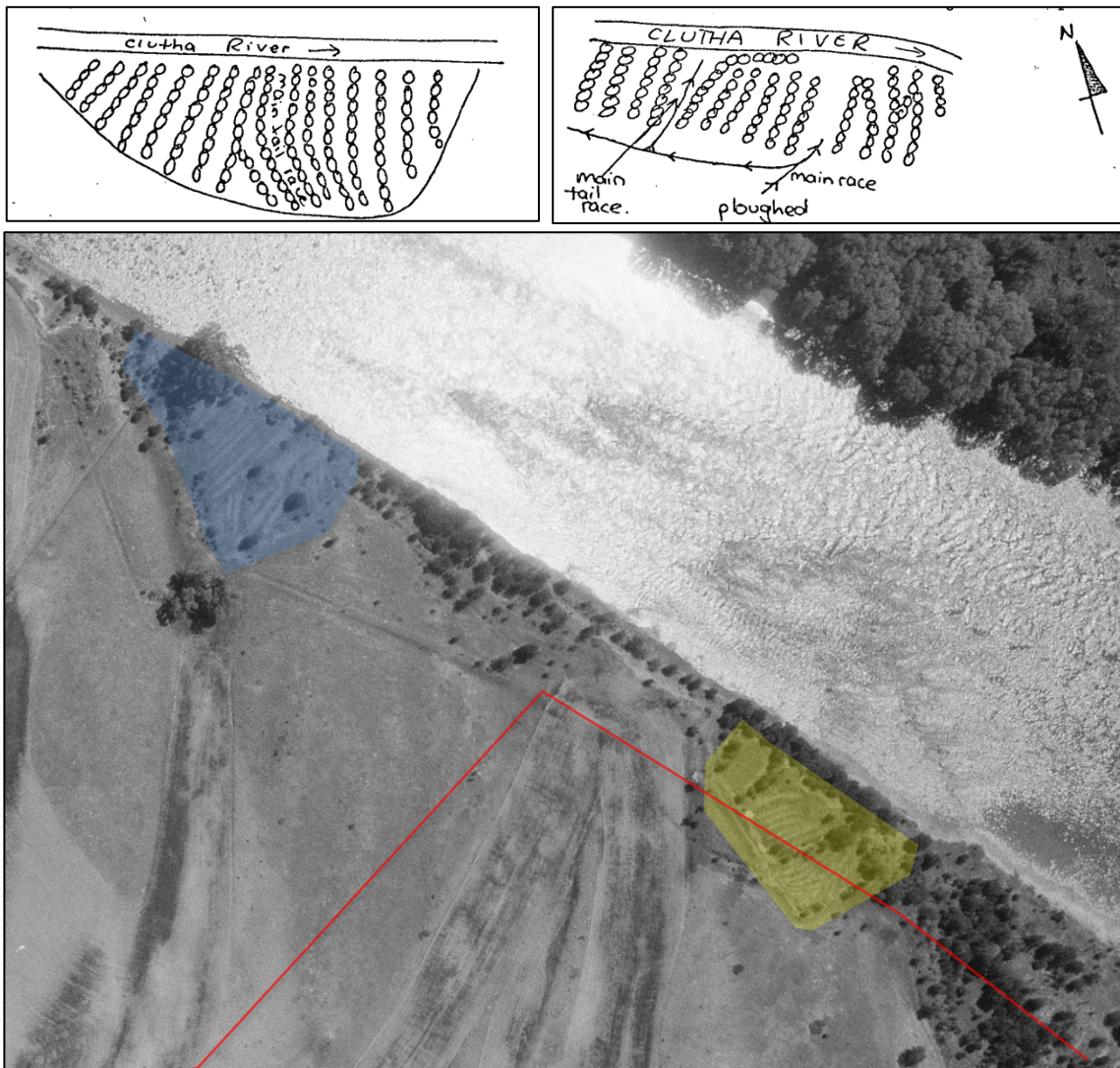


Figure 6-3. NZAA site record form sketches of (top left) G40/147 and (top right) G40/148; bottom: 1976 aerial showing location of G40/147 (blue) and G40/148 (yellow). Red line roughly denotes project area boundary.

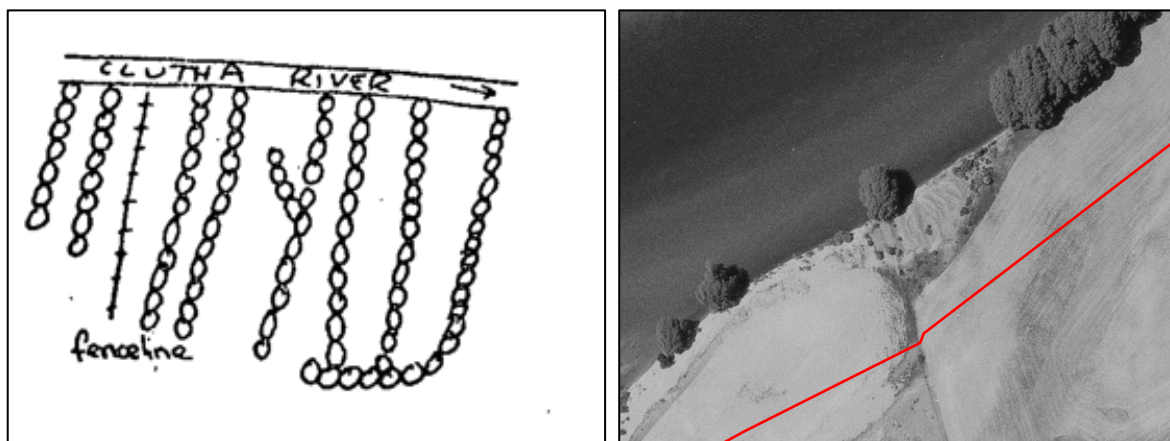


Figure 6-4. Left: G40/150, site record sketch; right: Site as seen in 1976 aerials, around the time of original recording. Approximate edge of project area in red.

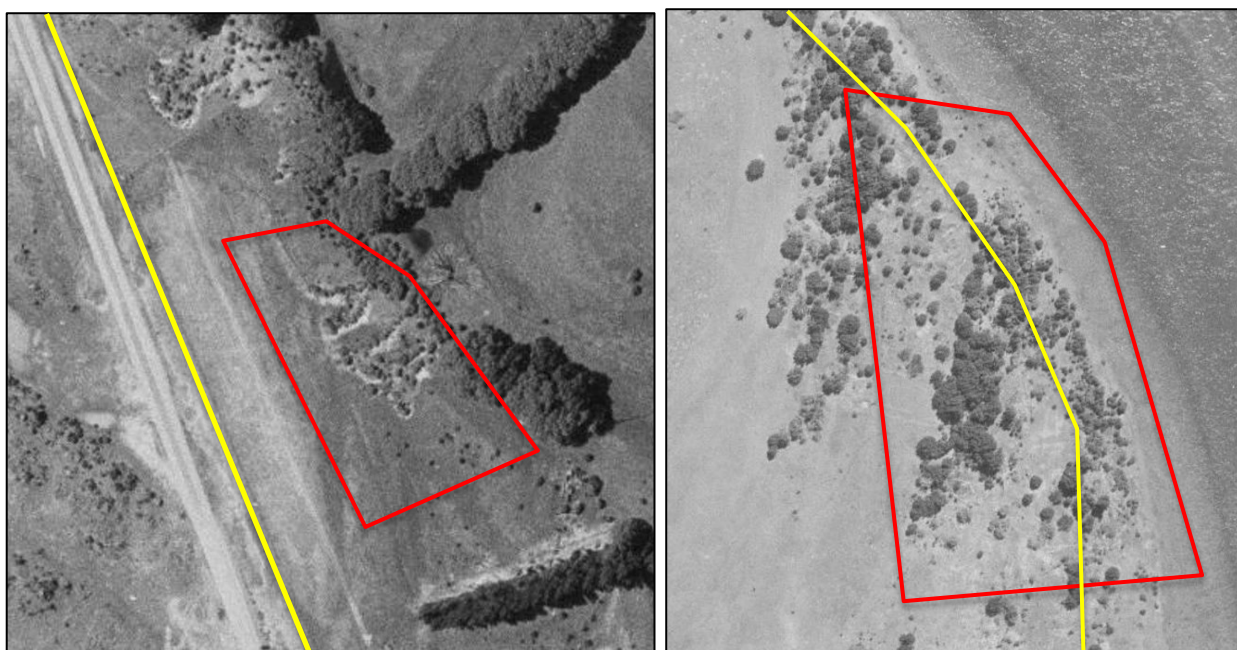


Figure 6-5. Approximate locations of (left) G40/174 (1956 aerial) and (right) G40/149 (1976 aerial). Edge of project area in yellow.

6.2 The Wider Heritage Context

There are twelve additional recorded archaeological sites within 1km of the project area (Figure 6-2). Unsurprisingly, these sites mainly relate to historical gold-mining practices in the region, with eight of the sites representing additional tailings features. Two of these sites, **G40/146** and **G49/145**, are located a short distance further west along the Clutha riverbank from the project area, with these tailings visible in both modern and older aerals. Tailings (**G40/158**, **G40/159**) are also recorded on the opposite side of the riverbank to the project area, along with a dam-with-race feature constructed of raised earthen walls (**G40/160**). This latter feature is still evident in older aerals, although recent development of the area appears to have significantly modified/damaged it.

Other sites provide insight into other gold-mining adjacent activities within the region. Although only anecdotally known, **G40/28** – a commercial site-type – represents the site of an old hotel, alluding to the early gold-mining period when the eastern bank of the Clutha River was the more regularly travelled route. **G40/175**, which represents an old miner’s hut that was known only from its chimney when recorded in 1979, is indicative of the kinds of housing that would have been a common site on the landscape in the late nineteenth century.

The closest Māori site to the project area is **G40/67** (oven with moa remains) within Luggate, over 4km away. This site was anecdotally reported-upon by Robert Gilkison in his memoirs (successive editions from 1920s-1950s), and as such the SRF essentially represents a placeholder with the description simply given as “near Luggate”.

There are no listed or scheduled heritage sites within general vicinity of the project area.

Table 6-2. Previously recorded archaeological sites within 1km of the project area.

NZAA ID	Site Type	Site Feature/s
G40/28	Commercial	Building - hotel
G40/160	Industrial	Dam/water race
G40/162	Industrial	Water race
G40/29	Mining - gold	Water race, Tailings
G40/151	Mining - gold	Tailings
G40/158	Mining - gold	Tailings
G40/161	Mining - gold	Tailings
G40/159	Mining - gold	Tailings
G40/145	Mining - gold	Tailings
G40/146	Mining - gold	Tailings

NZAA ID	Site Type	Site Feature/s
G40/147	Mining - gold	Tailings
G40/175	Historic - domestic	Hut floor/ site

6.3 Mining-Gold Sites in the Archaeological and Heritage Record

There are over 2500 mining–gold sites recorded throughout the Otago region, reflecting the key role that this industry played in shaping the early cultural, industrial, and social landscape of Otago (both interior and coast). This number is higher still if industrial-type sites are included in the tally, with many goldmining sites also recorded under this category. The nature of gold mining sites is therefore highly varied, as features relate to different working aspects of the gold fields while also tracing chronological differences in mining technology and equipment. For example, many features relate to the storage and movement of water required for sluicing and hydraulic elevating (*e.g.*, water races, reservoirs, ponds, aqueducts, dams), others relate to the physical remains of mining activities (*e.g.*, sluice faces, tailings, prospecting pits) or the specific equipment and machinery that was utilised (*e.g.*, dredges, stamper batteries, machinery).

The above also does not take into account the close association between domesticity and industrial activities in many mining landscapes, with ancillary structures such as miner’s huts often classified differently (as *e.g.*, historic-domestic sites) on ArchSite. For example, of the 2500+ Otago mining-gold sites, 205 feature the word “hut” in the site description. Conversely, of the 1391 historic-domestic sites in the Otago archaeological record, 55 feature the word “miner(s)” in the site description. This association is evidenced within the current project, with a known Residential Area located to the immediate northwest of the project area, raising the possibility of other miners’ domiciles being located nearby within the project area.

Miners’ domiciles are generally recorded based on the presence of observable structural remains, such as stacked-stone and sod wall segments, chimneys, and flattened floor impressions. As such, structures of a more ephemeral nature, such timber/iron shacks and canvas tents, are less likely to leave visible traces and hence will be underrepresented in the archaeological record. Numerous hut remains were recorded by Neville Ritchie during his 1979-1980 survey of the Luggate area (*e.g.*, G40/37, 44, 110, 111, 113, 127, 120, 122, 135, 137, 138), with these typically recorded as being in poor states of preservation at the time. Nonetheless, excavations of these sites can reveal information about how the sites were arranged and the materials employed, while recovered artefacts and midden deposits can help inform on the ethnicities and daily activities and of those who resided there. Excavations conducted at a similar mining site, F42/154, within Old Man Range on a small tributary of the upper Fraser River, demonstrated that features initially survey as superficial “tent” digouts can nonetheless preserve the remains of cobbled floor surfaces, drainage features, and the bases of stone chimney stacks (Bristow, 1994). Likewise, excavations of a hut complex at Macraes Flat (I42/36) showcased the diversity of archaeology that may be encountered, such as porch areas, paved floors, evidence of the timber framing (postholes) that would have sat atop the low schist walls, and an assortment of glass and metal artefacts (Petchey, 1999).

Nonetheless, while the gold mining landscapes of central Otago have undergone a significant number of archaeological surveys, with high frequencies of archaeological sites recorded, the majority of these surveys took place over forty years ago. As such, the current condition (and often location) of many sites is now unknown, with little subsequent investigation of specific sites in the intervening decades. This is very much the case with all sites within the project area, none of which have been updated since their initial survey in the 1970s. Furthermore, the expansive and complex nature of goldfields paired with rugged isolated terrains and challenges with site access, mean that many landscape features remain unrecorded.

6.4 Agricultural – Pastoral Sites in the Archaeological and Heritage Record

The initial European settlement of Central Otago was agricultural in nature, with many large runs already established for several years prior to the discovery of gold in 1861. As such, a brief survey of the ~200 recorded agricultural-pastoral sites within the central region returns a wide variety of features, including shepherd's huts, farm buildings/homesteads, post and wire fences, irrigation races, woolsheds, stone walls, and stock yards.

The exact nature of pastoral/agricultural activities within the project area prior to the onset of industrialised irrigation in the twentieth century is poorly understood, with the persistent deposition of sand seemingly thwarting other growing/farming ventures in the area. However, given that Section 15, Block VII, Tarras SD was originally subdivided for an agricultural lease, it is clear that some pre-1900 agricultural activity took place within the project area. Moreover, while the original 1883 plans for Section 15 depict the presence of a garden plot, the larger area inclusive of Section 15 and 30 were known to have been farmed prior to being returned to the Crown. While farming/gardening activities often leave at-best a superficial mark on the subsurface, there is nonetheless the possibility of encountering in situ material such as buried topsoils, fencing/walls that potentially bounded the area, and postholes.

Residences/structures associated with agricultural/pastoral activities, such as the house in Figure 5-4 (SO 7374), are also often recorded within the same site category, especially if they represent part of a larger farmstead. Although the construction of the house is unknown, subsurface remains are likely to include foundation features such as stacked-stone walls, chimney bases, and/or the remnants of pile/post holes. Other features may include artefact deposits, such as rubbish or offal pits, which can offer a direct informational link to the daily activities and occupations of those who once resided there.

6.5 Commercial Sites in the Archaeological and Heritage Record

Of the 4166 ArchSites currently recorded across the combined regions of Central Otago and the Lakes District, 106 are catalogued as commercial site types. Commercial sites within the area typically tend to fall into two main categories: places where goods were traded, such as bakeries (e.g., G41/300, G41/492 E40/72), butcheries (e.g., G42/469, G41/781), blacksmiths (e.g., G42/470), and general stores (e.g., G41/614, G43/260, F41/436), and hotels (banks are often recorded as either commercial- or administrative-type sites depending on the context). The latter represents the most numerous commercial-type ArchSite in the Central Otago and Lakes regions (n = 64), with numerous hotels springing up “overnight” to facilitate the massive influx of travellers making their way to the goldfields from the early 1860s.

Whereas the two commercial site-types closest to the project area are hotels (the Queensberry Hotel and an unnamed, largely forgotten one), the (unrecorded) commercial-type site of most relevance to the current project is the general store established by Hassing in 1863. Given that it was part of the same broad commercial venture, the ferry potentially represents a second unrecorded commercial-type site; however, it is regarded as being outside of the current scope of works. The majority of general stores recorded on ArchSite relate to structures that would have (or in several cases still do) lined the main streets of their respective goldmining towns, such as H41/155 (Pyle's Store) in St. Bathans, or Smith's Store and Bakery in Macetown (F41/492). As such, the construction of these stores was likely substantive enough to at least guarantee integration with the surrounding streetscape. In comparison, mining camp stores, whose construction likely reflected both the expedience and ephemerality of their demand, were probably not dissimilar to the miner's huts/tents they would have been built in proximity to (see above). In this respect, while a construction of stacked schist and/or sod may have been possible, it was just as likely represented a canvas tent supported by timber framing potentially supported by low schist foundations. Any artefact scatter/deposits that can be associated with the store may inform on the kinds of goods that were traded there.

7 Results of the Site Survey

Two site visits were carried out by NZHP archaeologists. The first was undertaken on 29 October 2024 by Blair McPhee and Heath Lie-Olesen and focused on the northern portion of the project area. The second was undertaken by Megan Lawrence on 6 January 2025 and focused on the southern portion of the project area. The purpose of these surveys was to record the extent and condition of visible archaeology and to identify areas of modification within the project area that may affect the condition of subsurface archaeology. The following section will describe the results of the site survey, documenting the site setting and condition of visible archaeology.

7.1 Setting

The project area is situated within a large (300-400m wide), flat river terrace that extends for 1.5km along the true right bank of the Clutha River. Originally dominated by aeolian sand drifts deposited over a substrate of river cobbles and associated alluvium, recent irrigation and planting efforts have seen this area transformed into grassy agricultural land/paddock, the majority of which is subject to regular ploughing. Mounds of larger river cobbles have been irregularly positioned throughout the project area, presumably due to the obstacle they present during ploughing. While large willow trees line the eastern edge of the terrace at its border with the Clutha River, the northern end of the project area is covered by a thicket of Manuka, extending for over 50m from the steep riverbank to the fence line to the south. An upper terrace runs along the southwestern edge of the project area, widening at the southern end. On this wider southern end, the ground had been modified by modern viticulture activity. At the southeast end of the embankment below the western terrace, a spring is located, likely representing the “Lagoon” shown in Figure 5-4 (Figure 7-1). Although a recent cutting within this spring appeared intended to direct water slightly further westward, no evidence of the strong westward extension depicted in the 1883 plans was observable. Through the centre of the project area, further the modern houses and associated structures have been constructed. Associated ground modification include the construction of vehicle tracks and driveways, plantings and ponds.



Figure 7-1. “Lagoon” located at southern end of project area, facing northwest.

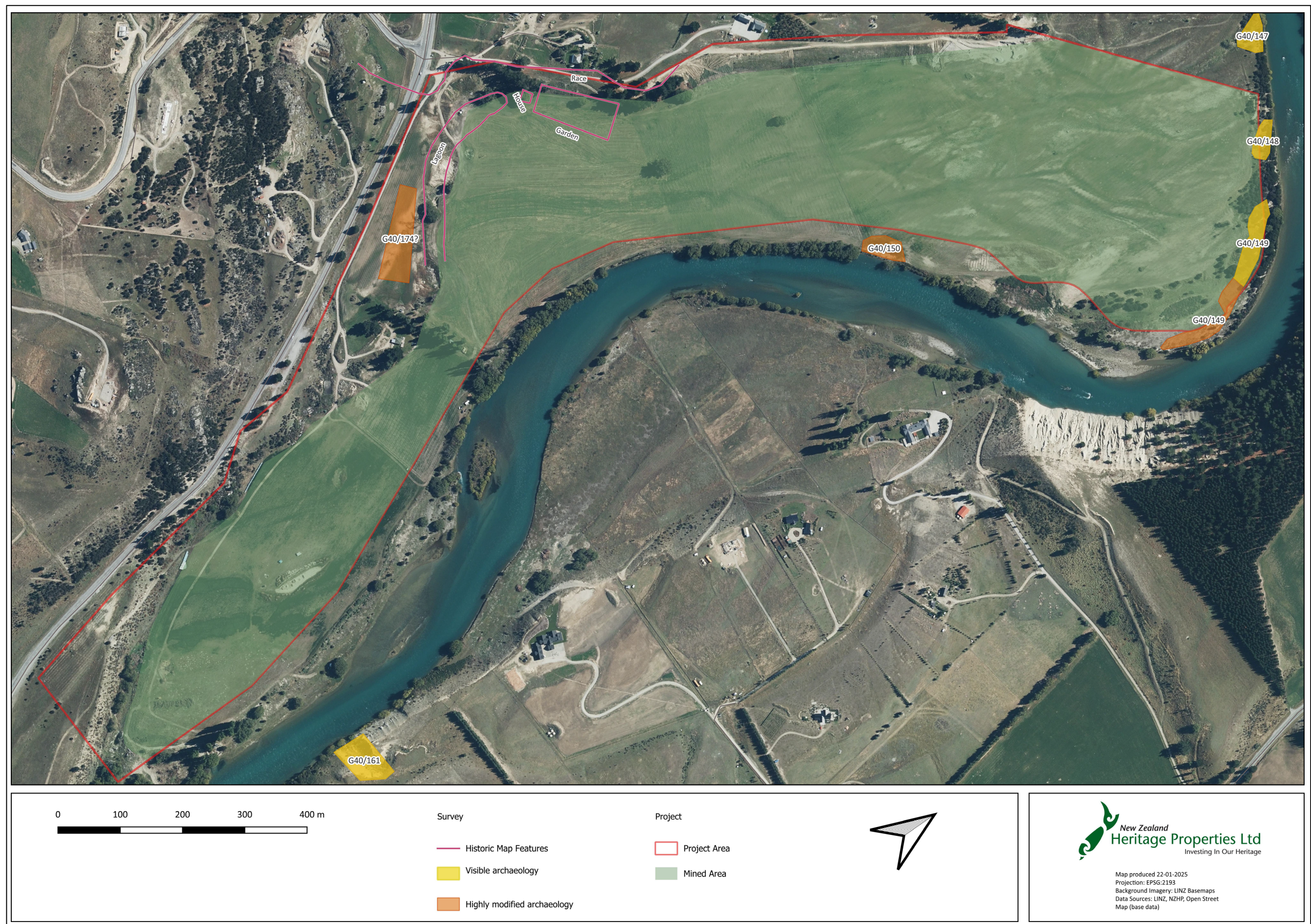


Figure 7-2. Results of site survey, showing location of archaeological sites discussed in the text. Historic features geo-referenced from SO 7374.

7.2 Pedestrian Survey

The primary purpose of the survey was to investigate the condition/visibility of known archaeological sites within the project area, as well as investigating the locations of potential sites depicted on historic survey maps (primarily Figure 5-4). No new/unrecorded sites were encountered the survey, including evidence of the 1863 ferry and general store.

The upper flat of the central raised area (bordering the highway) roughly aligns with the recorded location **G40/174** (Figure 7-2). This area has been thoroughly ploughed and none of the reported tailings could be observed (Figure 7-3). Moreover, a low, curving bund has been raised around the edge of the terrace, directly above the residential landscaping works taking place within the embankment slope. It is very possibly that this bund represents the remains of the tailings, which have been bulldozed/relocated in order to level the paddock for ploughing. This upper terrace is outside of the immediate scope of the planned mining works.



Figure 7-3. Upper terrace in general proximity of G40/174 Left, the upper terrace facing northwest. Right: detail of the low bund which has been shaped along the edge of the terrace, next to spoil from recent building activities, facing northwest.

A house, gardens, and water race were depicted in the 1883 plans for Section 15 (Figure 5-4), and this part of the project area was carefully surveyed. The house location aligns with a grassy, unploughed area positioned between a farm track and the slope bounding the western edge of the project area (Figure 7-4). No evidence of building remains was visible in this area. Recently felled trees had been piled up on the grassy expanse where the “garden” was once located – although this area was indistinguishable from the surrounding paddock. On the slope above, a dirt road now cuts through where the race appears to have followed the natural incline of the embankment, and no trace of the latter could be located.



Figure 7-4. Location of house in SO 7374 (Figure 5-4), facing north.

Most of the project area, several meters in from the immediate riverbank, has been subject to regular ploughing over the past 50 years or more. As such, no evidence of archaeology was visible across this large internal swath. Within the area where **G40/150** would have been located (roughly the north-south halfway point of the project area), a dirt road had been freshly constructed. This road, which closely parallels the riverbank, appears to have removed all trace of the tailings previously recorded here, although it is likely that this area had previously been levelled for the purposes of ploughing (Figure 7-5). Only scattered (and possibly disturbed) river cobbles lining the steep riverbank were visible in this area.



Figure 7-5. Photograph facing southeast towards the recorded location of G40/150, showing extent of modification.

The majority of observable archaeology, therefore, was located at the northern end of the project area. This clearly represented the visible remnants of archaeological sites **G40/148** and **G40/149**, recorded in 1979. **G40/149** appears to have been located at the northeastern edge of the lower terrace, within the southward bend of the river. Here, a surface of potentially highly degraded tailings was observed, covering an area of roughly 100m long x 20m wide. While most of this area presented as a semi-uniform scattering of river cobbles, some suggestive concentrations possibly represented the bases of once-larger tailings. A cobbled road had recently been constructed to the south of this surface, whereas stones had also been stacked along the base of the nearby fence line as a form of rabbit-proofing (Figure 7-7). It is possible that reuse of the cobbles in recent landscaping activities (in conjunction with deluge from the river) has contributed to the modification/erosion of the easternmost portions of **G40/149**.



Figure 7-6. Cobbled surface showing remnants of potentially highly modified tailings, facing southeast



Figure 7-7. Left: modern stone road, facing north; Right: stones lining base of fence line, facing southeast.

Slightly further to the north, this surface appeared to continue on the opposite side of an informal vehicle track, covering an area roughly 50m x 25m. Although also likely heavily modified, the subtlest indication of tailing-rows was still observable. Two large tailings mounds were more distinctly located to the immediate north of this surface,

with a rubbish pit excavated into the side of one by persons informally occupying the area (Figure 7-8). This area was regarded as the less equivocal start of the archaeological site **G40/149**.



Figure 7-8. Top: G40/149 facing west, with possible subtle row traces; bottom left: large tailings mound, facing southeast; bottom right: more tailing mounds associated with G40/149, facing north. Note modern rubbish pit.

Dense manuka growth within the northwestern corner of project area made it difficult to trace the full extent of certain features related to **G40/149** from this point of the survey. A large area of discrete tailings mounds, roughly 30m x 50m, was observed amongst the manuka growth roughly 80m west of the eroded tailings rows. The tailings, of which upwards of ~6 discrete mounds were observed, were all of relatively low height (<1m) and ranged in length from 4-10m. In many instances manuka trees were growing directly out of the mounds, with any additional tailings potentially obscured by this growth.



Figure 7-9. Western extent of G40/149, large area of tailings amongst mauka growth, facing southwest.

Around 60m west of G40/149 the final tailings within the project area were observed, which could be confidently linked with a recorded archaeological site **G40/148**. Covering a large, semi-continuous area roughly 65m by 30m, these were the only tailings preserved in still-visible rows—although in many places these rows had clearly eroded/slumped over the years, effectively forming an undulous field of river cobbles (Figure 7-10). The tailings were largely comprised of two large sections and one smaller one, separated by conspicuous furrows that likely represent tail races or a similar feature (Figure 7-11). The southern extent of the tailings were bordered by the modern farm fence, over which it was clear that sediment and rocks from the adjoining paddock were being

sporadically dumped. This obscured observation of the connecting head races which presumably continued to the southwest.



Figure 7-10. Rows of tailings (G40/148), facing north.



Figure 7-11. Possible tail race separating tailings within G40/148, facing north.

As discussed above, while recorded on ArchSite within the project area as **G40/147**, the actual location of the tailings is located to the north. This was confirmed during the survey with, no evidence of tailings present in the previously recorded location. Similarly, the sluiced gulley of **G40/161** was easily visible on the other side of the Clutha River during the survey, well outside the project area. The location of both sites have been updated on ArchSite. Furthermore, as mentioned above, the survey also confirmed that the heavily disturbed sites of **G40/174** and **G40/150** are located outside of the scope of works.



Figure 7-12. Sluiced area recorded as archaeological site G40/161 on the opposite side of the Clutha River to the project area.

8 Research Results

This section summarises the results from the historical background, previous archaeological investigations and the site survey within the area of proposed works. There is more than sufficient evidence to indicate that at least two recorded gold-mining sites, as well as unrecorded mining-gold, agricultural-pastoral, and commercial sites will be affected by the proposed works. Although much of the project area has been heavily developed for agriculture (and, to a lesser degree, residential occupation) over the last century, regular sediment deposition by both river inundation and wind suggests that subsurface archaeology may nonetheless remain *in situ*.

Historical/documentary evidence demonstrates that the area has been used as a goldfield since at least 1863, when a ferry and general store were also established at Sandy Point (although the precise location of these activities is not known). Most mining activities appear to have been restricted to lower-scale cradling and box-sluicing, with no physical evidence for industrial dredging despite historic allusions to several such ventures being established within the area in the later nineteenth century. Evidence of Sandy Point's long history of gold mining was first recorded by Neville Ritchie during his survey of the area for the Clutha Valley Development project in 1979. This resulted in four recorded archaeological sites that were located either within or directly adjacent to the project area: **G40/148** and **G40/149** at the northern end, **G40/150** roughly halfway along the west bank of the main terrace, and **G40/174** within the upper terrace closer to the highway. Two archaeological sites, **G40/147** and **G40/161**, indicated to be within Lot 1 DP 466676 within ArchSite, were confidently shown to be outside of the project area.

During the site survey, **G40/148** and **G40/149** were confidently relocated; however, the extent of the latter was less discrete, with numerous amorphous mounds grading to a low surface of equivocal/eroded tailings towards the northeastern corner of the terrace. This is largely consistent with the site record for **G40/149**, which characterised the tailings as extending over 200m, with evidence that the tailings at the southern [eastern] end were frequently subject to washing away by high river flows. The observed extents of both **G40/148** and **G40/149** are located across the boundary between Lot 1 DP 466676 and the marginal conservation strip, within the project area.

G40/150 could not be relocated during the site survey, with this site clearly having been mostly destroyed/heavily-modified by recent ploughing and road-building activity. Moreover, the extent of this site as shown in the SRF and historic aerials confidently places it within the bounds of the marginal strip; hence, while the presence of subsurface remains cannot be discounted, the site is regarded as being outside of the project area and will therefore not be affected.

Similarly, the only site currently understood to be located at the western-most end of the project area, closer to the highway – **G40/174** – could also not be relocated. It appears that this site has also been destroyed by recent farming activities. Although subsurface remains of the site potentially remain *in situ*, the site is located within the upper terrace and will not be mined as part of the current project; hence, it is outside of the scope of the proposed works and will not be affected.

Historic maps also suggest that unrecorded agricultural/pastoral sites may potentially be affected, with a house and associated gardens shown in survey plans from 1883 (SO 7374: Figure 5-4). While these were georeferenced to the western edge of the lower terrace, their location may have been slightly further northeast than indicated in Figure 7-2, given the somewhat erroneous location of the “lagoon” as transecting the upper terrace in SO 7374. The house was likely originally occupied by John Vliestra. While Vliestra was associated with gold-mining activities within the area (see above history), Section 15 was initially surveyed in provision of an agricultural lease, suggesting that some form of gardening and/or farming took place historically. While large-scale ploughing/development has likely disturbed most subsurface archaeology, there remains the possibility that evidence of Vliestra's occupation of the site (e.g., building foundations, refuse deposits) remains *in situ*, along with buried topsoils, postholes and other gardening features related to the associated market garden and/or orchard.

Unrecorded mining-gold sites may include the remains of miner's huts, with a known residential area located just to the north of the project area. Anecdotal accounts the settlement of 1863 also suggest a relatively large and sprawling mining community at Sandy Point. Remains associated with such sites are likely to include the bases of schist foundation walls, fireplace/chimney bases, paved floor surfaces, and associated artefact deposits. Other gold-mining sites may relate to unrecorded water races, with at least one water race known to have skirted the western edge of the project area where the modern farm road now descends from the terrace above. This race appeared to feed the tail races at sites **G40/148 and G40/149**, with these linkages potentially still traceable in the subsurface below the ploughed-out areas directly behind these sites. Other, smaller/superficial races potentially crossed the terrace to feed sites like **G40/150**.

Finally, the known presence of a general store and a ferry/punt raises the possibility of unrecorded commercial sites being encountered. While the remains of the ferry are presumed to have been long eroded-away by the typical vacillations of the river (in addition to being located outside of the project area within conservation land), the store may still be located somewhere within the project area. Unfortunately, the location of the store could not be determined during historic research, and there are few options with respect to constraining any explorative investigation of its remains.

The store/ferry also has some significance given its brief custodianship by a Māori party headed by "Chief Patu". Further manawhenua association with Sandy Point is implied by Hassing's discovery of moa skeleton not long after establishing himself there; however, it is not known if this was a natural "burial" recently exposed via erosion, or remains forming part of a midden/oven. Otherwise, the nearest recorded manawhenua site (oven/midden with moa remains, **G40/67**) is located 4.5km to the west, within Luggate township. However, this site, like the majority of recorded Māori sites in the broader Wānaka area, is based on second-hand anecdotal evidence and not direct archaeological investigation. Given the extensive gold mining of the riverbank, along with the severity of the Clutha's regular flooding events, there is little reason to expect unrecorded manawhenua sites being encountered during the proposed works.

8.1 Constraints and Limitations

The main constraint encountered during this work was the limited amount of documentary evidence relating to specific occupation of the area of Sandy Point contained within the project area. While the evidence for gold mining and related activities within the area is substantial, evidence for other activities – such as farming – are notably scarce. This is compounded by the lack of photographic record for Sandy Point, with no little-to-no pre-1900 photographic archives for the area readily traceable. Establishing a clear history of Sandy Point was further complicated by the historical existence of another, higher yield "Sandy Point", located between Clyde and Alexandra. Unless reported with explicit reference to its location (e.g., "near Clyde"), it was difficult to determine if the "Sandy Point" in question was the "Upper Clutha" locality, or the "Molyneux" gold workings 50km to the south.

Limitations during the pedestrian survey mainly pertained to the degree of post-1900 modification the landscape has undergone, with ploughing and related farming activities clearly having destroyed/modified much of the archaeology. Erosion of sites by both the river and (possibly) reuse of tailings rocks for modern landscaping, also meant it was difficult to trace the extent of some of the recorded archaeological sites.

9 Heritage Values of Sandy Point

The following sections summarise the heritage values for recorded archaeological sites within the project area following the criteria outlined in Section 3. An assessment of these values will be required under Section 46 of the HNZPTA 2014 should any modifications to them be proposed in the following stages of this work programme. These values will be utilised for any potential archaeological authority applications that may be required. This will be followed by a discussion of the heritage values of unrecorded sites that may potentially be affected by the proposed works.

Overall, NZHP has identified Sandy Point as an area with **low-moderate heritage value**. Gold mining sites are extremely common throughout the central Otago region, with the banks of its many famous rivers adorned with the spoil of past mining activities. While the history of Sandy Point harkens to a period when the Clutha River was as much an obstacle to be traversed as it was a source of the feverishly-sought element, its various tailings features cannot confidently be linked to any specific personages, nor do they have any special cultural, traditional, or community associations. Moreover, whereas both the recorded (gold-mining) and potential/unrecorded sites provide have some contextual and informational value regarding the range of activities and technologies employed across the broader site, any buried/subsurface features associated with these sites are likely to be heavily modified (by ploughing etc). While the two preserved/visible archaeological sites (**G40/148** and **G40/149**) of limited visibility/access to the public, **G40/148** still clearly evidences the sluice-mining technologies that created its undulating tailing rows, slightly increasing its amenity/aesthetic value.

9.1 Heritage Values of G40/148

G40/148 was originally recorded in 1979 as an area of sluicing tailings arranged in rows separated by the remnants of head races. The connecting main race could not be observed, mainly due to the build-up of ploughed sediment from the adjoining paddock. Otherwise, this site was relocated much as described during the site survey. Given that the site represents the best-preserved archaeological site within the project area, with the undulating tailings rows still visible over a 60m+ area, it is considered to have moderate amenity values, with the overall heritage values for the site being **low-moderate**. Due to its lack of direct association with any known personages or community, the overall heritage value of G40/148 are considered to be **low**. Table 9-1 summarises the heritage and archaeological values of the site.

Table 9-1. Summary of heritage values for G40/148.

Criteria	Key Questions
Aesthetic significance or value	Low-Moderate. The site is still visible as a large field of parallel tailings, although it is of limited accessibility to the public.
Archaeological significance or value	Low-Moderate: Although a common site type in Otago, this site is a good example of a mid to late nineteenth century alluvial gold mining complex that is in relatively good condition, being still readily visible as parallel rows without substantial overgrowth. As such it has moderate amenity value. The site also has contextual and informational value when considered as a physical record of the activities that predominated at Sandy Point, while also allowing for inter-regional comparison with other gold-mining sites. Although mining activities at Sandy Point are mainly associated with Pākehā occupation, the Māori custodians of the nearby store/ferry are known to have actively mined the wider region, while Chinese miners were also a significant presence in many early goldfield settlements.
Architectural significance or value	N/A
Cultural significance or value	Low. The identity of those that produced the tailings is not known, so are of limited cultural significance.
Historical significance or value	Low-moderate. The Otago Goldrush was a major, foundational event in New Zealand's early post-contact history. Sandy Point, which was occupied by miners from 1863 onwards, represents a physical remnant of that history. However, tailing features like G40/148 have been recorded as part of numerous sites throughout the region, and as such offer little in terms of additional information. Although testimonials like that of G. M. Hassing recount the individual personages active at the camp in 1863, there are no known prominent individuals, groups of organisations associated with G40/148 directly.
Scientific significance or value	N/A

Social significance or value	Low. Beyond being recognised as an archaeological site as defined by the HNZPTA 2014, the site has not been commemorated in any way by the local community.
Spiritual significance or value	N/A
Technological significance or value	N/A
Traditional significance or value	N/A

9.2 Heritage Values of G40/149

I44/149 was originally recorded in 1979 as a large (200m) area of heaped/mounded and amorphous tailings located at the northeastern edge of the terrace that forms the project area. Remains of what likely constitutes the majority of this archaeological site were relocated during the site survey, with the discrete mounds at the western extent of site more substantively “archaeological” than the (potentially) eroded tailings at the eastern extent. Due to the limited visibility of the feature, the prevalence of mining tailings in the region, and its lack of direct association with any known personages, the overall heritage values of G40/149 are considered to be **low**. Table 9-2 summarises the heritage values of the site.

Table 9-2. Summary of heritage values for G40/149

Criteria	Key Questions
Aesthetic significance or value	Low. Although many of the tailings are still visible as discrete mounds, they are not readily accessible by the public and have been largely overgrown and eroded in places.
Archaeological significance or value	Low. Although a good example of a mid to late nineteenth century alluvial gold mining complex, tailings like these are a common site type in the region. The site has contextual and informational value when considered as a physical record of the activities that predominated at Sany Point, while also allowing for inter-regional comparison with other gold-mining sites. However, this is offset by the generally poor state of preservation of much of the above-ground portion of the site, as well as its general lack of visibility/accessibility to the public. Although mining activities at Sandy Point are mainly associated with Pākehā occupation, the Māori custodians of the nearby store/ferry are known to have actively mined the wider region, while Chinese miners were also a significant presence in many early goldfield settlements.
Architectural significance or value	N/A
Cultural significance or value	No. The identity of those that produced the tailings is not known, so are of limited cultural significance.
Historical significance or value	Low-Moderate. The Otago Goldrush was a major, foundational event in New Zealand’s early post-contact history. Sandy Point, which was occupied by miners from 1863 onwards, represents a physical remnant of that history. However, tailing features like G40/149 have been recorded as part of numerous gold-mining sites throughout the region, and as such offer little in terms of additional information. Although testimonials like that of G. M. Hassing recount the individual personages active at the camp in 1863, there are no known prominent individuals, groups of organisations associated with G40/149 directly.
Scientific significance or value	N/A
Social significance or value	Low. Beyond being recognised as an archaeological site as defined by the HNZPTA 2014, the site has not been commemorated in any way by the local community.
Spiritual significance or value	N/A
Technological significance or value	N/A
Traditional significance or value	N/A

9.3 Heritage Values of Unrecorded Sites

This assessment has determined that unrecorded mining/gold, agricultural/pastoral, and commercial-type sites may be encountered during the proposed works. Although modern agricultural practices have likely heavily modified any remaining subsurface archaeology, the appreciable levels of sediment likely deposited across the project area over the past century and a half suggests that intact features may still be encountered during the proposed works.

Gold prospecting at Sandy Point stretches back to at least 1863, with a high chance of unrecorded mining/gold and related industrial sites being encountered during works. Within the project area, these sites are likely to include

tailings, water races, and associated machinery. Moreover, the known residential occupation of the area raises the possibility of finding features related to the wider goldmining landscape, such as miners' domiciles and stone walls. Due to their rarity and contextual values, these features have mostly been assessed as having **low-moderate** heritage values, up to **moderate** if in good condition. An evaluation of the heritage values for unrecorded mining - gold and industrial sites is provided in Table 9-3.

Table 9-3. Summary of heritage values for unrecorded gold-mining sites.

Criteria	Assessment
Aesthetic significance or value	Low. Unrecorded mining sites are not currently visible and likely comprise ephemeral features such as terraces, surface scatter or subsurface features that do not possess notable aesthetic value.
Archaeological significance or value	Low-Moderate: The rarity of these sites will vary. Water races and tailings (either isolated or extensions of the above affected sites) will be relatively common, whereas evidence of domestic habitation (i.e., miners' huts) will be rarer. Unrecorded (mining) occupation sites in this area could have high contextual values as they could be associated with the well-recorded mining activities around them. Material found in association with these sites, such as machinery and domestic artefacts, would help inform on the technology employed and the daily activities of the miners themselves. Although mining activities at Sandy Point are mainly associated with Pākehā occupation, the Māori custodians of the nearby store/ferry are known to have actively mined the wider region, while Chinese miners were also a significant presence in many early goldfield settlements.
Architectural significance or value	n/a
Cultural significance or value	n/a
Historical significance or value	Low-Moderate: Some unrecorded sites may be able to be associated with known mining claims or phases of activity and therefore may possess historical significance.
Scientific significance or value	n/a
Social significance or value	n/a
Spiritual significance or value	n/a
Technological significance or value	n/a
Traditional significance or value	n/a

Unrecorded agricultural/pastoral sites encountered during works are most likely to relate to John Vliestra's occupation of the area. Remains of historic agricultural activity can include buried topsoils from old garden beds and fenceposts and/or stone walls delimiting historic paddock/corral boundaries. These sorts of features often leave limited traces on the subsurface, being easily destroyed by later development and/or landscape modification (such as ploughing). However, the known presence of a farmhouse/homestead within the project area raises the possibility of encountering associated remains such as building foundations, offtail pits, and artefact deposits. As any evidence of past farming/gardening practices would contribute to our scant knowledge of these activities at Sandy point, any traceable material/features would be of **low-moderate overall heritage value**. An evaluation of the heritage values for unrecorded agricultural/pastoral sites is provided in Table 9-4.

Table 9-4. Summary of archaeological value for unrecorded agricultural-pastoral sites.

Criteria	Assessment
Aesthetic significance or value	Low. Unrecorded pastoral sites are below surface and therefore not currently visible.
Archaeological significance or value	Low-Moderate: The condition of these sites is currently unknown/subsurface. While pastoral sites are common in the wider area, sites of this nature have contextual value insofar as they provide insight into the range of activities that occurred adjacent to the more visible gold workings. This helps build a contextual profile with which to explore intra-regional variation in the development and occupation of other goldmining sites in the area. Moreover, any remaining in situ artefacts/features may provide substantive information regarding the occupation and activities of personages who are known to have lived and farmed at Sandy Point. Pastoral/agricultural activities within Sandy Point appear to have mostly been restricted to Pākehā occupation of the area.
Architectural significance or value	n/a
Cultural significance or value	n/a
Historical significance or value	Low-Moderate: Some unrecorded sites may be able to be associated with known personages, such as John Vliestra, and therefore may possess historical significance.

Scientific significance or value	n/a
Social significance or value	n/a
Spiritual significance or value	n/a
Technological significance or value	n/a
Traditional significance or value	n/a

Commercial sites within the project area are likely to be restricted to features/deposits associated with the general store known to have been established in the area in 1863. Although likely heavily disturbed (and below surface), this site type has been assessed as having **moderate** heritage values due to the relative rarity of mining-camp stores in the archaeological record, and the informational and contextual value that any identifiable remains are likely to hold. An evaluation of the heritage values for unrecorded commercial sites is provided in Table 9-5.

Table 9-5. Summary of heritage values for unrecorded commercial sites.

Criteria	Assessment
Aesthetic significance or value	Low. Unrecorded commercial sites are below surface and therefore not currently visible.
Archaeological significance or value	Moderate: Given the condition of any subsurface archaeology is both below surface and likely heavily modified, the amenity value of unrecorded commercial sites is considered to be low. Nonetheless, commercial sites associated with ephemeral mining camps are relatively rare within the Otago goldfields and have moderate contextual value as they provide insight into the range of services available during this short-lived period. Any identifiable remains – in particular artefact deposits – will also provide information on the nature of material used in the store’s construction, while also potentially informing on the types of goods that were traded there. Cultural associations include Pākehā and Māori, with both groups managing the store and ferry business during its brief tenure.
Architectural significance or value	n/a
Cultural significance or value	n/a
Historical significance or value	Moderate-high: Any verifiable remains connected with the general goods store may be able to be associated with known historical personages, such as George Hassing and/or Chief Patu and therefore will possess historical significance.
Scientific significance or value	n/a
Social significance or value	n/a
Spiritual significance or value	n/a
Technological significance or value	n/a
Traditional significance or value	n/a

9.4 Other Values

Given the geographic and spiritual significance of the Clutha River/ Mata-Au to manawhenua, in addition to the 1863 general store’s known association with Moeraki Māori, NZHP recommends that consultation be undertaken with manawhenua as part of the wider plans for the project, and a cultural values statement prepared.

10 Assessment of Effects and Other Considerations

Section 46 (g)(ii) of the HNZPTA requires an assessment of the effects of the proposed works, as detailed in Section 1.2, on archaeological and other values, which were assessed in the previous section. The assessment of effects takes into account the criteria established by HNZPT (2019) as outlined in Section 3. Also considered here are methods to avoid, minimise, and mitigate any adverse effects to heritage.

10.1 Assessment of Effects on Heritage Values

The client has proposed to establish a mining operation within the large lower terrace of Sandy Point, Luggate. While the affected area, including potential perimeter bund, will be set roughly ten meters inland from the marginal strip where the majority of archaeology is located, it is clear that some of the recorded sites once extended further than their currently recorded extent. It is therefore possible that subsurface archaeology may be encountered in situ below the level of twentieth century landscape modification (e.g., ploughing).

This section will outline the assessment of effects on the two recorded sites and the three unrecorded site types that may be encountered within the project area.

10.1.1 *Assessment of Effects on Recorded Sites*

This assessment has identified two recorded sites that will potentially be impacted by the proposed works: **G40/148** and **G40/149**. These sites, both of which are located at the northern extent of the project area, cross from the Crown marginal strip into the private parcel representing the project area. Furthermore, while both the southern extents of these sites have been modified by previous ploughing activities, it is clear based on the original site recording forms that additional features – such as head races – extended further back into what is now the modern paddock. Moreover, a large area of **G40/149** (mostly its southeastern portion) has been heavily eroded through both river inundation and (possibly) repurposing of rocks for nearby landscaping purposes.

The effects of the proposed works on these two sites therefore depends largely on the extent of planned earthworks. Whereas the visible boundary of **G40/148** only extends a few meters into the project area from the marginal strip, parts of **G40/149** extend for almost 30m into the project area. If an effort to avoid all visible, above-surface archaeology is made, then it is likely that the works will have a **minor magnitude** of impact, with only below-surface (and likely highly modified) archaeology potentially affected. If the proposed works are to extend closer to the boundary of the marginal strip, then there is the potential to affect/destroy large portions of **G40/149**, with a resultant **major magnitude** of impact on the site.

10.1.2 *Assessment of Effects to Subsurface Archaeology for Unrecorded Sites*

This assessment has identified that three types of sites may potentially be affected by the proposed works: mining-gold/industrial, agricultural/pastoral, and commercial. Unrecorded mining-gold sites may include the remains of races, dams, and other structures likely to have left subsurface traces, such as previously unrecorded miner's huts. As any such features encountered within the immediate project area (i.e., on the lower terrace) are likely to be destroyed by the proposed works, the **magnitude of impact on unrecorded mining-gold sites is considered to be major**.

Potential agricultural/pastoral sites mainly relate to garden features (see Figure 5-4), historic stone walls, and fence lines/postholes. The activities associated with these features typically make only minimal modifications to the subsurface and are more likely to be modified via later land development than the above site-types. Nonetheless, the structure depicted on the 1883 survey map SO 7374 (Figure 5-4) is likely to also be recorded as an agricultural/pastoral site (e.g., farmstead), insofar as it is associated with an agricultural lease (and garden). Below-surface foundation features and artefact scatters/deposits associated with this occupation may be encountered. As any such features located within the proposed area of works are likely to be destroyed entirely, the **magnitude of impact on unrecorded agricultural/pastoral sites is considered to be major**.

Finally, the unrecorded commercial site related to the 1863 general store established by Hassing in conjunction with his ferry operation. The location (and construction) of this structure is not known, and any remains are likely to have been heavily modified by modern land-use. Nonetheless, as any such features located within the proposed area of works are likely to be destroyed entirely, the **magnitude of impact on unrecorded commercial sites is considered to be major.**

10.2 Recommendations to Avoid, Minimise and/or Mitigate Adverse Effects

Considering the assessment of values and effects to those values based on the proposed works, this section considers how archaeological and heritage values can be protected or avoided during the proposed works as well as providing mitigation for information loss.

10.2.1 Sites and Features to be Avoided or Protected

As a first principle, every practical effort should be made to avoid damage to any archaeological site, whether known or discovered during any redevelopment of the project area.

The current assessment has determined that the two sites likely to be impacted by the proposed works are the gold tailings sites **G40/148** and **G40/149**. As such, it is recommended that works avoid modification to the known site extent and a 10m exclusion buffer around the site (Figure 10-1). This exclusion zone will protect not only the currently exposed features associated with this site but also potential subsurface features which would likely be concentrated in this area if present.

The current location of features associated with all other recorded and unrecorded sites throughout the project area are subsurface, and their condition and extent unknown. Moreover, given the generally destructive nature of the works (all sediment dug-out to depth of 3-4m by a mechanical excavator), it is likely any remaining unrecorded, in situ archaeology within the project area will be destroyed as a result. While structural features such as stone foundations are generally recognisable when accidentally encountered, other features (such as post holes, artefact deposits etc) can be more difficult to detect. Therefore, NZHP recommends targeted excavations take place in areas where there is a high likelihood of archaeology being encountered (see below).

Finally, while two sites were determined to be outside the project area (G40/150 and G40/174), any contractors working on this site should be aware of their presence, with the appropriate archaeological appraisal sought prior to any earthworks that may impact subsurface remains associated with these sites.

10.2.2 Mitigation for Information Loss

This assessment has determined that the proposed works have a high likelihood of encountering archaeological features. Due to the destructive nature of the works, there will be loss of information values, especially by removing any newly found or newly recorded extents of structural or artefactual remains in part or in whole within the project area. The recovery of information through archaeological investigation, monitoring, recording, analysis, and reporting is a method of mitigating the loss of this information.

As neither stand-over nor on-call monitoring are practical recommendations throughout the full duration of the project, a targeted investigatory approach is recommended at the outset of earthworks. This approach is outlined in Figure 10-1, which is based on historical research, pedestrian survey, and previous archaeological investigations within the project area. This, along with reporting of the archaeological record, will allow preservation via record, to mitigate information values:

- Immediately outside the 10m exclusion zone to the rear/south of **G40/149** and **G40/148**, two trenches are to be excavated in order to determine if traceable, subsurface remains of these features extend back into the ploughed farmland behind. The first trench will run on the northwest-southeast alignment directly behind the respective exclusion zones. The second trench will run perpendicular to the first,

extending southwest back into the paddock. The placement of the second trench will likely be contingent on the findings of the first trench (i.e., the location and extent of observable archaeology). These trenches should be at least 1m in width, but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).

- The area in the vicinity of the house and gardens depicted on the 1883 survey map (SO 7374) should be excavated to sterile ground (NB: this has been expanded to account for potential inaccuracies regarding the placement of these features in SO 7374). This can be done in ~100mm spits via hydraulic excavator; however, should archaeological features and/or deposits be encountered, these may require hand-excavation for all/part of their extents.
- Although the location of the 1863 general store is not known, it is considered to have been positioned in proximity to the ferry. Given the steepness of the sandy bluff opposite the northern-most bend in the river adjacent to the project area, the ferry is reasoned to have been positioned within the flat area bounding the gentler, more southern bend. Moreover, as the majority of gold workings were on the western side of the river (within the project area), it is likely that the majority of the camp was congregated on this side. Therefore, it is recommended an exploratory trench be excavated along the flattened area bounding the southern river bend in order to determine the presence of subsurface archaeology. This trench should be at least 1m in width, but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).
- If at any point during the above excavations archaeology is encountered, all features should be investigated and recorded following best archaeological practice.
- The above investigatory excavations must be monitored by the s45 approved person, who may appoint a person to carry out the monitoring on their behalf, as detailed in the AMP.
- All remaining work outside of the above investigatory recommendations can be conducted under On-Call Protocols (OCP). An investigatory trench is not recommended for the area behind G40/150 as this feature does not appear to have extended into the project area.

As the values of the anticipated features are low to moderate, NZHP recommends that any structures effected by the proposed works be recorded to a minimum of a Level III standard as defined in HNZPT's guide, *Investigation and Recording of Buildings and Standing Structures* (HNZPT, 2018), in order to recover information about their construction, alteration and use through time, as specified in the site instruction.

Any authority should be exercised in accordance with an Archaeological Management Plan (AMP). The purpose of the site instruction is to clarify a methodology, including variations, to ensure site protection during multiple phases of earthworks for service installation, show the location of high-risk areas for archaeological monitoring, set recording to current archaeological practice and that key information, based on archaeological values and Level III recording for structures. Any archaeological site instruction should be prepared under the direction of the s45 archaeologist and changes approved by HNZPT and NZHP.

Archaeological reporting is essential to allow for future comparative studies, interpretation, and public outreach outside the limits of a user pays construction situation. Having accessible and timely information about the location of remaining in situ archaeological sites for site management for future projects is essential. As such, NZHP recommends that within 20 working days of the completion of works under the authority that site record forms on ArchSite are entered for any newly recorded sites. A final report is essential to adequately document recorded structures to current archaeological practice to allow preservation via record. As final interpretation of archaeological sites is subject to analysis, structure drawings, reporting, and peer review, it is recommended that the final report is due within 6 months of the completion of archaeological work. At the completion of final

reporting, ArchSite should be updated with a reference to the final report, final interpretation, maps/plans, and site condition. It is recommended that a copy of the final report be distributed to CODC and HNZPT to ensure accessibility to archaeological information.

Briefings for contractors and project managers are recommended to ensure that all parties understand the conditions of the authority and their individual responsibilities. The briefing will outline when an archaeologist is required on site, the types of archaeology expected to be encountered, and the monitoring protocols. Such steps will ensure that archaeological values, such as information value and possible amenity purposes, are increased through appropriate archaeological investigation. NZHP recommends that the briefing be undertaken in an office space to best enables the briefing to be presented digitally, thus maximising engagement.

10.3 Summary of Effects on Heritage Values

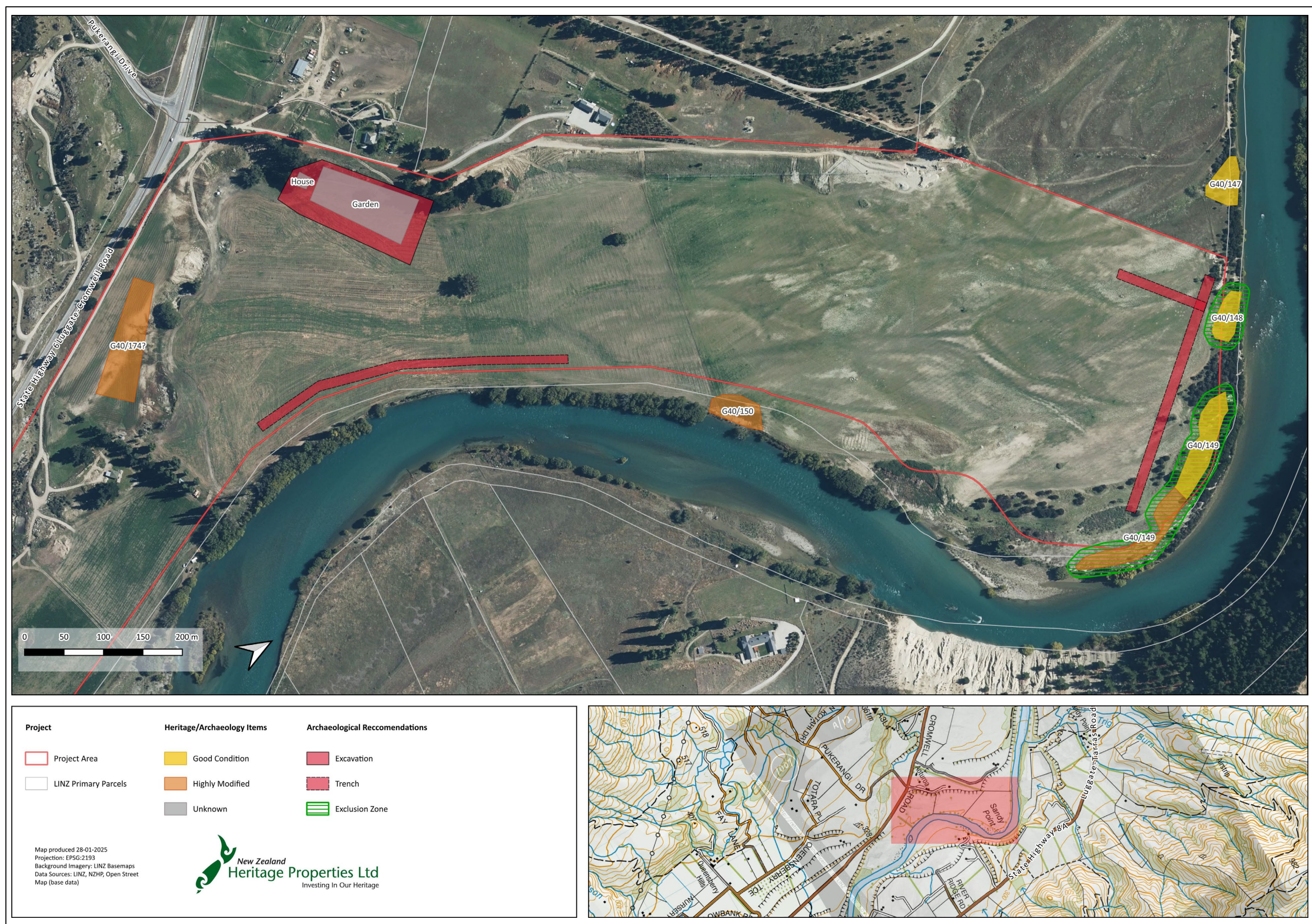
As discussed in Section 8.1, NZHP has identified the heritage values for all recorded sites within the project area, as well as the heritage values for unrecorded mining, commercial, and agricultural/pastoral sites. The summary of these values and the impact of the works on these sites is provided here.

The two sites determined to be affected by the proposed works, **G40/148** and **G40/149**, are located at the northern fringe of the project area, with the latter making a more substantial encroachment into the project area than the former. **G40/148** represents the best-preserved archaeological site within the project area, with its undulating tailings rows still visible over a 60m+ stretch of riverbank. While this results in slightly higher aesthetic/amenity values, given its lack of direct association with any known personages or community, the overall heritage value of **G40/148** is **considered to be low-moderate**. Due to its generally poorer (and more diffuse) state of preservation, in conjunction with the general prevalence of mining tailings in the region as well as its lack of direct association with any known personages, the overall heritage and values of **G40/149** are **considered to be low**.

Provided the recommended exclusion zone around these sites is adhered to, the proposed works will likely have a **minor magnitude of impact** on **G40/148** and **G40/149**, with the extent of possible subsurface features associated with these sites currently unknown.

The overall heritage values of unrecorded mining-gold, commercial, and agricultural/pastoral sites are considered to **low-moderate to moderate** depending on the nature, extent and condition of such sites. However, due to the extent of landscape modification that is likely to result from the proposed works, **the magnitude of impact on these sites is likely to be major**.

Given the exclusion zones for **G40/148** and **G40/149**, as well as targeted archaeological investigations for select areas followed by recording, analysis and reporting on any encountered archaeological features, NZHP supports the proposed works.



11 Conclusions and Recommendations

This heritage assessment has identified that two archaeological sites will potentially be affected by the proposed works: **G40/148** and **G40/149** (Table 11-1). The heritage values of these sites are considered to range from **low** to **low-moderate**, given their lack of direct association with known historic personages and limited amenity values. Provided the 10m exclusion zone recommended in this assessment is followed, there is likely to be a **miner magnitude of impact** on **G40/148** and **G40/149**, with the extent of possible subsurface features associated with these sites currently unknown. Exploratory trenching of the area directly behind these sites may help clarify the breadth of subsurface archaeology associated with **G40/148** and **G40/149**, further mitigating any potential information loss. The two other (heavily modified) sites identified as being within proximity of the project area, **G40/174** and **G40/150**, have been determined to be outside the scope of works and hence will not be affected.

This assessment has determined that there is a high likelihood of encountering unrecorded mining-gold, agricultural/pastoral, and commercial sites during the course of the proposed works. The location of some of these sites was determined through the examination of historic maps and the original site record forms for the affected sites. As such, the water race(s) that fed **G40/148** and **G40/149** may potentially be encountered via the exploratory trenches recommended herein, while controlled excavation of the known location of an historic farmhouse and associated garden may result in features and/or artefacts relating to this unrecorded agricultural/pastoral site being encountered. Other potential mining-gold sites include miner's huts and associated ancillary structures; however, the location of these sites is not known, with their recording subject to the On-Call Protocol. Likewise, the location of the single unrecorded commercial site – the 1863 general store associated with Hassing's ferry operation – could not be meaningfully constrained during the course of this assessment. However, exploratory trenching of its potential location close to the flatter, southern river bend, may return evidence of this structure along with other archaeology pertaining to the short-lived settlement it serviced.

The overall heritage values of unrecorded mining-gold, agricultural/pastoral, and commercial sites are considered to **low-moderate to moderate** depending on the nature, extent and condition of such sites. However, due to the extent of landscape modification that is likely to result from the proposed works, **the magnitude of impact on these sites is likely to be major**.

Table 11-1. Sites affected by the proposed gold dredging of Sandy Point.

NZAA Site Id	Site Type	Brief Description
G40/148	Mining-gold	Tailings and tail races
G40/149	Mining-gold	Tailings

On the basis of this assessment, NZHP makes the following recommendations:

- Authority Application:** As the proposed works described in Section 1.2 will affect sites G40/148 and G40/149, in addition to potential unrecorded sites, an archaeological authority under Section 44 of the HNZPTA 2014 must be obtained from HNZPT prior to any modification of the site.
 - If development plans are altered from those reviewed for this assessment (Appendix A), then HNZPT and NZHP must be alerted, as any changes may alter the assessment of effects or invalidate the authority.
- Resource Consent:** Conditions of the resource consent should include archaeological recording and analysis of any archaeological features impacted by the proposed works.
 - This recording and analysis should be reported on following HNZPT guidelines and submitted to the HNZPT and the Central Otago District Council.
- Protection of sites/features:** As a first principle, every practical effort must be made to avoid damage to any heritage site, whether known, or discovered during any redevelopment of the site.

- a. An exclusion zone should be established to protect the known extent of G40/148 and G40/149.
4. **Archaeological Management Plan (AMP):** All works must be carried out in accordance with AMP. Any amendments to the AMP will require prior written approval from HNZPT.
5. **Contractor Briefing:** All contractors working on the project must be briefed by the s45 approved person (or person nominated on their behalf) on the possibility of encountering archaeological evidence, how to identify possible archaeological sites/features during works, the archaeological work required by the conditions of the authority, and contractors' responsibilities with regard to notification of the discovery of archaeological evidence to ensure that the authority conditions are complied with.
6. **Recording of Structures:** Any structures encountered, such as water races or building remains, are to be recorded to a Level III standard as defined in HNZPT's guide, *Investigation and Recording of Buildings and Standing Structures* (HNZPT, 2018). Details of the recommended recording are provided in the AMP.
7. **Archaeological Monitoring:** It is recommended that archaeological monitoring follow a targeted approach in order to mitigate loss of information for those sites (both recorded and unrecorded) most likely to be affected (Figure 10-1):
 - a. Immediately outside the 10m exclusion zone to the rear/south of **G40/149** and **G40/148**, two trenches are to be excavated in order to determine if traceable, subsurface remains of these features extend back into the ploughed farmland behind. The first trench will run on the northwest-southeast alignment directly behind the respective exclusion zones. The second trench will run perpendicular to the first, extending southwest back into the paddock. The placement of the second trench will likely be contingent on the findings of the first trench, i.e., the location and extent of observable archaeology. These trenches should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).
 - b. The area in the vicinity of the house and gardens depicted on the 1883 survey map (SO 7374) should be excavated to natural ground (NB: this has been expanded to account for potential inaccuracies regarding the placement of these features in SO 7374). This can be done in ~100mm spits via hydraulic excavator; however, should archaeological features and/or deposits be encountered, these may require hand-excavation for all/part of their extents.
 - c. Although the location of the 1863 general store is not known, it is considered to have been positioned in proximity to the ferry. Given the steepness of the sandy bluff opposite the northernmost bend in the river adjacent to the project area, the ferry is reasoned to have been positioned within the flat area bounding the gentler, more southern bend. Moreover, as the majority of gold workings were on the western side of the river (within the project area), it is likely that the majority of the camp was congregated on this side. Therefore, it is recommended an exploratory trench be excavated along the flattened area bounding the southern river bend in order to determine the presence of subsurface archaeology. This trench should be at least 1m in width but may need to be widened to ~2m if visible archaeology extends to greater than 1m in depth. Depth of excavations will be subject to the discretion of the onsite archaeologist, being based on the level/presence of visible archaeology, the depth at which sterile sediment is confidently reached, and/or the practical working depths of the trench (i.e., <2m).
 - d. The above earthworks must be monitored by the s45 approved person (or person nominated on their behalf) in accordance with the AMP. Any archaeological features and material encountered shall be recorded, analysed, and interpreted in accordance with current archaeological practice and as outlined in the AMP.

- e. All remaining work outside of the above investigatory recommendations can be conducted under the OCP.
8. **Archaeology of Māori origin:** If archaeological material of Māori origin is discovered at any stage, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all relevant parties including takata whenua via Aukaha and HNZPT and in accordance with the AMP.
- a. Any taoka tūturu are *prima facie* the property of the Crown who will be notified of the find. Taoka tūturu will be registered with the Ministry for Culture and Heritage. NZHP, in collaboration with manawhenua, shall notify the Ministry of Culture Heritage and establish the most appropriate temporary storage, management and care for taoka tūturu, until such time as traditional or actual ownership is determined, with an appropriate institution or kaitiaki.
9. **Kōiwi (human remains):** Should kōiwi be encountered, all work must stop within 20m of the find. NZHP will assist the authority holder in contacting all affected parties as soon as practicable, including [takata whenua via consulting company], HNZPT, and the police. The Ngāi Tahu policy for kōiwi takata shall also be followed (Te Rūnanga o Ngāi Tahu, 2019).
10. **Reporting:**
- a. Within 20 working days of the completion of on-site archaeological work, the site record forms must be updated or submitted to ArchSite.
 - b. Within 6 months of the completion of on-site archaeological work, a final report on any archaeological material that is found must be prepared in accordance with *ASG12 Archaeological Report Guideline* (HNZPT, 2023) and submitted to HNZPT for inclusion in the digital library and to Aukaha.

12 References

- Anderson, A, Allingham, B., & Smith, S. (Eds.). (1996). *Shag River Mouth: The Archaeology of an Early Southern Maori Village*. (Research P). Canberra: ANH Publications, RSPAS, The Australian National University.
- Anderson, Atholl. (1982). Maori Settlement in the Interior of Southern New Zealand from the early 18th to the late 19th Centuries AD. *Journal of the Polynesian Society*, 91, 53–80.
- Anderson, Atholl. (1983). *When all the moa-ovens grew cold: Nine centuries of changing fortune for southern Maori*. Dunedin: Otago Heritage Books.
- Anderson, Atholl. (1990). Story: Te Pūoho-o-te-rangi. Retrieved from Te Ara - the Encyclopedia of New Zealand website: <https://teara.govt.nz/en/biographies/1t59/te-puoho-o-te-rangi>
- Anderson, Atholl. (1998). *The Welcome of Strangers; an ethnohistory of southern Maori*. Dunedin: University of Otago Press.
- Anonymous. (1900). *GOLD DREDGING*. Hocken Snapshot. Retrieved from <https://hocken.recollect.co.nz/nodes/view/16661>
- Ballantyne, A. (2015). Gold-Dredges: From Dunedin to Siberia.
- Beck, R. J., & Mason, M. (2002). *Mana Pounamu: New Zealand jade*. Auckland: Reed.
- Binney, J. (2004). Tuki's Universe. *New Zealand Journal of History*, 38(215–232).
- Boffa Miskell Limited. (2018). *Natural Character, Riverscape & Visual Amenity Assessments: Clutha/Mata-Au Water Quantity Plan Change – Stage 1 Prepared for Otago Regional Council*. Report prepared by Boffa Miskell Limited for Otago Regional Council.
- Bristow, P. (1994). *Final report on the excavation of a miner's hut site (S143/226) in the Old Man Range, Central Otago*. Heritage New Zealand Pouhere Taonga.
- Brown, A., Jacombs, C., & Brooks, E. (2011). *Archaeological Assessment for Stage Two of the Clutha Gold Cycle Trail: Roxburgh Bridge to Beaumont*.
- Craw, D., Upton, P., Walcott, R., Burrige, C., & Waters, J. (2012). Tectonic controls on the evolution of the Clutha River catchment, New Zealand. *New Zealand Journal of Geology and Geophysics*, 55(4), 345–359.
- Crawford, J. (2006). *Tales from the Woolshed*. Teviot Valley 2007 Society Inc.
- Cromwell Argus. (1878). *Page 4 Advertisements Column 4*. Volume IX, Issue 476, 24 December 1878, Page 4. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG18781224.2.6.4>
- Cromwell Argus. (1885a). *Page 2 Advertisements Column 2*. Volume XVII, Issue 828, 24 February 1885, Page 2. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG18850224.2.10.2>
- Cromwell Argus. (1885b). *Warden's Court*. Volume XVII, Issue 841, 26 May 1885, Page 2. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG18850526.2.9>
- Cromwell Argus. (1899a). *Page 2 Advertisements Column 1*. Volume XXXI, Issue 1604, 30 September 1899, Page 2. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG18990930.2.10.1>
- Cromwell Argus. (1899b). *Page 2 Advertisements Column 2*. Volume XXXI, Issue 1609, 17 October 1899, Page 2. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG18991017.2.3.2>
- Cromwell Argus. (1902). *Land Board*. Volume XXXIV, Issue 1781, 6 May 1902, Page 4. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG19020506.2.31>
- Cromwell Argus. (1903). *Luggage Notes*. Volume XXXV, Issue 1822, 17 February 1903, Page 4. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG19030217.2.30>
- Cromwell Argus. (1908). *WARDEN'S COURT*. Volume XXXIX, Issue 2083, 9 March 1908, Page 5. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG19080309.2.17>
- Cromwell Argus. (1932). *Obituary*. Volume LXII, Issue 3230, 19 September 1932, Page 5. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/CROMARG19320919.2.29>
- DfT. (2008). *Design Manual for Roads and Bridges. Volume 11, Environmental Assets; Section 3, Environmental Topics; Part 2 HA 208/7 Cultural Heritage*. Department for Transport and Highways England.
- Dunstan Times. (1886). *Page 2 Advertisements Column 1*. Issue 193, 6 January 1866, Page 2. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/DUNST18660106.2.10.1>
- Evening Star. (1904). *MINING NEWS*. Issue 12309, 26 September 1904, Page 6. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/ESD19040926.2.44>
- Frazer, R. (1990). *Chalmers, Nathanael*. Te Ara - the Encyclopedia of New Zealand.
- Gilkison, R. (1958). *Early Days in Central Otago* (3rd ed.). Whitcombe & Tombs Ltd.
- Gore, H. G. (1862). *Gold field at Gabriels Gully, Clutha district*. Alexander Turnbull Library: 1/2-096648-F.
- Hamel, J. (2001). *The Archaeology of Otago*. Wellington: New Zealand Department of Conservation.
- HNZPT. (2014). *Archaeological Guidelines Series: Kōiwi Tangata Human Remains*.
- HNZPT. (2018). *Investigation and recording of buildings and standing structures. Archaeological Guidelines Series No. 1*. Heritage New Zealand Pouhere Taonga.

- HNZPT. (2019). *Writing Archaeological Assessments. Archaeological Guidelines Series No. 2*. Heritage New Zealand Pouhere Taonga.
- HNZPT. (2023). *AGS12 Archaeological Report Guideline*. Heritage New Zealand Pouhere Taonga.
- Ka Huru Manu. (2021). *Ōtepopo*.
- Kā Huru Manu. (2018). *Ka Ara Tanbito*. Te Runanga O Ngāi Tahu.
- Kāi Tahu Ki Otago. (2005). *Kai Tahu Ki Otago Natural Resource Management Plan 2005*. Dunedin, NZ: Kāi Tahu Ki Otago.
- Kerr, J. S. (2013). *The Conservation Plan. A guide to the preparation of conservation plans for places of European Cultural Significance* (Seventh Ed). James Semple Kerr.
- Knudson, D. (2009). *Donald Hay*. Queenstown Courier, No. 82, 10.
- Lewis, K. (n.d.). Goldrush Online. Retrieved from Goldrush Online website: <https://kaelewis.com/database.htm>
- Mantell, W. B. D. (1848). *Hand sketch of south part of the Middle Island*. National Library (MapColl-834caq/[ca.1848]/Acc.23675).
- McCraw, J. (2007). *Early Days on the Dunstan*. Dunedin: Square One Press.
- McIntyre, R. (2007). *Historic heritage of high-country pastoralism: South Island up to 1948*. Wellington: Department of Conservation.
- McLintock, A. H. (1966a). Blizzard and Flood in 1863. Retrieved from Te Ara - The Encyclopedia of New Zealand website: <https://teara.govt.nz/en/1966/disasters-and-mishaps-flood-hazards/page-2>
- McLintock, A. H. (1966b). Flood and Storm in Central Otago, 1878. Retrieved from Te Ara - The Encyclopedia of New Zealand website: <https://teara.govt.nz/en/1966/disasters-and-mishaps-flood-hazards/page-3>
- Moyle, J., McPherson, S., & Cawte, H. (2013). *Final Report on Modifications to Site G43/233, 1346 Teviot Road, Central Otago Archaeological Authority 2014/029*.
- Murray, D. L. (1975). Regional hydrology of the Clutha River. *Journal of Hydrology (NZ)*, 14, 83–98.
- New Zealand Historic Places Trust Pouhere Taonga. (2009). *Assessment of Heritage Values and Recommendations for SL2008-036 Ben Nevis & SL2008-037 Craigroy Pastoral Leases*.
- Ngāi Tahu Claims Settlement Act 1998. (n.d.). *Ngāi Tahu Claims Settlement Act 1998*. Retrieved from <https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM430873.html>
- NZHPT. (2012). *Sustainable Management of Historic Heritage Guidance Series: Invi Management Plans*. Wellington: New Zealand Historic Places Trust Pouhere Taonga.
- O'Brien, R., & Barnes-Wylie, J. (2019). *Significance Assessment Guidelines. Guidelines for Assessing Historic Places and Historic Areas for the New Zealand Heritage List/Rārangi Kōrero*. Heritage New Zealand Pouhere Taonga.
- Otago Daily Times. (1862). *THE NEW DIGGINGS*. Issue 292, 26 November 1862, Page 6. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/ODT18621126.2.22>
- Otago Daily Times. (1863). *Untitled*. Issue 365, 20 February 1863, Page 4. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/ODT18630220.2.17>
- Otago Daily Times. (1904). *Page 8 Advertisements Column 1*. Issue 12876, 21 January 1904, Page 8. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/ODT19040121.2.64.1>
- Otago Daily Times. (1923). *Sales By Auction*. Issue 18926, 28 July 1923, Page 20. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/ODT19230728.2.158.4>
- Otago Regional Council. (2024). *growOtago*. Retrieved December 4, 2024, from <https://maps.orc.govt.nz/portal/home/item.html?id=a3d75c9e135142e68f4e02b6fb64eaf7>
- Otago Witness. (1860). *The Otago Witness*. Issue 435, 31 March 1860, Page 5. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18600331.2.16>
- Otago Witness. (1861). *ANNUAL LICENSING MEETING*. Issue 490, 20 April 1861, Page 5. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18610420.2.8>
- Otago Witness. (1862). *RECONNAISSANCE SURVEY*. Issue 556, 26 July 1862, Page 3. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18620726.2.10>
- Otago Witness. (1894). *LAND BOARD*. Issue 2083, 25 January 1894, Page 22. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18940125.2.101>
- Otago Witness. (1897). *CROMWELL*. Issue 2250, 15 April 1897, Page 30. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18970415.2.99.2>
- Otago Witness. (1899). *DREDGING ON THE UPPER CLUTHA*. Issue 2377, 21 September 1899, Page 35. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW18990921.2.107>
- Otago Witness. (1900a). *LAND BOARD*. Issue 2413, 31 May 1900, Page 30. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19000531.2.99.15>
- Otago Witness. (1900b). *LUGGATE*. Issue 2439, 12 December 1900, Page 35. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19001212.2.99.4>
- Otago Witness. (1903a). *LAKE WANAKA*. Issue 2567, 27 May 1903, Page 31. Retrieved from

- <https://paperspast.natlib.govt.nz/newspapers/OW19030527.2.95.1>
- Otago Witness. (1903b). *Rural Rambles*. Issue 2579, 19 August 1903, Page 79. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19030819.2.189>
- Otago Witness. (1911). *Otago Land Board*. Issue 3009, 15 November 1911, Page 21. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19111115.2.67>
- Otago Witness. (1912). *OTAGO LAND BOARD*. Issue 3027, 20 March 1912, Page 23. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19120320.2.40.24>
- Otago Witness. (1920a). *A REMINISCENCE*. Issue 3436, 20 January 1920, Page 60. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19200120.2.242>
- Otago Witness. (1920b). *RAFTING ON THE UPPER CLUTHA IN THE EARLY SIXTIES*. Issue 3476, 26 October 1920, Page 54. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19201026.2.154>
- Otago Witness. (1927). *THE OLD MAN FLOOD*. Volume 1851, Issue 3809, 15 March 1927, Page 80. Retrieved from <https://paperspast.natlib.govt.nz/newspapers/OW19270315.2.296>
- Parcell, J. C. (1951). *Heart of the Desert: Being the History of the Cromwell and Bannockburn Districts of Central Otago*. Dunedin: Whitecombe & Tombs Limited.
- Peat, N. (2002). *Wanaka: The Lake Wanaka Region*. Dunedin: University of Otago Press.
- Petchey, P. (1999). THE EXCAVATION OF THREE MINERS' HUT SITES MACRAES FLAT. *Archaeology in New Zealand*, 42(1), 66–78.
- Potiki, T., & KTKO Consultancy Ltd. (n.d.). *A Thematic Maori Heritage Study for Dunedin*. Dunedin.
- Ritchie, N., & Hooker, R. (1997). An Archaeologist's Guide to Mining Terminology. *Australasian Historical Archaeology*, 15, 3–29.
- Ritchie, N. (1980). *Archaeology and Prehistory of the Upper Wakatipu Region*. The Queenstown Courier, No. 25.
- Ritchie, Neville. (1980a). *Luggate Archaeological Survey*. Clutha Valley Development, Cromwell: Heritage New Zealand Pouhere Taonga.
- Ritchie, Neville. (1980b). *Queensberry Archaeological Survey*. Clutha Valley Development, Cromwell: Heritage New Zealand Pouhere Taonga.
- Roxburgh, I. (1957). *Wanaka Story: A History of the Wanaka, Havea, Tarras, and surrounding districts*. Christchurch: Capper Press.
- Roxburgh, I. (1990). *Wanaka and surrounding districts*. Alexandra: Central Otago News Print.
- Smith, I. (2019). *Pākehā Settlements in a Maori World: New Zealand Archaeology 1769-1860*. Wellington: Bridget Williams Books.
- Tahua, T. (1798). [*Chart of New Zealand drawn by Tooke-Titter-a-nui Wari-pedo, a priest of that country who resided on Norfolk Islands 6 months*]. [London] : Cadell & Davies.
- Te Runanga o Ngāi Tahu. (2023). Kā Huru Manu.
- Te Rūnanga o Ngāi Tahu. (1997). Ngāi Tahu – the iwi.
- Te Rūnanga o Ngāi Tahu. (2019). *Kōiwi Tangata. Te Wāwata o Ngāi Tahu e pa ana ki Ngā Tāonga Kōiwi o Ngā Tūpuna The Policy of Ngāi Tahu Concerning the Human Remains of our Ancestors*. Unpublished report prepared by Te Rūnanga o Ngāi Tahu.
- Te Rūnanga o Ngāi Tahu. (2024a). Manuhaea. Retrieved from Kā Huru Manu, The Ngāi Tahu Cultural Mapping Project website: <https://kahurumanu.co.nz/atlas>
- Te Rūnanga o Ngāi Tahu. (2024b). Take Kārara. Retrieved from Kā Huru Manu, The Ngāi Tahu Cultural Mapping Project website: <https://kahurumanu.co.nz/atlas>
- Te Rūnanga o Ngāi Tahu. (2025). Nohoanga. Retrieved January 16, 2025, from <https://ngaitahu.iwi.nz/opportunities-and-resources/for-whanau/nohoanga/>
- Upper Clutha Historical Records Society. (2021). *Those Were The Days*. Volume 16. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://www.uppercluthahistory.org/wp-content/uploads/2022/09/20211201-Vol-16-Those-Were-The-Days.pdf>
- Veitch, I. (2003). *Chyde on the Dunstan*. Dunedin: John McIndoe Limited.
- Waitangi Tribunal, D. of J. (1991). *Ngai Tahu Land Report*. Wellington.
- Webster, A. (1948). *Teniot Tapestry: A History of the Roxburgh-Millers Flat District*.
- Whites Aviation Ltd. (1956). *Clutha River, Luggate, Queenstown-Lakes District, Otago: WA42734*. Alexander Turnbull Library, Wellington.
- Williams, G. J. (1974). Economic geology of New Zealand. *Australasian Institute of Mining and Metallurgy Monograph*, 4, 490 pp.
- Williams, J. (2010). Mahika Kai: The Husbanding of Consumables by Maori in Precontact Te Waipounamu. *The Journal of the Polynesian Society*, 119.

Appendix B Site Record Forms

List of site record forms attached for sites that will be affected by the proposed works.

NZAA Site Id	Site Location	Brief Description
G40/148	Sandy Point, Luggate	Tailings
G40/149	Sandy Point, Luggate	Tailings