

1346-1536 Teviot Road, Roxburgh

An Archaeological Assessment

Report Prepared for Hawkeswood Mining Limited
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An Archaeological Assessment

Prepared by **New Zealand Heritage Properties Ltd**

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Project Details

Archaeological Site No.	G43/232, G43/233, G43/285 and G44/159; and previously unrecorded sites
Site Address	1346-1536 Teviot Road, Roxburgh (Sections 40, 84, 89, 90, 91, 92, 93, Part 96, 97, 102, 106, 110, 115, 116, 117, 118 Block VIII Bengel SD; Section 3 SO 24438; Lots 2, 3 and 4 DP 375668; Paper Road ID 3190213 and 3190223)
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Executive Summary

New Zealand Heritage Properties Ltd (NZHP) has been commissioned by Hawkeswood Mining Limited to undertake an archaeological assessment of the property at 1346-1536 Teviot Road, Roxburgh (Sections 40, 84, 89, 90, 91, 92, 93, Part 96, 97, 102, 106, 110, 115, 116, 117, 118 Block VIII Bengel SD; Section 3 SO 24438; Lots 2, 3 and 4 DP 375668; Paper Road ID 3190213 and 3190223). Hawkeswood Mining Limited are proposing to establish and operate an alluvial gold mine throughout the project area.

The research undertaken for this assessment has identified that two previously recorded sites and two sites recorded as a result of this assessment will be impacted by the proposed works. The two previously recorded sites include G43/232, which records a section of pre-1900 sluice faces and tailings on the true left bank of the Clutha/Mata-Au, along with features and artefacts, alongside post-1900 dredge tailings and channels. The other previously recorded site is G43/233 which records a section of pre-1900 sluice faces and tailings on the true left bank of the Clutha/Mata-Au as well. During the site survey, two further sites were recorded. G43/285 records water races relating to the Kitto Family mining complex. The Kitto family were living and mining throughout the project area from at least the 1870s through until the 1900s. G44/159 records scattered artefacts relating to historic-domestic occupation. It is not clear exactly to who these remains relate; however, archaeological investigation may provide further information on this deposit.

There is further potential for unrecorded archaeological remains to be encountered throughout the project area. This includes mining remains relating to other individual miners and companies living and working in the area from the 1870s through to the early 1900s. These include Peter Grant and the Golden Treasure Number 2 Dredging Company as well as W Smith and Bennet and Company. Further historic domestic remains may also be encountered. There were several Residential Areas occupied throughout the project area in the 1880s and 1890s. Remains relating to the occupants including again Peter Grant, the Kitto family as well as Nils Clough, A Pringle and J Noble. On top of this, there is also potential for subsurface midden and oven remains relating to early manawhenua activity, as is seen in the recorded sites in the surrounding area along the Clutha/Mata-Au and nearby hills. Precedence from recorded sites nearby, indicates that such remains may be encounter at a considerable depth: up to 2m, especially towards the Tima Burn at the southeast end of the project area.

The recorded sites are considered to have **low to moderate** archaeological values, and potential unrecorded sites may hold **low to high archaeological values**. Due to the nature of the proposed works, the overall impact of the works on the archaeological values of both recorded and unrecorded sites will be major. However, the recommended mitigation outlined in Section 9.2, would go some way to offset the adverse effects, reducing the overall impacts of the works.

Archaeological sites affected by the development of 1346-1536 Teviot Road, Roxburgh.

NZAA Site Id	Site Location	Brief Description
G43/232	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318894; N 4938374)	Large area of pre-1900 sluice faces and tailings as well as post-1900 dredge tailings and channels
G43/233	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318182; N 4939445)	Area of pre-1900 sluice faces and tailings.
G43/285	Between Teviot Road and the Clutha/Mata-Au (E 1318444; N 4939033)	Water races relating to the Kitto family mining complex
G44/159	Between Teviot Road and the Clutha/Mata-Au (E 1319190; N 4938182)	Artefact scatter likely relating to historic-domestic occupation

Based on the results of this assessment, NZHP makes the following recommendations:

- **Protection of sites/features:** As a first principle, every practical effort must be made to avoid damage to any archaeological site, whether known, or discovered during any redevelopment of the site.

- Artefactual remains relating to pre- and post-1900 mining (POI 19, POI 23, POI 26, and POI 38) should be salvaged, store and reinstated close to the public cycleway with public interpretation following the goldmining operations.
 - All excavation in the areas of archaeological features must be undertaken by a skilled operator.
- **Authority Application:** As the proposed works described in Section 1.2 will affect site G43/232, G43/233, G43/285 and G44/159, as well as 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 (Section 1.2), then HNZPT and NZHP must be alerted, as any changes may alter the assessment of effects or invalidate the authority.
- **Archaeological Management Plan:** All works must be carried out in accordance with AMP. Any amendments to the AMP will require prior written approval from HNZPT.
- **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.
- **Recording of Structures:** Any subsurface unrecorded structures, such as cob or timber building remains and water races, should be recorded to a Level II 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.
- **Archaeological Monitoring:** All earthworks that may affect an archaeological site must be monitored by the s45 approved person (or person nominated on their behalf) in accordance with the plan shown in Figure 9-3 and the AMP.
 - Excavations within the red and orange zones should be undertaken prior to any other works occurring on site, with a hydraulic excavator and monitored by an archaeologist.
 - Excavations within the red zones should be undertaken until natural deposits are encountered and there is no further potential for archaeological remains to be present.
 - Excavations within the orange zones, should be undertaken to 2.5m in depth as there is a higher risk of deeper archaeological remains to be present beneath natural flood deposits in these areas.
 - Any archaeological features and material encountered shall be recorded, analysed, and interpreted in accordance with current archaeological practice and as outlined in the AMP, with the exception of potential Māori archaeology in the area of the Tima Burn, where no archaeology will be impacted under this authority
- **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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki and HNZPT and in accordance with the AMP.
 - 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.

- **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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki, HNZPT, and the police. The Ngāi Tahu policy for kōiwi takata shall also be followed (Te Rūnanga o Ngāi Tahu, 2019).

- **Reporting:**
 - Within 20 working days of the completion of on-site archaeological work, the site record forms must be updated or submitted to ArchSite.
 - Within 12 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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki Toitū Otago Settlers Museum, Tūhua Otago Museum and the NZAA Central Filekeeper.

Abbreviations

Abbreviation	Definition
AMP	Archaeological Management Plan
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
OCP	On-Call Protocols
POI	Point of Interest
P.R.	Pre-emptive Right
R.A.	Residential Area
RMA 1991	Resource Management Act 1991

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/Tipuna	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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1 Introduction

Hawkeswood Mining Limited are proposing to establish and operate an alluvial gold mine at 1346-1536 Teviot Road, Roxburgh (Sections 40, 84, 89, 90, 91, 92, 93, Part 96, 97, 102, 106, 110, 115, 116, 117, 118 Block VIII Benger SD; Section 3 SO 24438; Lots 2, 3 and 4 DP 375668; Paper Road ID 3190213 and 3190223). New Zealand Heritage Properties Ltd (NZHP) has been commissioned by Barry MacDonell (MacDonell Consulting) on behalf of Hawkeswood Mining Limited to undertake an archaeological assessment of the project area. This report has been prepared to assess the archaeological potential of the project area and to consider the impact that the proposed works will have on any archaeological 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).

1.1 Project Area

The project area is defined as 1346-1536 Teviot Road, Roxburgh, encompassing 22 land parcels, and a summary of the project area is provided in Table 1-1, with landowner details provided in Table 1-2. There are two previously recorded archaeological site within the project area. This includes G43/232, which records dredge tailings, channels, and pond; and G43/233, an area of pre-1900 sluice faces and tailings. Two previous archaeological authorities have been issued for works at these sites: 2012/651 and 2014/029. These archaeological sites have been updated as part of this assessment. Furthermore, another two archaeological sites were recorded as a result of the research and survey undertaken for this report including remains relating to the Kitto Family mining activities (G43/285) and an artefact scatter (G44/159). There are no scheduled items on the Central Otago District Plan within the project area, nor are there any listed places on New Zealand Heritage List/Rārangī Kōrero. While not within the project area, the Clutha/Mata-Au is a statutory acknowledgement area, which runs to the west and southwest of the project.

Table 1-1. Summary of project area.

Site Address	1346-1536 Teviot Road, Roxburgh
Legal Description	Sections 40, 84, 89, 90, 91, 92, 93, Part 96, 97, 102, 106, 110, 115, 116, 117, 118 Block VIII Benger SD; Section 3 SO 24438; Lots 2, 3 and 4 DP 375668; Paper Road ID 3190213 and 3190223
Landowner	See Table 1-2 below
Territorial Authority	Central Otago District Council
Archaeological Site No.	G43/232, G43/232; G43/285; G44/159; and previously unrecorded sites
Previous Archaeological Authorities	2012/651; 2014/029
New Zealand Heritage List/Rārangī Kōrero	N/A
Covenant or Heritage Order	N/A
Scheduled on District Plan	N/A
Reserve Status	N/A
Statutory Acknowledgement Area	No (Note that works are adjacent to the Clutha River/Mata-Au, but the proposed works do not extend into the associated marginal strips or the river itself)
Customary Marine Title	No

Table 1-2. Landowners for parcels within project area.

Address	Legal Description	Landowner
1484 Teviot Road, Millers Flat	Section 3 SO 24438; Section 110 and 118 Block VIII Benger SD	Parker, Alan Thomas
1426 A, C-D Teviot Road, Millers Flat	Section 84, 90, 91, 102 Block VIII Benger SD	Jacks Ridge Limited (Hawkeswood, Andrew)
1534 Teviot Road, Millers Flat	Part Section 96 Block VIII Benger SD	Hunter, Matthew Ross; Parker, Georgia Rose
-	Section 92 Block VIII Benger SD	Central Otago District Council
1426E Teviot Road, Millers Flat	Section 106 Block VIII Benger SD	Jacks Ridge Limited (Hawkeswood, Andrew)
1406 Teviot Road, Millers Flat	Lot 2-3, 4 DP 375668	Campbell-Lloyd, Gabrielle Claire; Wilson, Gareth David
1346 Teviot Road, Millers Flat	Sections 40, 89, 93, 97, 115-117 Block VIII Benger SD	Crawford, Laurie Allan; Crawford, Pamela Fay
Paper Road	ID 3190213 and 3190223	Central Otago District Council

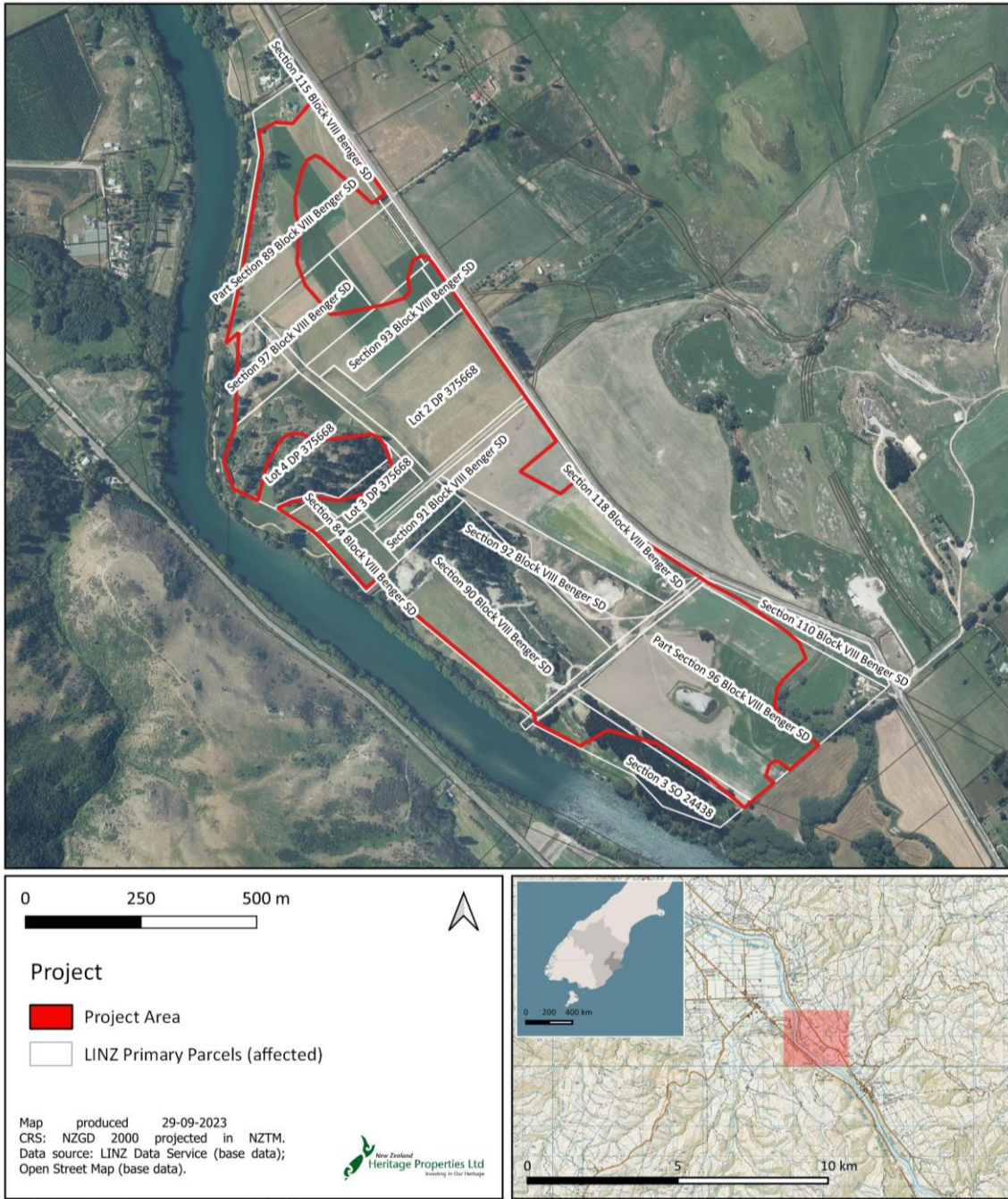


Figure 1-1. Map showing the project area.

1.2 Proposed Activities

Hawkeswood Mining Limited are proposing to establish and operate an alluvial gold mine at 1346-1536 Teviot Road, Roxburgh (Sections 40, 49, 84, 89, 90, 91, 92, 93, Part 96, 97, 102, 106, 110, 115, 116, 117, 118 Block VIII Bengier SD; Section 3 SO 24438; Lots 2, 3 and 4 DP 375668; Paper Road ID 3190213 and 3190223). Topsoil and overburden will be stripped to create a pit that will typically be around 16 m deep. A mine pond within the pit will have an area of approximately 150 m by 100 m (1.5 ha). Including areas being stripped, mined and rehabilitated, stockpile areas, roading, bunding, workshop and yard, and sediment ponds, the total work area will be approximately 27 ha, at any one time. The total area affected by mining will be approximately 70 ha (Figure 1-1 and Figure 1-2) over the life of the mine. The topsoil will be stockpiled separately for rehabilitation. Overburden will be used to create a series of bunds around the perimeter of the site. Any excess overburden will be stockpiled, ready for use in the progressive rehabilitation.

Prior to the commencement of mining activities and site establishment, the existing power network must be rerouted. Currently power is supplied to Millers Flat from the national grid via a series of power poles intersecting the project area, following west along a paper road from Teviot Road and then north along an adjoining paper road to the Mata-Au. To establish a protected underground cable, trenching will be undertaken for a cable path along Teviot Road to the north boundary of the site, before it follows the inside of the project boundary to the cycle path edge, stopping at the river crossing (shown on Figure 1-3). This cable trench will be approximately 1m wide, to a minimum depth of 1m; however, the trench may require deeper sections due to undulations in the ground surface caused by Site G43/233. Clearance to the current fence alignment (where applicable), spoil placement, and the width of the hydraulic excavator tracks, will result in an approximate 3m wide corridor of disturbance for this trench. Works for this cable trench will be undertaken using a hydraulic excavator.

The areas where bund will be placed will be excavated first, prior to the commencement of mining. Bunds are required for both noise and visual protection to surrounding properties, with a minimum height of 4m, requiring a minimum width at the base of 5m. Bund locations are shown in Figure 1-2. The bunding position has been determined with advice from noise and landscape experts to mitigate effects on adjacent landowners. This includes positioning of the bund to ensure that noise levels from machinery and visual effects do not create adverse effects on neighbours residential amenity, including outdoor living spaces. As a result of the location of the cable trench, the bund will be located over a 3m wide strip of excavated land and a 2m wide strip of unexcavated land; as a result, the uneven surface will require levelling prior to the erection of the bund. This will result in a 2m wide strip of tailings associated with G43/233 being removed, while protecting the remaining tailings outside of the project area with a physical protection from the mining procedure.

Mining will commence at the northern end of the site and progress in a generally southerly direction, with the pit traversing from side to side within the resource limits, with rehabilitation (backfilling with tailings, overburden, and finally topsoil) occurring progressively. The geographical phasing of this work is shown in Figure 1-2. Existing tracks will be used to access the mine throughout the various stages, which require no added widening or cutting to be made fit for purpose.

Relevant to archaeological impacts assessed in this report is the excavation within each of these areas, rather than the geographical movement of works across the entire project area. Works within each of the Stage 1-4 areas will include two key phases:

1. Topsoil stripping:
 - a. Recommendations surrounding use of a hydraulic excavator instead of a bulldozer for enabling initial archaeological monitoring and investigations in areas with higher archaeological potential at the beginning of each stage of works are detailed below in Section 9.
 - b. The remainder of the topsoil stripping, outside of the archaeological risk zones, will be undertaken with a bulldozer. This work will be undertaken by a suitably qualified excavator, for the purpose of separating topsoil from the lower silt deposit, for the later rehabilitation of the site. NZHP believes there is low potential for encountering archaeology in these areas outside the identified risk zones.
2. Silt and gravels beneath excavated by hydraulic excavator.

Under Exploration Permit 60712, Hawkeswood mining has undertaken exploration of the site already within Sections 84, 90, and 91, Block VIII Benger SD, which included extensive excavations across these areas as shown in Figure 1-4. Earthworks undertaken so far include excavations to the northwest to approximately 1.5m deep and to 16m deep for the dredge pond. To the southeast the topsoil has been stripped (approximately 200-300mm). Thus, the only location where archaeological features may survive throughout the exploration area, cut into the deposits beneath the topsoil, is the area highlighted red in Figure 1-4.

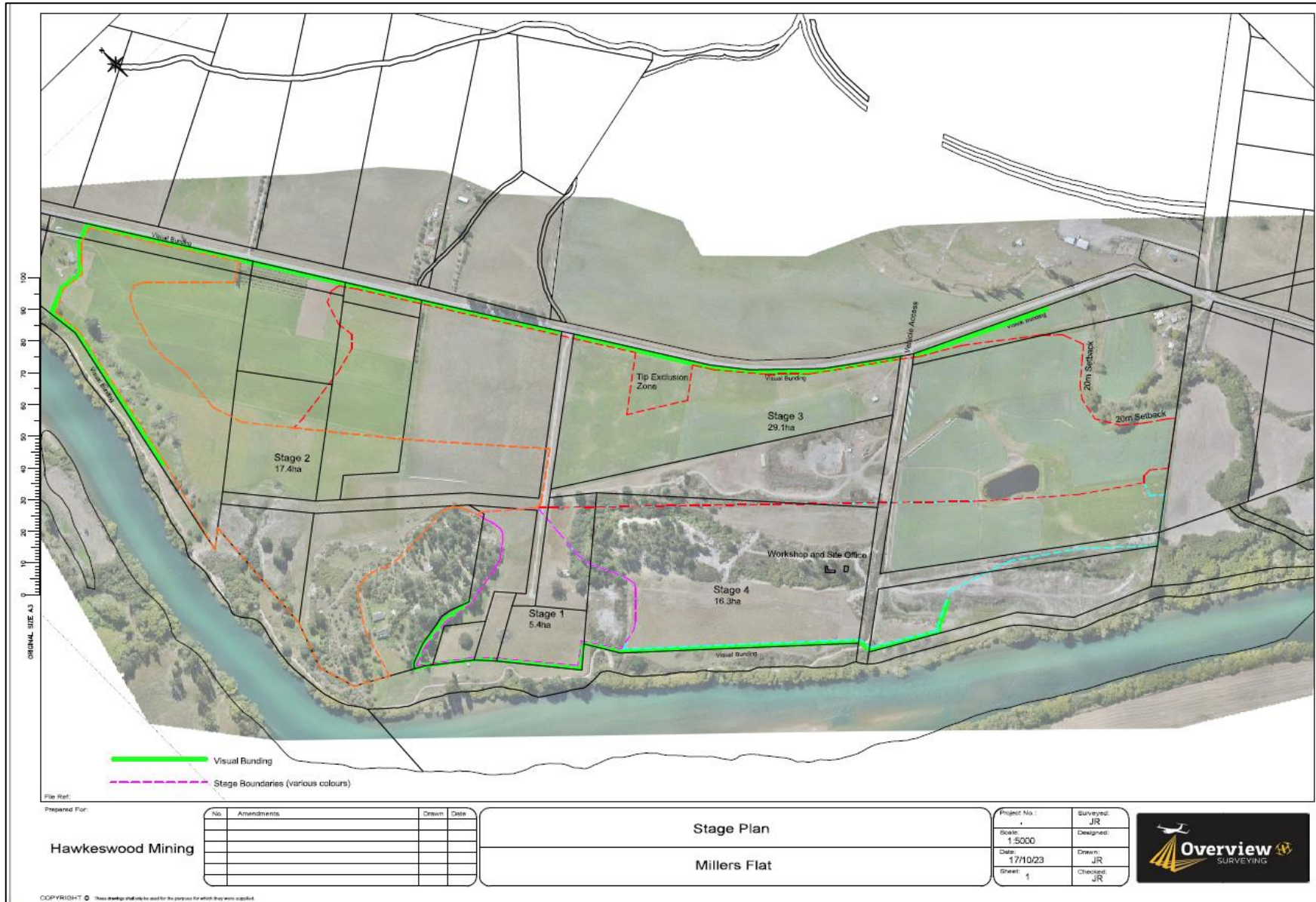


Figure 1-2. Plan of proposed mining works and staging across the project area (image provided by MacDonell Consulting Ltd.). The bund locations as discussed above are shown in green.

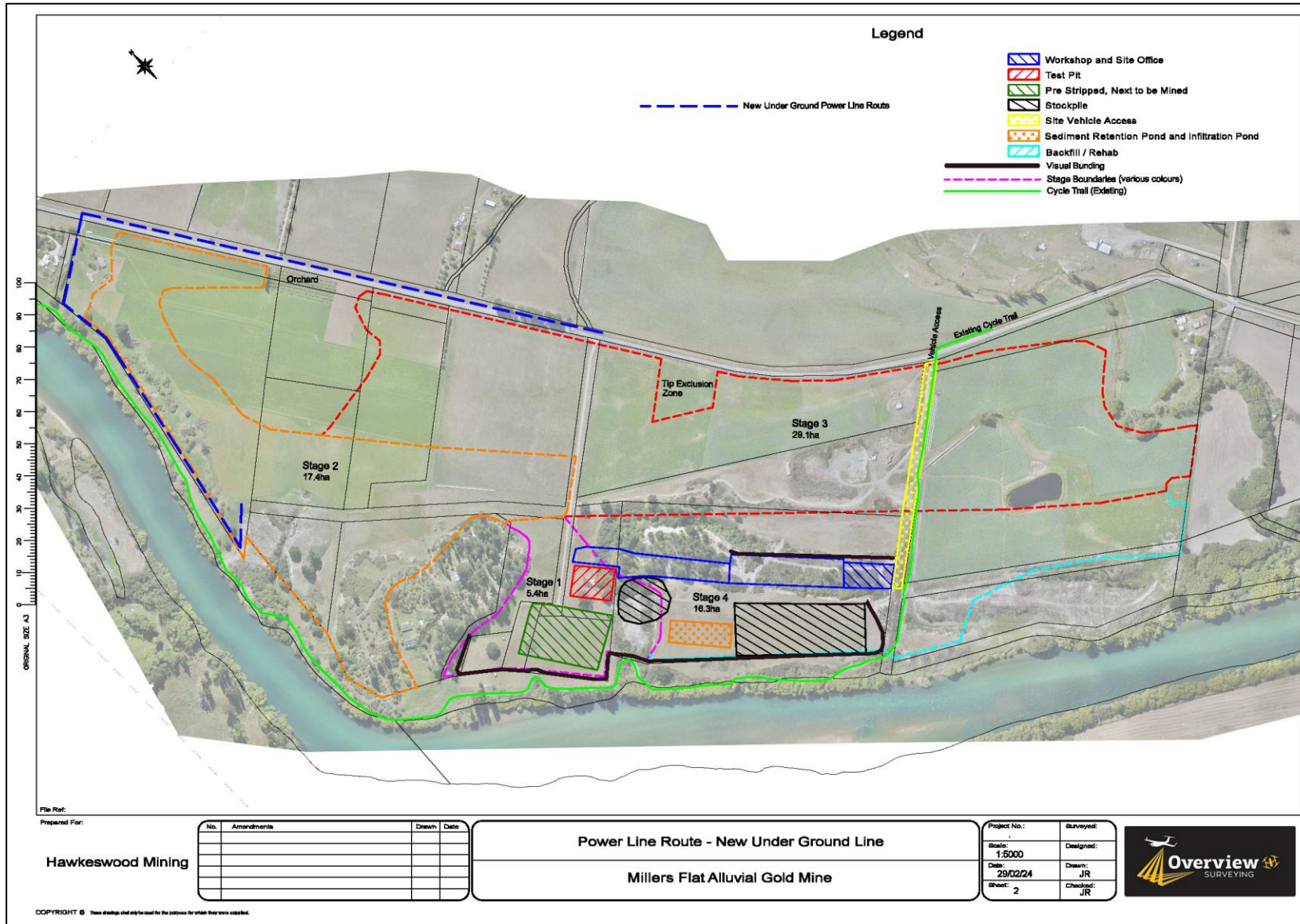


Figure 1-3. Location of proposed power trenching, as required for rerouting existing services. Please note that the bund displayed relates to the earlier exploratory work, and does not represent the bund that will be placed as part of the proposed works.



Figure 1-4. Aerial imagery showing prior exploration works undertaken by Hawkeswood Mining Limited Under Exploration Permit 60712 showing area excavated to approximately 1.5m (highlighted yellow); 16m (highlighted orange); and between 200-300mm (highlighted red).

2 Statutory Requirements

The legislative requirements relating to archaeological sites and artefacts are detailed in the following sections. There are two main pieces of legislation that provide protection for archaeological sites: the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014) and the Resource Management Act 1991 (RMA 1991). Artefacts are further protected by the Protected Objects Act 1975.

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).

Archaeological sites are defined by this Act as

- (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.

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 land owner, 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 land owner of the authority, its conditions, and terms of consent.

An additional role of HNZPT is maintaining the New Zealand Heritage List/ Rārangī Kōrero (the 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 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/Rārangī 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.

The rūnanga Papatipu o Murihiku; Te Rūnanga o Awarua, Te Rūnanga o Oraka/Aparima, Te Rūnanga o Hokonui and, Te Rūnaka o Waihōpai are collectively involved in the protection/promotion of the Murihiku region's natural and physical resources by providing input into the processes required by the RMA and other relevant legislation. *Te Tangi a Tauira - The Cry of the People: Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan* (Ngāi Tahu ki Murihiku, 2008) has been developed by Ngāi Tahu ki Murihiku and supporting councils.

While the CODC has not individually supported these two management plans, 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.

Both management plans are recognised by iwi authority Te Rūnanga o Ngāi Tahu. The plans provide explanation of kaitiakitanga, outline cultural values and places of significance, identify primary issues, and provide 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).

2.3 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 taoka tūturu. Under Section 11 of the Protected Objects Act 1975, any newly found Māori cultural objects (taoka 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 taoka tūturu, accidentally or intentionally is required to notify the Ministry of Culture and Heritage within:

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

3 Methodology

This archaeological assessment has been prepared in accordance with HNZPT's (HNZPT, 2019) guideline on preparing an archaeological assessment. Presented below are the methods used to gather information to identify the archaeological potential of the project area, determine the archaeological significance, and assess the effects of the proposed work on archaeological values.

3.1 Research to Identify Archaeology and Inform Archaeological Values

The first half of this report provides the information gathered to inform on the archaeological values of the project area, including the setting, historical background, archaeological context, and the site visit. Documentary research was undertaken to inform the background research sections of this assessment. The physical environment section documents the setting of the project area, its land use, and considers 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. Previous archaeological 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 archaeology. This section also considers the wider archaeological context, including the consideration of sites recorded near the project area and how mining, historic-domestic and midden/oven sites are represented in the archaeological record at the local, regional, and national level. Sources utilised for this research include:

- Kā Huru Manu,
- Historic newspaper articles through PapersPast,
- Historic photographs (DigitalNZ; Te Papa Collections; Hocken Snapshot),
- Historic maps accessed via Prover and from Archives New Zealand,
- New Zealand Archaeological Association Site Recording Scheme, ArchSite,
- The HNZPT archaeological reports digital library,
- New Zealand Heritage List/Rārangi Kōrero, and
- Published primary and secondary sources.

An archaeological site survey was undertaken by NZHP archaeologists Megan Lawrence and Oliver Walne on 25-26 September 2023. A site survey 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 archaeology. GNSS was used to record any features observed, while handheld GPS were used to track the survey progress. The survey comprised a walkover of the project area at 15m intervals; however, the topography in areas of twentieth century dredging was sometimes too steep to traverse, and instead the survey followed the ridgeline and valleys of such areas. Note this deviation from the grid only occurred in areas of post-1900 disturbance. Potential sites identified from archaeological and historical background research were examined in more detail to confirm if any surface features were present at these locations.

3.2 Assessment of Archaeological Values

The assessment of archaeological and other values is based on 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 archaeological value (Table 3-1). 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 archaeological 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 3-1. Levels of overall archaeological value (adapted from DfT, 2008).

Level of Significance	Criteria
Very High	<ul style="list-style-type: none"> • World Heritage Sites (and proposed sites) • An archaeological site of acknowledged international importance
High	<ul style="list-style-type: none"> • Listed archaeological sites, including those of listing quality and importance <ul style="list-style-type: none"> ○ 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 archaeological sites, including those of scheduling quality and importance • Archaeological sites with exceptional values
Medium	<ul style="list-style-type: none"> • Archaeological sites that can be shown to have moderate values
Low	<ul style="list-style-type: none"> • Archaeological 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	<ul style="list-style-type: none"> • Sites with very little surviving archaeological interest
Unknown	<ul style="list-style-type: none"> • 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 archaeological 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

The project area, 1346-1536 Teviot Road, Roxburgh, is located along the true left bank of the Clutha River/Mata-Au (Figure 4-1). The land is primarily rural and currently used for farming with large, grassed fields stretching across the area. However, recent mining by Hawkeswood Mining Limited has occurred in the centre of the project area. The project area sits on a river terrace approximately 10-18m above the mean Clutha River/Mata-Au level and is largely flat with minor undulations except where historic mining has heavily altered the landscape.

Along with the Clutha River/Mata-Au to the west, the southeast end of the project area is bounded by the Tima Burn, a tributary of the Clutha River/Mata-Au. To the east the project area is bounded by Teviot Road, with adjacent flat farmland on the other side before the topography rises to the hills behind. At the northern end of the project area the river curves round to the east, and the project area narrows considerably. Further flat farmland continues along this narrow margin.

The geology of the project area is predominantly defined by greywacke clasts/schist sandy gravels. Drilling through this area encountered possible quartzite cobbles or boulders, which have been observed in historic dredge tailings through the area (Hawkeswood Resources, 2023). There are two different soil types that extend through the project area. Along the river's edge is Geesf (Sib 1) and to the west side of the project area is Gibbstonf (Sib 5).

Geesf (Sib 1) is an anthropic soil categorized as constructed or heavily modified by people. The soil properties and character are lost in this modification, and typically holds a sand texture with high proportion of stone inclusions (Manaaki Whenua Landcare Research, 2023a). This type of soil is unsurprising given the long history of mining through the nineteenth and twentieth century that has occurred throughout this area, reshaping the landscape along the river's edge. These modifications will be discussed below in Section 5; however, to summarise the landscape transformations along the river's edge, early mining focused on prospecting along the banks of the Clutha River/Mata-Au, and with evolving technologies the scale of mining and land modifications increased dramatically.

The second soil type present throughout the project area (Gibbstonf (Sib 5)), is a well-draining Brown Soil characterised by a dark grey-brown loamy topsoil with some stone inclusions. The brown/yellow-brown subsoil is also loamy with a gravelly layer from less than 45cm soil depth to over 100 cm (Manaaki Whenua Landcare Research, 2023b). This soil type has a loamy texture, and some stone inclusions. This soil type stretches across the western side of the project area beyond the heavily modified Geesf (Sib 1) to the east.

Flooding has also had an impact on the landscape, with an 1870s flood laying down a large amount of silt through the area, vastly impacting the landscape. Archaeological sites have been recorded at a significant depth below the ground surface, in particular remains at archaeological site G44/12, were reported to be up to 2m in depth (Anderson, 1989; Jacombs & Brooks, 2015). To reach deeper deposits mining improvements came in the form of ground and hydraulic sluicing, water races, and significantly for the project area dredging (Hamel, 2001; Webster, 1948). Dredging began in the river in the late 1800s; however, by the turn of the nineteenth century dredging started to explore the adjacent terraces, vastly changing the landscape within the project area. Dredging did not occur throughout the entire project area, but where it was undertaken, it created deep valleys and high tailing mounds. The locations of post-1900 dredging within the project area and the likely impact on earlier archaeological remains are discussed below in Sections 5 and 9.

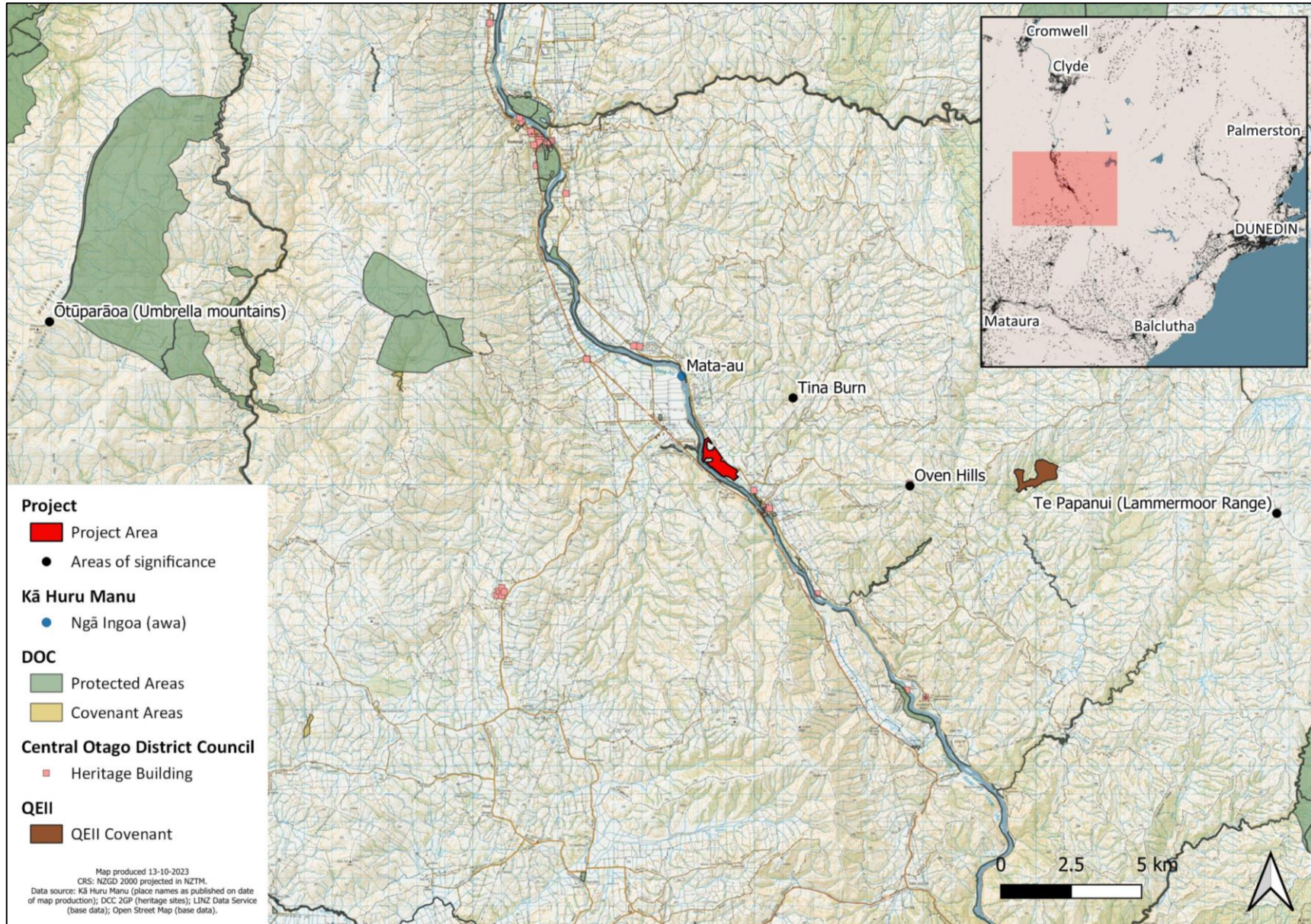


Figure 4-1. The broader geographical setting of the project area.

5 Historical Background

The following sections outline the historical background for the project area. This includes the Māori occupation, post-contact period occupation of the wider Teviot area, as well as a specific site history of the project area. This history examines both pre-1900 and post-1900 development of the site to understand the modification to the project area over time.

5.1 Māori Occupation of Millers Flat and Surrounding Area

While archaeological evidence for Māori settlement is present in Central Otago, settlement patterns are more indicative of migratory routes in use 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). 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); however, this claim is disputed by early Pākehā accounts of older Māori villages no longer in use by the time of European arrival (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, 2012). The following sections discuss occupation through Millers Flat and the wider surrounds, indicative of the deep history of the area.

5.1.1 *Pā and Kāika*

Archaeological evidence shows that the area wider area supported small seasonal nohoaka, with evidence for semi-permanent kāika and pā recorded well beyond the project area, near coastal areas, and in closer proximity to Whakatipu-wai-māori. This is reinforced by Anderson's map of traditional settlements shown in Figure 5-1 (Anderson, 1982). Several record umu/oven sites reflective of occupation in the surrounding vicinity of the project area, located close to the Mata-Au/Clutha (G44/12, G43/3), its tributaries and adjacent hillsides (G43/134, G43/79, G43/110, G43/111, G43/108, G44/13, G44/14, G44/29). Large occupation sites are recorded along the banks of the Mata-Au/Clutha, including an early period site containing moa bone at G44/10. This site was reported to be home to a large number of ovens located over 1.3 hectares; however, an 1878 flood deposited a thick layer of silt of over the site (Anderson, 1989; Jacombs & Brooks, 2015).

Several of the smaller oven sites are located on the aptly named Oven Hill, that can be seen on Beattie's annotated map of Otago (Figure 5-2) southeast of the project area. This map depicts a range of pre-1840 Māori placenames in the vicinity of Lake Onslow (Beattie, n.d.). The source of information for Beattie's annotations stem from a combination of the recollections of Māori informants, fragments of Māori tradition, and notes on historical observations, archaeological discoveries, and analyses of placenames. While the sources for this information differ, the frequency of placenames attest to the length of Māori occupation in this area. Closer to the project area, immediately southwest an annotation notes that a stream in the vicinity was named 'Okura', relating to a rapid below where the Mata-au meets the Kawarau River. Other key placenames identified include Otūpohutu Range (today referred to as Ōtūparāoa) to the west, Kopūwai Range (today Kōpūwai) to the north, and Waimonga to the east (Hokonui Rūnanga, 2023; Te Rūnanga o Ngāi Tahu, 2023).

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 factors for travel, settlement, and trade. In the Otago region, silcrete and porcellanite raw materials were particularly important during early periods of Māori settlement, with over 300 outcrops mapped in the south-eastern districts of the South Island (Hamel, 2001). For example, between Teviot Road and the Mata-Au/Clutha to the northwest of the project area, porcellanite flakes were recorded at (G43/3), while unidentified flake material was found nearby at E43/2 and across the river at G44/47. A porcellanite quarry

has been recorded west of Lake Roxburgh (G43/4) with a porcellanite working floor recorded to the southeast (G43/30).

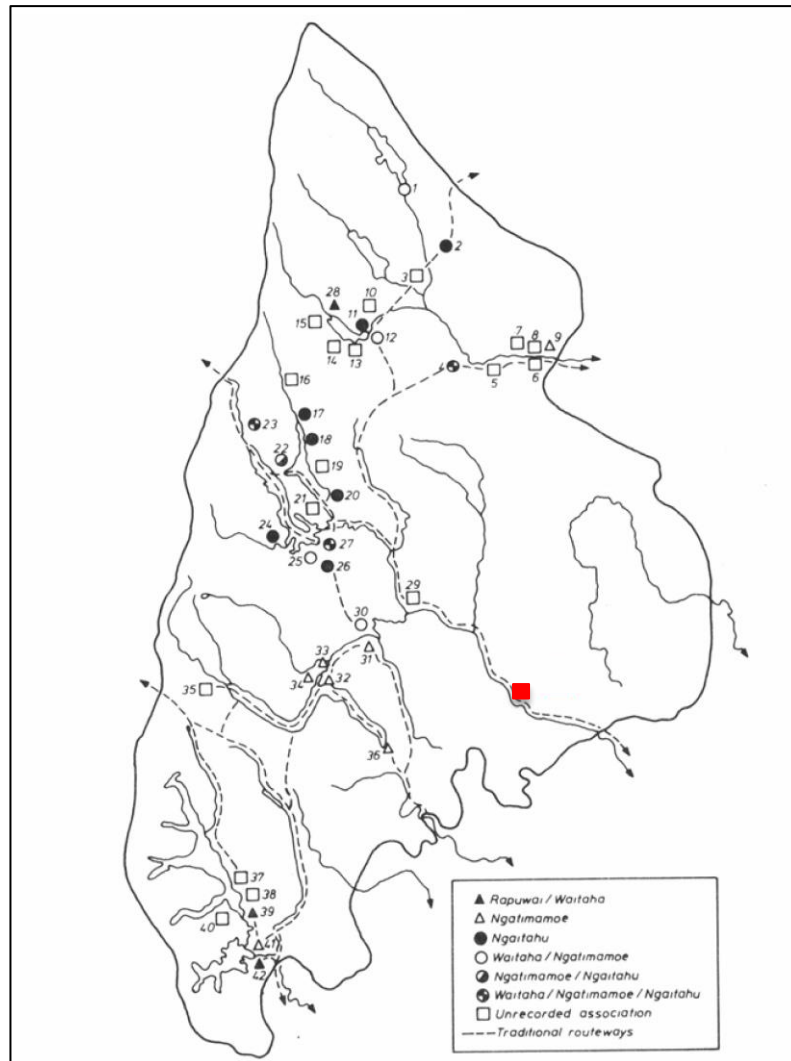


Figure 5-1 Ara tawhito and settlements compiled by Anderson (1982: Figure 2), with location of project area outlined red.

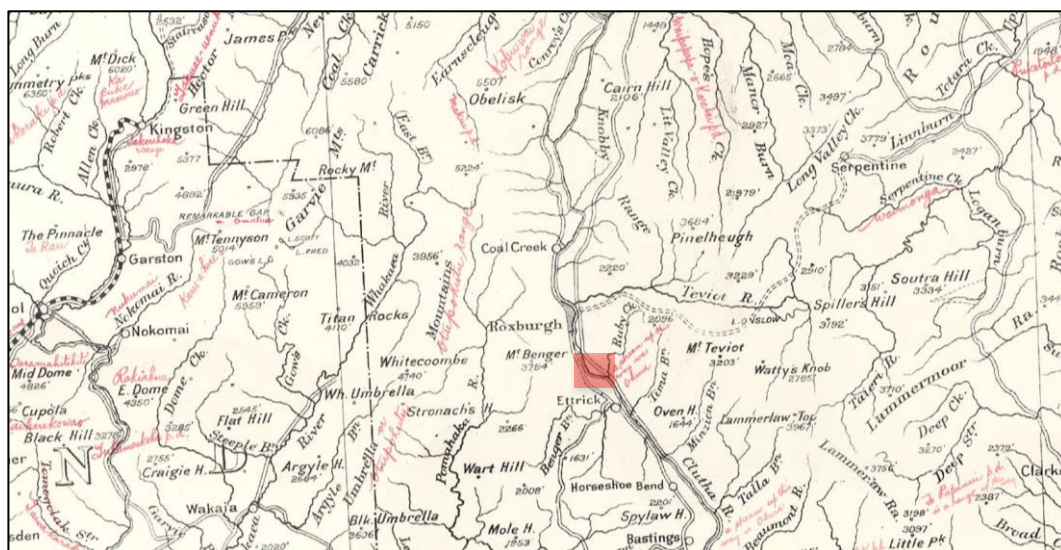


Figure 5-2 Detail of Beattie's annotated map, dated to the early twentieth century (Beattie, n.d.), with references to 'Okura' 'Otūpohutu' and 'Kopūwai' Ranges, and 'Waimonga', with project area highlighted red.

Chert was also a commonly used material (Hamel, 2001), and immediately southeast of the project area eroding quartz or chert flakes have been recorded in association with umu/ovens (G44/12). It is likely that the material was chert as the quartz was less frequently used (Hamel, 2001). Further southeast, the larger early period site G44/10 records porcellanite flakes, but also slate, silcrete and argillite flakes. More recent excavations for installation of fence posts encountered a large number of previously disturbed stone flakes (approximately 200) through the site. Most stone tools analysed were typical of Otago moa hunting or processing sites, as they would have been used for large animals such as moa. The majority of material was porcellanite, with occasional silcrete and notably sandstone. A discoidal sandstone artefact (Figure 5-3) was not commonly found archaeologically and it possible it was used for reworking and manufacture the other silcrete and porcellanite tools (Jacombs & Brooks, 2015).

One of the most prized stones for Māori throughout Aotearoa was pounamu (e.g., nephrite and bowenite). 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 5-4). Pounamu sourced from the Great Lakes was transported across Otago and Murihiku by ara tawhito, as both a trading commodity and item of prestige (Coutts, 1971). While the raw material was discovered and transported by early Māori communities (with some of the earliest semi-permanent settlements associated with pounamu artefacts), the use of pounamu became more common and abundant from the sixteenth century onwards (Hamel, 2001). The paucity of pounamu recorded in the vicinity of the project area reinforce that this area likely relates to an early period of settlement associated with ephemeral nohoaka.

5.1.3 *Mahika Kai*

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, 2012; Williams, 2010). Mahika kai includes marine resources, freshwater fishing, fowling, plants for consumption and trees and plants for material production (Anderson, 1998).



Figure 5-3. Discoidal sandstone artefact from G44/10 (Jacombs & Brooks, 2015).



Figure 5-4. Distribution of pounamu (nephrite and bowenite) in the South Island (Beck & Mason, 2002).

Only tentative details are known about the earliest periods of occupation surrounding Millers Flat, but from archaeological and ecological evidence it appears that the earliest Māori groups in this region took advantage of the abundant moa, small birds and tuna (eels) that lived in the beech forests and waterways that once covered the area (Hamel, 2001). Evidence for this can be seen at Millers Flat with several moa hunting sites present in the area (Anderson, 1989; Hamel, 2001), this includes a large site G44/10, southwest of the project area along the edges of the Mata-Au/Clutha locally referred to as Barclay's Paddock. Reports of extensive moa bone remains is also reported at the site from 1920s and 1930s, and further moa bone fragments were encountered on the edge of a culvert installation (Anderson, 1989; Jacombs & Brooks, 2015).

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 (Te Rūnanga o Ngāi Tahu, 2023). These routes over land and along rivers were utilised to access important food and material resources, and to travel between established communities (Te Rūnanga o Ngāi Tahu, 2023). 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 (refer to Figure 5-1). The Mata-Au connected the southern 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 (Te Rūnanga o Ngāi Tahu, 2023). One early depiction of ara tawhito in the interior is shown on Mantell's 1848 map of the South Island (Figure 5-5). 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).

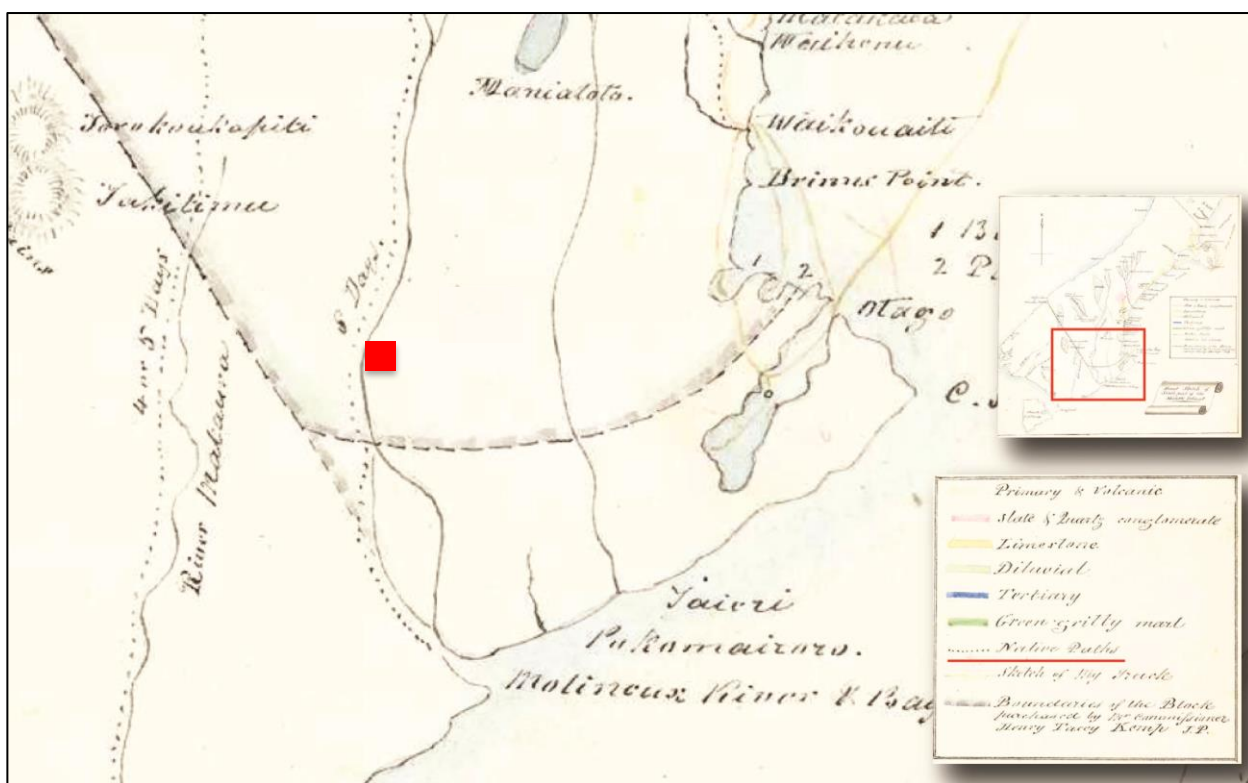


Figure 5-5 Detail of Mantell’s 1848 map titled ‘Hand Sketch of the South part of Middle Island’ showing “Native Paths” along the Clutha/Mata-Au, with approximate location of the project area shown in red (Mantell, 1848).

5.2 Contact and Post-Contact Period Occupation in the Otago Region

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 Rūnanga 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 Rūnanga o Ngāi Tahu, 1997, 2023).

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*

By the late 1850s, most explorers were looking for land to claim for farming. In 1857, four years after Nathaniel Chalmers, two runholders John Cargill and Walter Miller crossed the Lammerlaws into the Teviot Valley to explore the area after hearing lands were to be opened for lease. Both men took on runs in the area with John Cargill at Teviot Station and Walter Miller at Oven Hills (Crawford, 2006). 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).

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 of Gabriels Gully in May 1861. Gold mining in the Upper Taieri began with the gold rush in the Serpentine in June 1863 (Hamel, 2001); with the Teviot Valley claim the Mt Bengier Gold Field (Crawford, 2006). Early prospecting occurred along both sides of the Clutha River/Mata-Au, with the true left bank the more prosperous of the two (Webster, 1948). 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 (Figure 5-6). The significance of mining around the project area can be seen in the 1880 Run Map which shows mining reserve along the Clutha River/Mata-Au (Webster, 1948).

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).

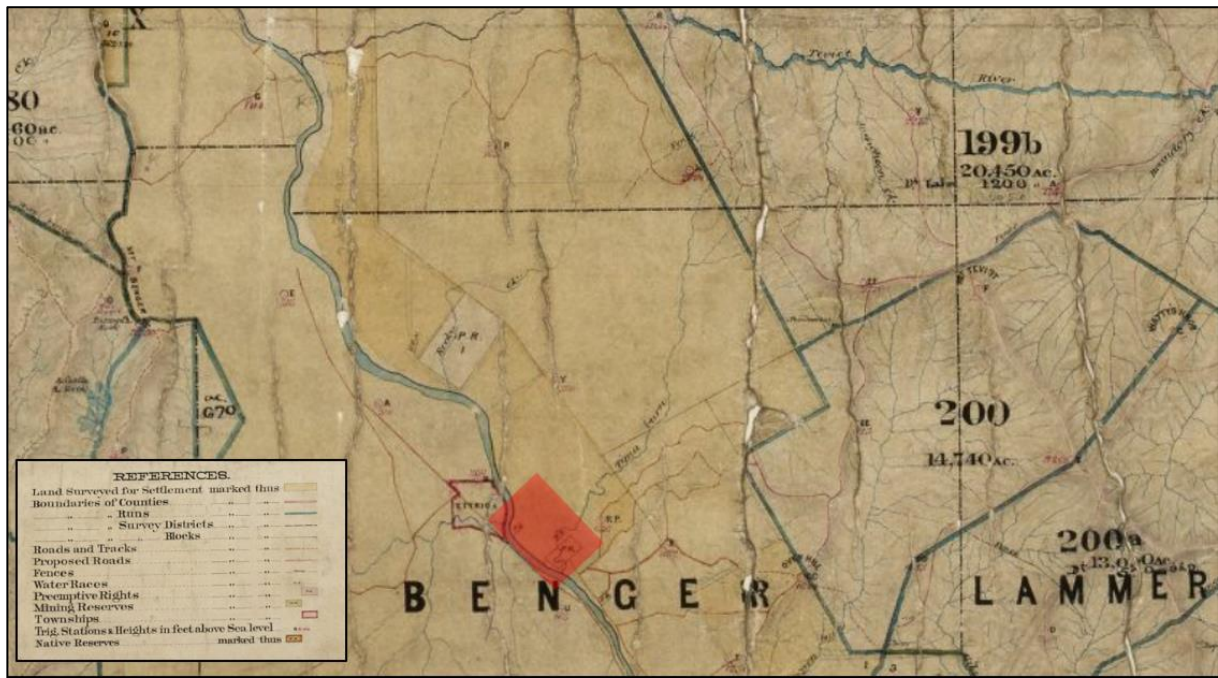


Figure 5-6. Detail of the 1880 run map showing mining reserves and the project area (highlighted red).

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 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 (paddocking) 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. In 1862 the first miners to work the area around Millers Flat were Andrew Young and James Woodhouse, prospecting the river banks (Webster, 1948). Unfortunately, many remains of early mining activity were destroyed or damaged by a major flood in 1878.

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

¹ 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 (Ritchie & Hooker, 1997).

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.

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, and Otago became world leaders in the dredge scene (Ballantyne, 2015). By 1896 there were 20 dredges operating along the Clutha/Mata-Au and just three years later, all claims available along the river had been made (Moyle, McPherson, & Cawte, 2013; Webster, 1948).

5.3 History of the Project Area

The project area was originally part of Block VIII Benger District. This area was subdivided into several smaller land parcels as shown in the 1962 Plan (Figure 5-7). This includes Sections 40, 84, 89, 90, 91, 92, 93, 94, 95, 96, 97, 102, 106 and the two paper roads. These sections were not all subdivided at the same time, with land portioned off from the 1870s through into the late 1900s.

Many sections were only shown on plans in the 1800s when leased to occupants or became designated as Residential Areas (R.A.). Some portions of the railway reserve lying to the northeast of the project area were not privatised until after the 1960s (including Part Sections 110 and 118 – adjacent to Sections 92 and 96 in Figure 5-7). The land parcels throughout history also often changed entirely as mining claims were made throughout the project area. Consequently, the sections below focus on the individuals and companies who occupied and worked the land in these areas rather than the sections themselves. Each section then follows on to discuss the results of the archaeological site survey.



Figure 5-7. Plan showing the subdivision of Block VIII and project area outlined red (Penney, 1962).

5.3.1 Kitto Family

Throughout the project area there was extensive occupation by the Kitto family from the 1870s to 1900. Activity associated with this family ranged over several land parcels, primarily Sections 89, 90, 93-95 and 97 (Figure 5-7), though features such as races extended beyond this. A table of key events area provided below (Table 5-1).

An 1874 plan, SO 181, shows the subdivision of Block VIII with Section 97 identified (Figure 5-8) and first documented Pākehā occupation through this area identified as part of this assessment. Section 97 (also noted to be Pre-emptive Right B of Run 200 discussed further in Section 5.3.6) contains a building and two water races (a northern race and a northeastern race) which connect to a dam. All of these features are associated with Kitto (Figure 5-8). This was likely John Francis Kitto, who arrived in New Zealand in 1867 and quickly found himself employed at Miller’s Flat (Cyclopedia Company Limited, 1905). To the west of Section 97 a sluicing claim is also shown (Figure 5-8). All these features sit within the project area, although the water races and sluiced area extend beyond the project boundaries. The dam is positioned in what is defined as Mining Reserve land in an 1884 plan, SO 182 (Figure 5-9), which would later become Sections 93-94. The dam itself had been massively enlarged by this time. The 1884 plan also shows the northeastern water race extending east from the dam, altered as the dam was enlarged.

By 1884, Kitto’s earlier building in Section 97 was no longer present. Instead, he had two buildings to the southeast of Section 97 in the Mining Reserve (what would become Section 95). Nearby a separate building is visible associated with a “Smith”. A murderous family dispute in 1882 suggests that the buildings were occupied by John, his wife and six of their ten children, including their son John Francis Kitto (Evening Star, 1882). Betsy Ann, the daughter of John Kitto, and her husband Joseph Augustus Roggiro lived not too far away (though it is unclear if this dwelling was within the project area). John Kitto went to his daughter and son-in-law’s house and shot Joseph through a window (South Canterbury Times, 1882). Kitto who had spent a brief period of time in the Dunedin lunatic asylum held “a deeply-seated grudge against his son-in-law” and he thought that Roddeiro “was the devil,

an hallucination which probable accounts for the exclamation “praise be to God” when he was informed of the fatal effect of his shot” (Marlborough Daily Times, 1882).

Table 5-1. Summary key events for land occupied by the Kitto family.

Year	Event	Source
Pre-emptive Right A – Section 97		
1857	Lease applied for by Walter Miller, Station named Oven Hills	(Crawford, 2006)
Circa 1870	Captain John Henderson joins Miller	(Crawford, 2006)
1874	Kitto has house and water race within Section 97 (Pre-emptive Right A), with sluicing claim along western extent of Section 97 (Pre-emptive Right A)	SO 181
1883	Miller sells his share of Oven Hills (now known as Ormaglade) to Henderson	(Crawford, 2006)
1884	Kitto’s building no longer present within Section 97 (Pre-emptive Right A) by this date	SO 182
1898	Section 97 (Pre-emptive Right A) transferred from Henderson to Dick and Others	Deed Index K Folio 200
1907	Section 97 (Pre-emptive Right A) transferred to Fraser by this time, and permission granted to Golden Bed Dredging Company for dredging	(Otago Witness, 1907)
1924	Section 97 (Pre-emptive Right A) transferred to Farquharson and others	Deed Index K Folio 197
1928	Section 97 (Pre-emptive Right A) sold to Penrose	Deed Index K Folio 197
1935	Section 97 (Pre-emptive Right A) sold to Laurie and Pamela Fay Crawford	CT270/85
Section 89		
1874	Kitto’s northern water race present on land	SO 1181
1879	Cob and thatch stables built	Government Valuation Roll, 1897
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1884	Stable on property associated with James(?)	SO 182
1897	Two R.A. present on land one associated with Kitto (with the 1879 stable), another with J Noble (with two new buildings constructed in this year). Kitto also has a mining reserve at the northern end of the land. Note Bennet and Company Race also extends through this area	SO 3225; Government Valuation Roll, 1897
1900	Land becomes part of Section 70, included in the Golden Bed Dredging Company’s mining claim.	SO3255
1902	Eastern portion of land becomes part Section 75 included in mining claim for Ettrick Gold Dredging Company	SO 3259
1903	Land forms part Section 79 (superseding Section 70), as part of mining claim for Golden Bed Dredge Company	SO 3264
1917	Section 89 formalised, surveyed for R Gilland	SO 3299
1924	Section 89 sold to Peter Russell	CT204/281
Sections 90, 93-95		
1874	Kitto’s Dam northern and northeast water races present through land	SO 181
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1884	Kitto’s dam expanded considerably. Kitto has a house (constructed of cob and thatch) and Smith has one house on the land by this date. Land to north subdivided into Sections 41 to 43.	SO 182; Government Valuation Roll, 1897
1897	R. Kitto has further mining claim, two dam reserves, two R.A. (one purchased from P. Clough), along with two further races on land. Note Bennet and Company Race also extends through this area.	SO 3225
1900	Land becomes part of Section 70, included in the Golden Bed Dredging Company’s mining claim.	SO 3255
1903	Golden Bed Dredging Company had dredged into Section 70 by this time, with the remaining property forming part Section 79, included in another mining claim for Golden Bed Dredge Company	SO 3264
1924	R.A. no longer present. Section 90 formed at this time with twentieth century dredging having occurred through this section prior to this date	SO 3314
1931	Sections 93 to 95 established incorporating Sections 41-43 and part Section 79. By this time Golden Bed Dredging Company had mined through Section 95. Section 94 and 95 were purchased by Joseph Thomas Parker	SO 3328; CT208/149 and CT208/150
1954	Section 93 sold to John Francis Harris	CT 374/111
Section 40		
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1884	Section 40 subdivided	SO 182
1887	Wood and iron building constructed with Section 40	Government Valuation Roll, 1897
1897	Building located within Section 40 and Section 40 purchased by Richard Kitto	SO 322; OT117/72
1906	Section 40 sold to Robert Gilland	OT117/72
1908	Building occupied by Parker	SO 3280

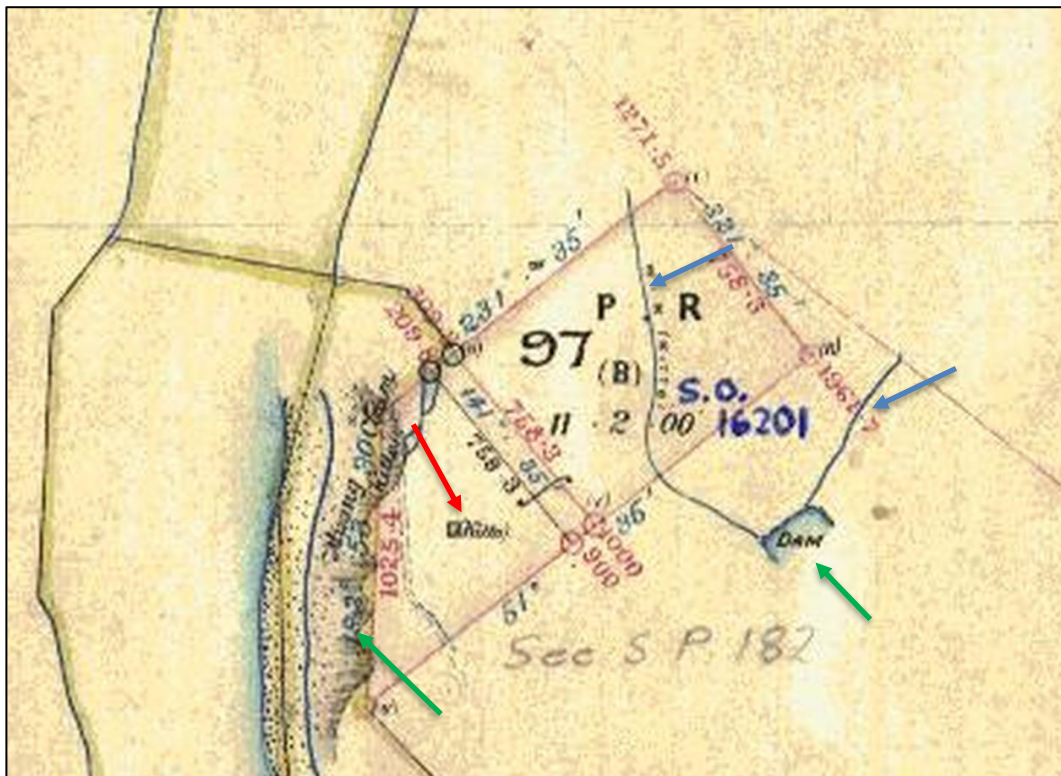


Figure 5-8. Detail of 1874 plan, SO 181, showing Section 97 Block VII and detail of occupation at this time including water races (blue arrows), other mining features (green arrows) and building (red arrow).

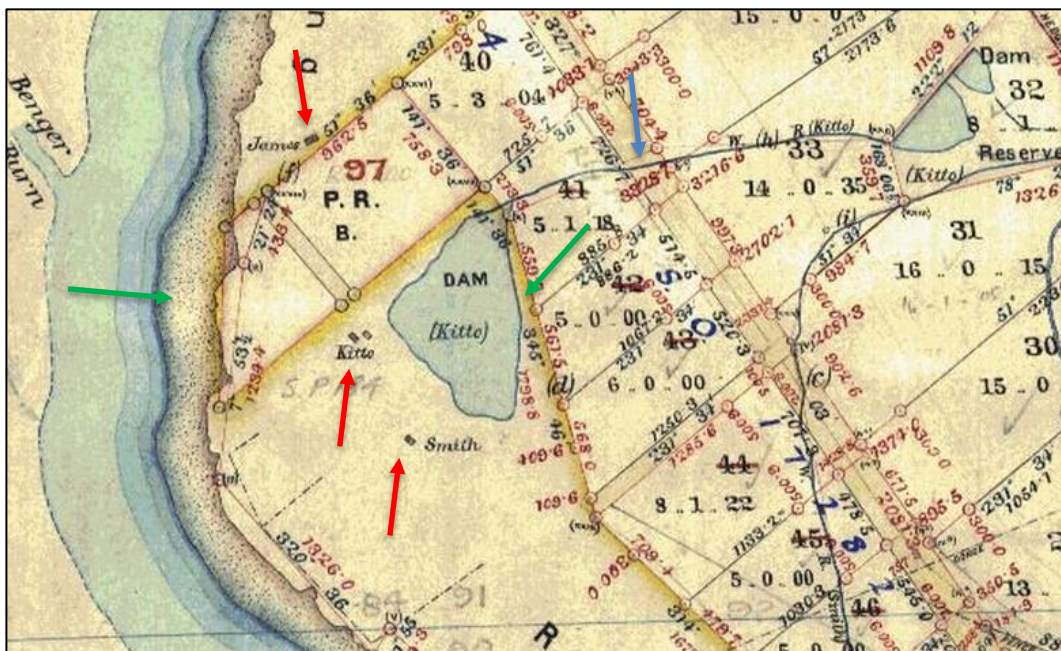


Figure 5-9. Detail of 1884 plan, SO 182, detail of occupation at this time including a water race (blue arrow), other mining features (green arrows) and buildings (red arrows).

Nearby to John Kitto's house was another occupied by W. Smith, which will be discussed further below in Section 5.3.3 (Evening Star, 1882). To the north of Section 97 another building was also shown, this one belonging to James(?). It is unclear if James was associated with Kitto in any way. They may have been a partner for a mining claim with, or an employee of, Kitto. The 1897 government valuation roll indicates that the building shown was a stable, first built in 1879 out of cob and thatch.

An 1895 plan, SO 3195, shows a single house just outside the project area and between the location of Smith's and Kitto's, which were no longer shown (Figure 5-10). It is unclear if this was a completely new building or if it was same as one of those shown in the 1884 plan. By 1897, multiple buildings are shown to belong to Kitto at this location (Figure 5-11), suggesting the latter is likely. The buildings are also sitting within a defined Residential Area (R.A.), and the 1897 government valuation roll indicates that there was one house in the R.A. at this time both constructed around 1885 from cob and thatch. Given the possible error of valuation rolls, it is likely that one of the buildings shown in the 1884 plan continued to be present through until 1897. While there are ancillary buildings shown in the 1897 plan, the valuation rolls in from the same year only indicate one building on the site, with others present on another plot of land also owned by the Kitto's outside of the project area. Again, these are notably absent from the 1895 plan. At the turn of the century the buildings were associated with a Mrs Ann Kitto, until they had been taken over by the Golden Bed Dredging Company (Government Valuation Roll, 1897).

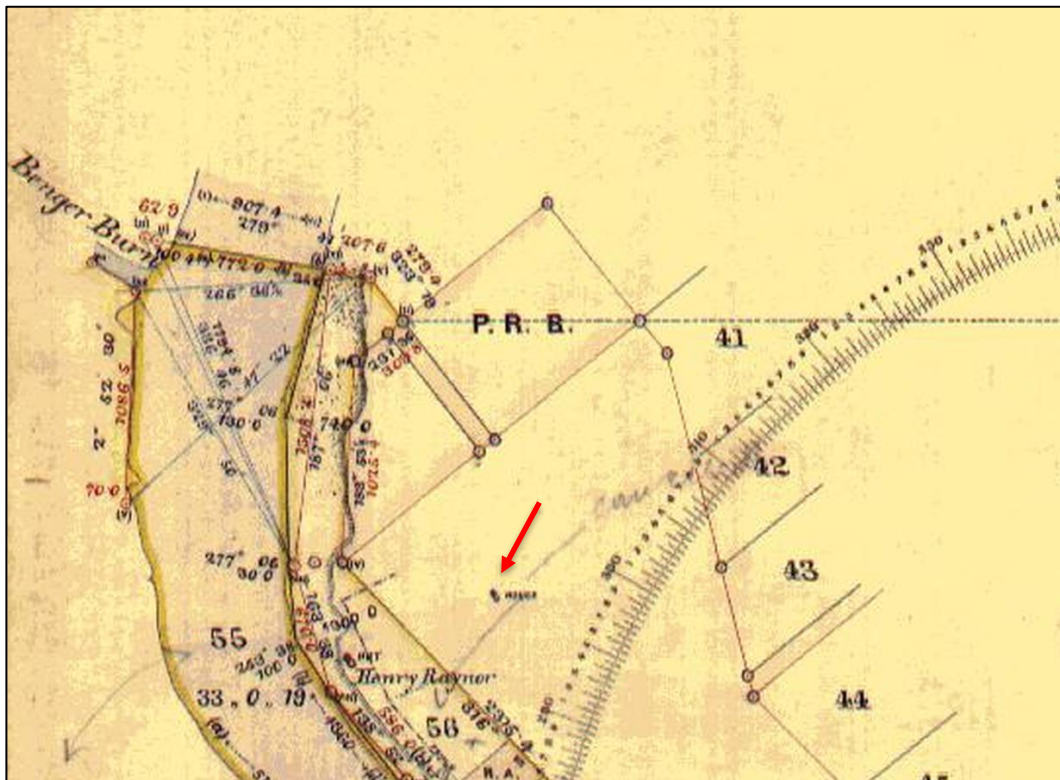


Figure 5-10. Detail of 1895 plan, SO 3195, showing building on mining reserve.

There are three further buildings shown by this time in the 1897 plan (Figure 5-11). Another Kitto building and R.A. was located just north of Section 96, an unlabelled building is shown to the northeast corner of Section 97 and another adjacent in Section 40. The building in the R.A. was the cob and thatch stable earlier associated with James (?), and by 1908 this building is described as merely a hut (SO 3280; Figure 5-12). This suggests, although it was a residential area, no dwellings were constructed on the property.

Richard Kitto purchased Section 40 in 1897 (OT117/72), (the section itself had been established in 1884) and it is likely that both unlabelled buildings were associated with the Kitto family. The government valuation roll indicates that the timber and iron building within Section 40 was constructed in 1887. Section 40 was sold to Robert Gilland in 1906, and just two years later the building was occupied by Parker. Kitto's stable building within the R.A. is not visible in photographs by 1903, but the two unlabelled buildings were, along with several possible outbuildings in between (Figure 5-13). By 1944 only ancillary structures remained on the section (Figure 5-14), of which all were removed in the later twentieth century.

Further dams are shown in the 1897 plan belonging to Kitto and his sons, linking up with each of his races. Kitto and Son's dam and race heading northeast are also shown, along with two further races running north and

southeast from the dam. The north and northeast races were those shown in the 1874 and 1884 plans. By 1903, an image of the project area shows the dam, the north and northeast race (Figure 5-13 and Figure 5-15). By this time the race has been modified to form a sharp angle and bypass the dam entirely (Figure 5-15). This can be seen also in a 1931 plan (SO 3328; Figure 5-17). This plan also shows the north race circumnavigated the old dam as well, and this can be seen in the 1944 aerial photograph (Figure 5-18). Going around the dam both races appear to connect to Kitto's race running southeast. The southeast race is likely that visible continuing alongside the Clutha/Mata-Au in the 1903 panoramic photograph of the area (Figure 5-16).

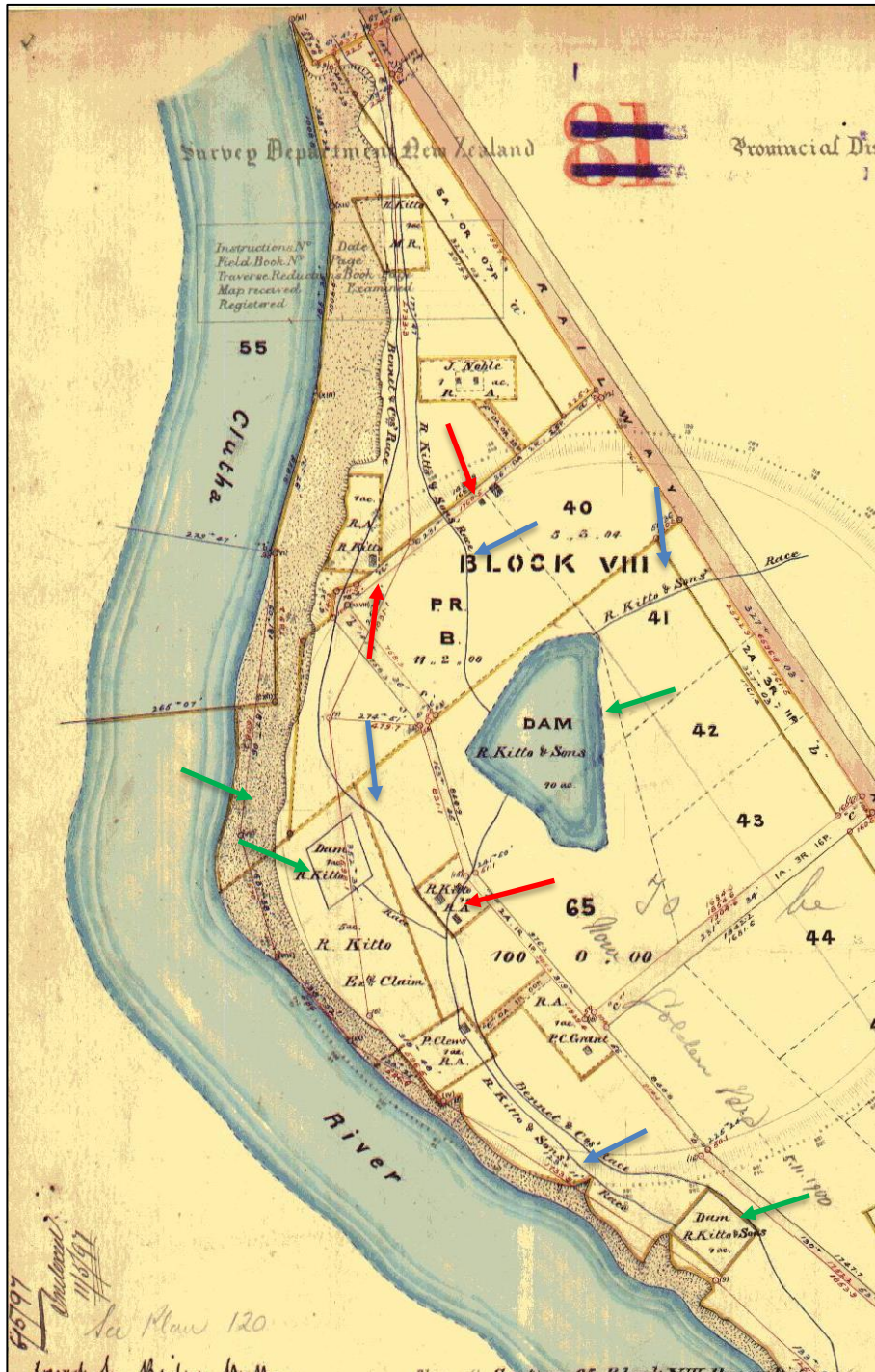


Figure 5-11. Detail of SO3225, dating to 1897, showing detail of occupation at this time including water races (blue arrows), other mining features (green arrows) and buildings (red arrows).

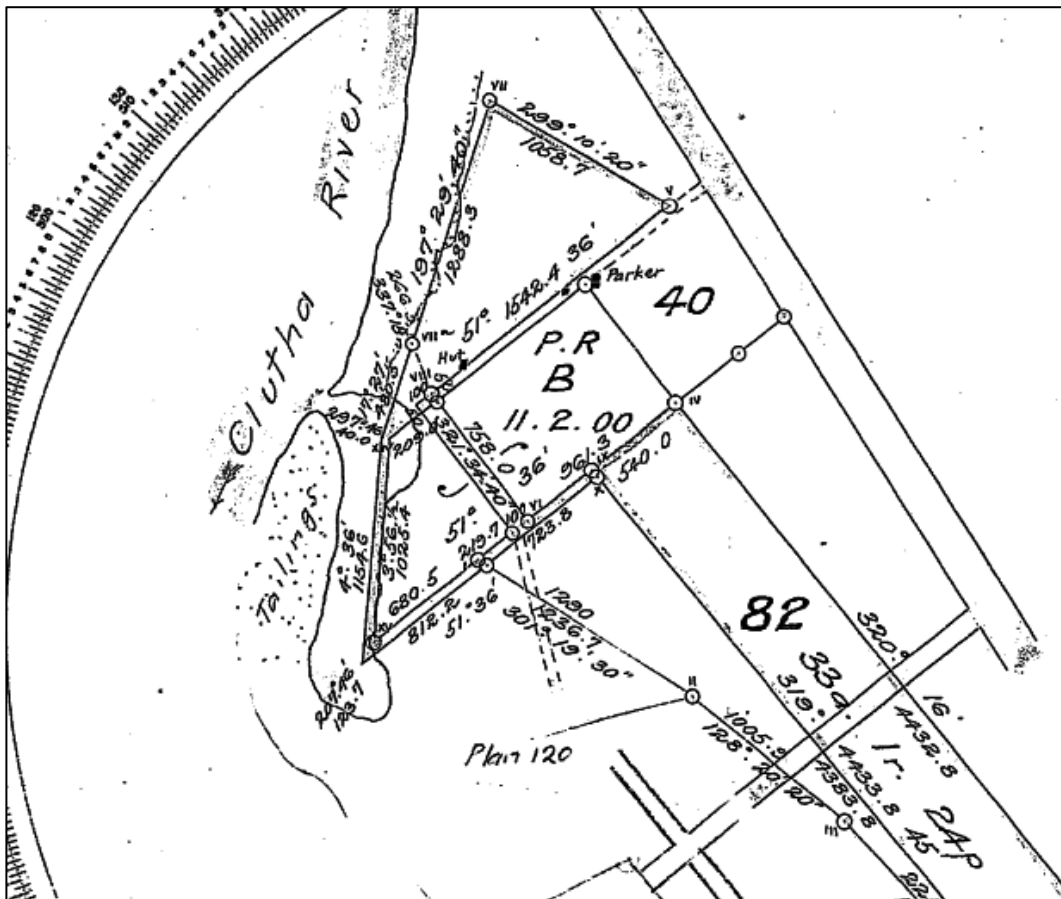


Figure 5-12. Detail of SO 3280 showing building associated with Parker in Section 40.



Figure 5-13. Detail of panorama photograph showing the buildings in Section 40 (red arrow) and Section 97 (orange arrow), and the north water race (blue arrow) (Unknown, 1903a).



Figure 5-14. Detail of 1944 Aerial Photograph showing location of buildings within Sections 40 and 97 (Retrolens: SN291 Run 758/74).

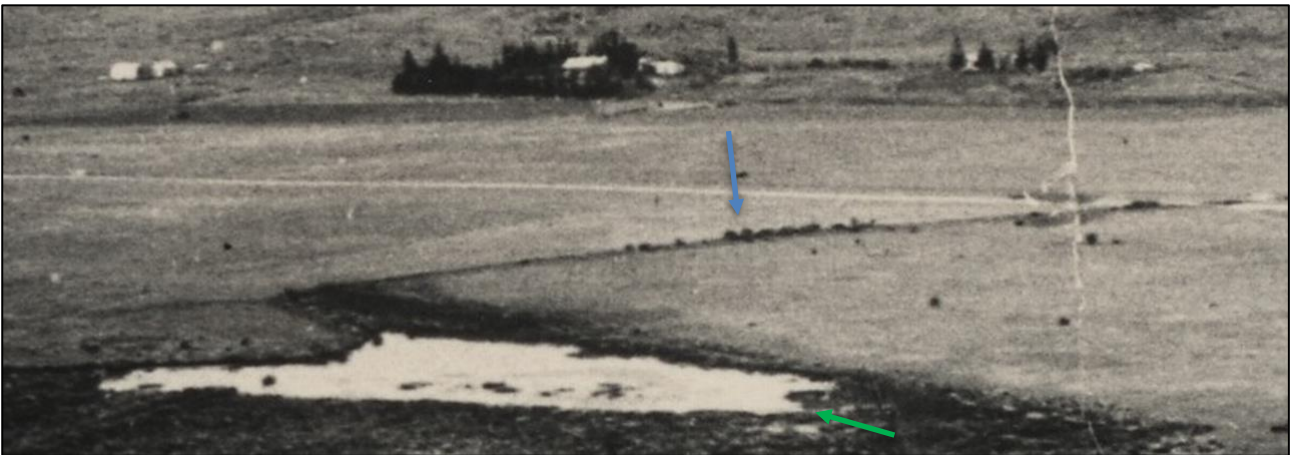


Figure 5-15. Photograph looking northeast at dam (green arrow) and water race running northeast (blue arrow)(Unknown, 1903b).



Figure 5-16. Part 3 of a panorama showing the project area from around 1903 showing Kitto's water race to the west of Bennet and Company race (blue arrows). Note Bennet and Company are discussed further below in Section 5.3.3 (Unknown, 1903b).

Pre-1900 sluicing areas and tailings extend into the project area especially at the northern end of the project boundary. Given the predominance of the Kittos in the nineteenth century throughout this area, especially earlier in the 1870s, many of these features could be the result of their earlier mining activity. This is supported by Richard Kitto's claim shown in the 1897 plan. This pre-1900 worked area can be seen in 1940s aerial images (Figure 5-18) where they have not been modified by later mining activity and align with the pre-1900 plans (Figure 5-8 to Figure 5-11). It is this section of tailings that has been previously recorded as G43/233.

The Kitto family had extensive connections with mining throughout Otago. Several members of the family worked for or formed mining companies. An image of the wheeler at Millers Flat used by the Kittos can be seen in Figure 5-19. Richard Kitto was part of the Majestic Dredging Company which had made an 1899 claim for Section 67 along the Clutha River/Mata-Au adjacent to the project area as well (Figure 5-20). The Majestic Dredge is shown in Figure 5-21. John Francis Kitto (again likely a relation to, rather than, the convicted John Kitto above) was manager of the Ettrick Company's Dredge (Tuapeka Times, 1893) and would eventually work on the Magnetic Dredge as well as the Prince Arthur Dredge along the Shotover River. Records indicate the Ettrick Gold Dredging Company sought a claim over Section 75, Block VIII (part of which would become the eastern extent of Section 89), in 1902 (SO 3259). However, prior to this in the 1890s, the company was working to the north of a claim, discussed below, associated with the Golden Treasure No. 2 Company (Otago Witness, 1896b), indicating they were likely dredging the river adjacent to Section 75 prior to 1902. Many of the pre-1900 features relating to the Kitto family were disturbed, modified or completely destroyed by later mining endeavours, in particular those relating to the Golden Bed Dredging Company.

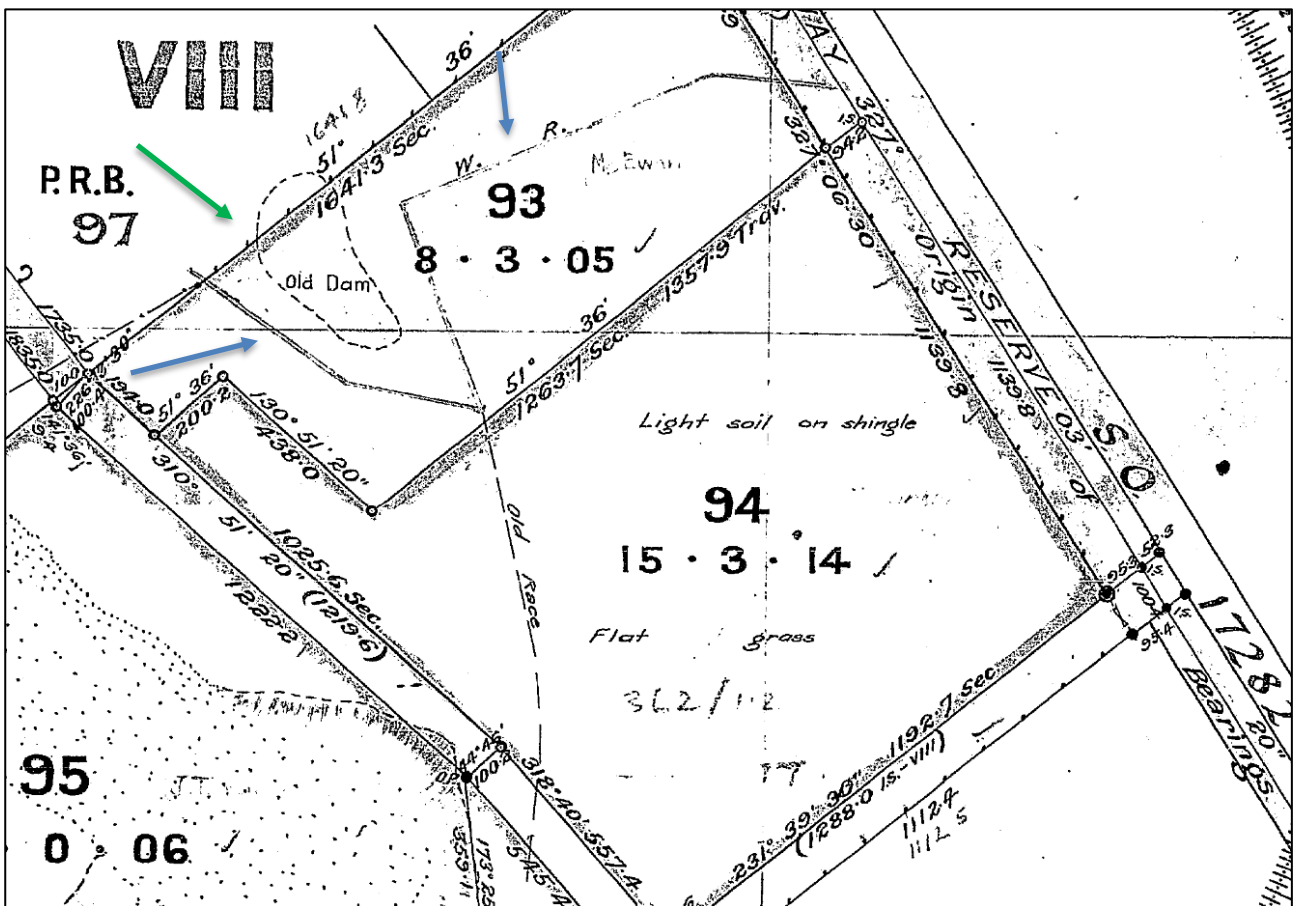


Figure 5-17. Detail of 1931 plan, SO 3328, showing the old dam (green arrow) and water race running northeast (blue arrow).



Figure 5-18. 1944 Aerial Photograph (Retrolens: SN291 Run 758/74) showing the remains of Kitto's Water races (blue arrows) to the northeast, northwest and south. Worked ground, the result of pre-1900 sluicing (green arrow) and post-1900 dredging (purple arrows) can also be seen along this area.



Figure 5-19. Photograph taken between 1895 and 1910 showing J. F. Kitto's wheeler near Millers Flat (*J. F. Kitto's Current Wheeler near Millers Flat, n.d.*).

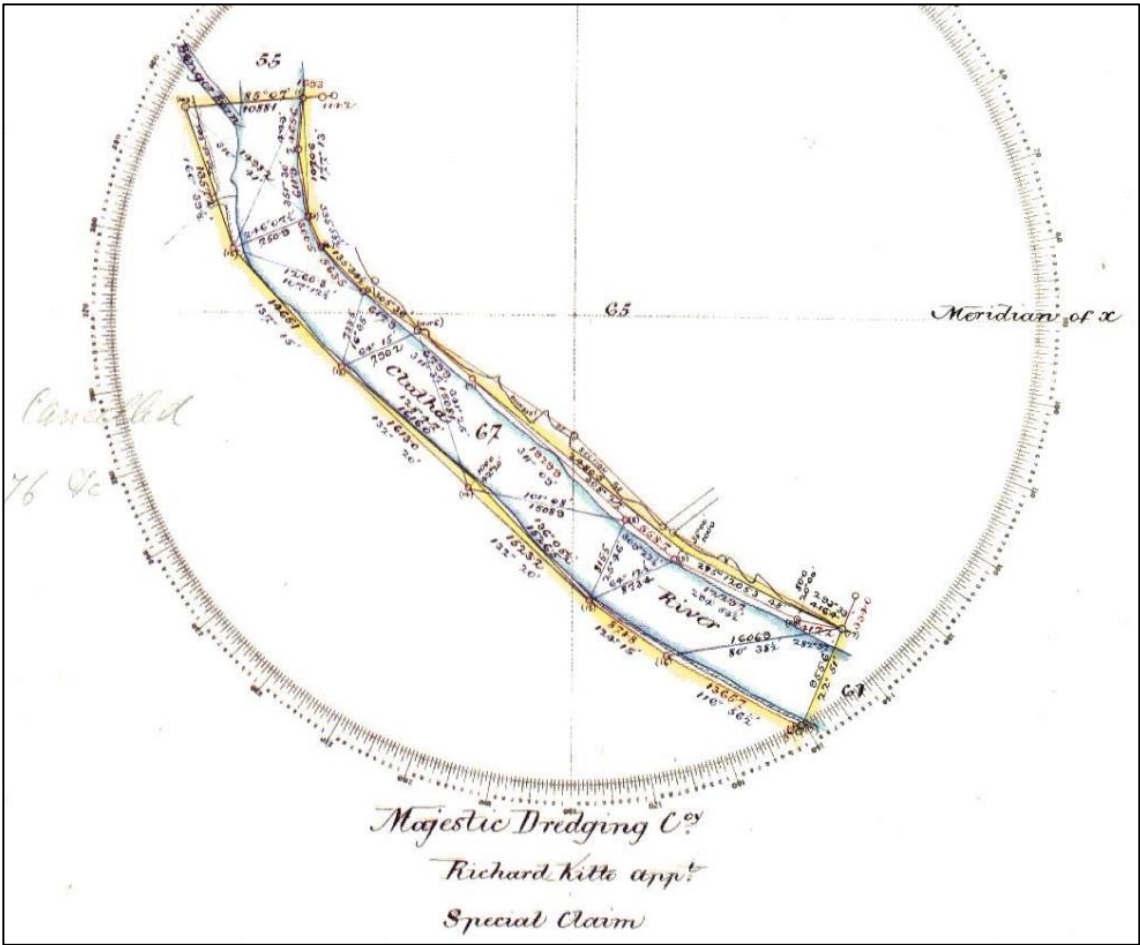


Figure 5-20. SO 3237 (1899), showing Majestic Dredging Company's claim along the Clutha River/Mata-Au.



Figure 5-21. Photograph of the Majestic Dredge at Millers Flat around 1900 (Muir, T. & Moodie, 1900).

5.3.1.1 Site Survey

The site survey located the areas associated with the Kitto family's mining and occupation; however, many of the features shown on the historic plans were not visible due to modern land changes. This section discusses the building site locations within the project area, the dams and water races as well as sluicing and tailing sites. A map is shown below of the features relating to the Kitto family identified from historical maps and during the site survey (Figure 5-22).

Historical research identified several buildings within the project area associated with the Kitto family mining activities. All buildings sites were either removed due to modern surface or are subsurface under farmland. There was no conclusive evidence identified for any of the structures above ground. However, at the approximate location of one building, Richard Kitto's house shown in the 1897 plan (Figure 5-11), in the north-west of the project area, the possible remains of a building platform was identified (Point of Interest [POI] 40) at the top of a slight rise (Figure 5-23).

Richard's other two buildings were located outside the project area, but a small portion of the wider land parcel associated with the buildings, Section 40, encroached into the project area and the property was largely in grass farmland (Figure 5-24). Another potential building platform (POI 34; Figure 5-25) was identified; however, it was not associated with any building shown on the historic plans. It sat on an area of intact land between two areas of post-1900 tailings that ran along the western boundary with the Clutha River/Mata-Au. The platform was 12.5m long and 6m wide with depressions along the north-western edge. A block of concrete was also present on this side which could relate to the construction of the building (Figure 5-26). Given the ephemeral nature of many of the buildings in this area it is possible that an undocumented pre-1900 building was situated at this location.

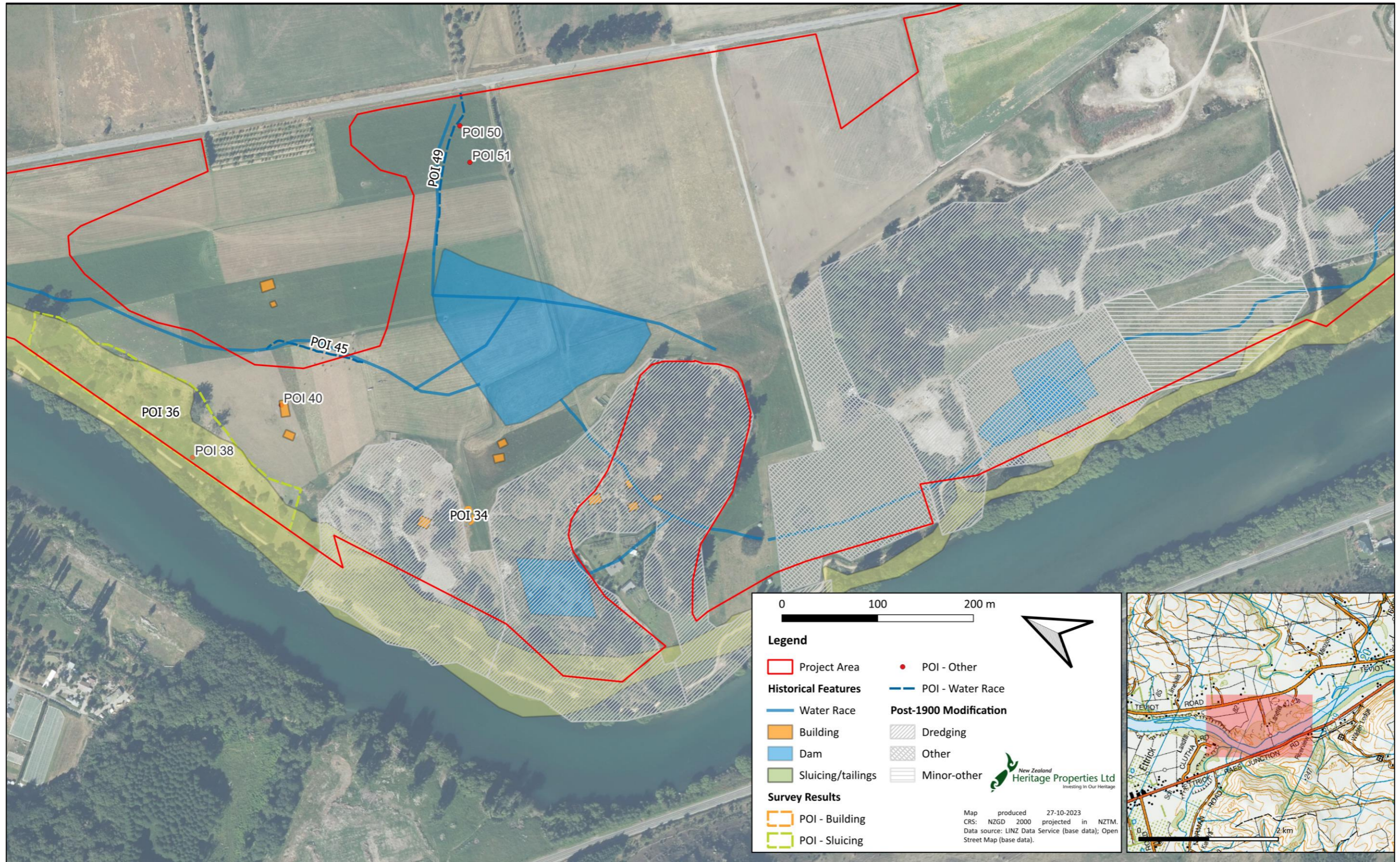


Figure 5-22. Plan of features associated with the Kitto family identified from historical maps and during the survey. Post-1900 modifications within the project area are also shown, however the modern greenwaste tip is not outlined.²

² Note that the historical features on these plans were georeferenced from historic plans and the exact locations may not be accurate. Where it was not possible to confirm if two buildings from historic plans of differing dates, both buildings are shown as potential locations.



Figure 5-23. Photograph looking east at location of potential building platform at the top of a rise (marked by Oliver Walne in photograph).



Figure 5-24. Section 40 during survey (facing northwest).



Figure 5-25. Potential building platform (POI 34) facing north-east.



Figure 5-26. Left: Concrete block. Right: Depressions in possible building platform (POI 34) facing south-east.

The location of the Kittos' dam shown in the 1874 and subsequent plans, was located within modern farmland, and had not been affected by current or previous mining activities. Based on the 1931 plan (Figure 5-17) it appears that this dam was decommissioned (Figure 5-17). This was reflected in the survey as there was no evidence of the dam and the area has converted to farmland (Figure 5-27). The lack of clear definition of the dam edging indicates that the dam was likely filled, at least partially, sometime in the twentieth century.



Figure 5-27. Location of large inland dam (facing north-east).

Two of the water races associated with the dam were located during the survey. Sections of both the north and northeast water races associated with the large Kitto dam on the 1897 plan were identified and recorded as POI 45 and POI 49 respectively. POI 45 was recorded as extending for 105m in a north-west to south-east direction. It ran along the base of a seemingly natural slope and was 1800mm wide and 100mm deep (Figure 5-28).

POI 49, the northeast race, was recorded running north-east to south-west running towards the large Kitto dam. The section recorded ran for 160m from the north-eastern boundary fence. It was 2m wide and up 200mm deep although the sides were very flattened by farming activities such as ploughing and stock (Figure 5-29). On the other side of Teviot Road, to the northeast, the race continued and was far more obvious and defined (Figure 5-30). Along the side of this race (POI 49) were two timber posts (POI 50 and 51). It is unclear if or how these posts were associated with the race as only the bottom 250mm of each post remained (Figure 5-31). The posts did not appear to be aligned with the race as POI 50 was on the edge of the race while POI 51 was set back from the race.



Figure 5-28. Water race (POI 45) facing north-east and south-west.



Figure 5-29. Water race (POI 49) facing west and east.



Figure 5-30. Water race (POI 49) continuing outside of the project area (facing northeast).



Figure 5-31. Wooden posts (Left: POI 50. Right: POI 51) facing north-west.

Other water management features were present in the stockpile area adjacent to the active mine site. While previous photographs indicated that a water race attributed to Kitto and Sons on the 1897 plan (Figure 5-11) may have still been present, no surface evidence of this activity was visible during the site survey. A potential feature was identified during the survey (Figure 5-32); however, aerial photographs and conversations with Simon Johnstone (Hawkeswoods Civil) identified this as part of the earthworks works undertaken for the Exploration Permit 60712. While this was not the historic race, there is still potential for subsurface remains the water race to be encountered during earthworks in the vicinity of this POI.



Figure 5-32. Photograph looking northeast at the modern earthworks feature at the general location of the former Kitto race.

While other races were shown on the historic plans and aerials as being associated with the Kitto mining activities, none of these were identified during the survey. This is likely due to the use of the area as farmland as there was extensive evidence of the area being ploughed, grazed, and planted (Figure 5-33). The extents of the three races as recorded during the archaeological survey have been recorded as archaeological site G43/285.



Figure 5-33. Location of a water race in farmland facing north (no archaeology identified).

There were two further dams shown on the 1897 plan associated with the Kitto's (Figure 5-11). One of the two smaller dams closer to the Clutha/Mata-Au riverbank has been destroyed by tailings of post-1900 dredge runs along the bank (Figure 5-34). The other dam to the south-east may still be present; however, the current mining operations have built up the area with stone to create a stockpile and storage ponds (Figure 5-34).



Figure 5-34. Left: 1903 Tailings along Clutha riverbank (facing south). Right: Storage Pond in location of Kitto dam (facing north-west).

Along the western extent of the project area, in close proximity to the Clutha River/Mata-Au, a section of sluice faces and tailings was identified as part of Kitto's pre-1900 mining activities shown in the 1884 plan (Figure 5-9).

This area has previously been recorded as archaeological site G43/233. The sluice faces now form a ridge at the edge of the farmland and have been grassed over. At the base of the faces, sit small piles of tailings. The area was recorded as POI 36 and was 315m in length and spanned approximately 62m (Figure 5-35). The feature was clearly visible from the adjacent cycle trail for the full length, and extends outside of the project area, into the marginal strip containing the cycle trail (Figure 5-37, Figure 5-38). Within the area was what appeared to be a metal ladder axle (POI 38) that was likely from mining activities in the area (Figure 5-36). It is possible that the axle comes from the ladder the dredge which would have carried the buckets of gravel (Figure 5-39). The archaeological site record form for G43/233 has been updated with the results of the archaeological survey.



Figure 5-35. Sluice faces and tailings at G43/233 (facing east and south).



Figure 5-36. Metal ladder axle in proximity to G43/233.



Figure 5-37. Approximate extent of tailings for G43/233 (POI 36) as viewed during survey. Note portion of feature extends outside of project area.



Figure 5-38. Screenshot of drone footage looking north-northeast over tailings of G43/233 (provided by Jared Reeves, Overview Surveying, 2024). Boundary of project area intersecting tailings showing in yellow.



Figure 5-39. Axle from dredge ladder at Millers Flat (Muir & Moodie Studio, 1900).

5.3.1.2 *Summary of Historical Research and Site Survey Results*

Historic research identified several building and R.A. associated with the Kitto Family from at least 1874 through to the turn of the century. The family was extensively involved with gold mining in the area, with several water races and dams associated with the Kittos throughout the project area. Unfortunately, a large number of features would have been destroyed by later twentieth century dredging, removing remains of the buildings, smaller dams and parts of the water races. Part of the modern Hawkeswood mine did extend over part of the water races and former dams. However, it was not possible to identify if the features had been removed prior to this.

In spite of the later modifications, two of the water races were relocated during the archaeological survey (POI 45 and 49), although they had been heavily modified by farming activity. Their presence suggests there is a high potential to find subsurface remains of the remaining features through the project area, especially the large dam, which appears to have been infilled. The water races have been recorded as archaeological site G43/285. Two potential occupation sites were identified during the site survey in the form of raised platforms. One platform aligns with a building on an 1884 plan, while the other did not correspond with any pre-1900 buildings known to date. Pre-1900 sluicing and tailings previously recorded through the project area as G43/233 were revisited during the survey, and the archaeological site record form will be updated with the results of the survey. There is potential that the remains are associated with the Kitto family given their presence through the area; however, this is hard to confirm due to the lack of early mining records through this area.

5.3.2 *Peter Cruickshanks Grant, the Golden Treasure No.2 Dredging Company, and the Golden Bed Dredging Company*

Peter Cruickshanks Grant was associated with the Golden Treasure No.2 Dredging Company, and the later Golden Bed Dredging Company. Grant's occupation and the companies' mining operations extended throughout the project area and the adjacent river bed. Within the project area their activity extended over the land that would become Sections 84, 90, 91, 93, 94, 95, and 102 (Figure 5-7), and a description of key events associated with Grant and the companies are provided in Table 5-2.

The Golden Treasure No.2 Dredging Company, established by Peter Grant, Patrick Laffey, Robert Richardson, William Waugh and Roderick McDonald was operating late 1800s. Peter Grant himself was living within the project area. From at least 1896, he (and the Golden Treasure No. 2 Dredging Company) was applying for the construction of water races around Millers Flat (Mt Benger Mail, 1896), but he had been mining in the wider area for decades working on dredges and prospecting the rivers beaches (Clutha Leader, 1890). The 1897 plan (Figure 5-41) shows, in the centre of the project area in what would become part Section 91 and 90, a R.A. occupied by P. C. Grant and a single building. The R.A. is not shown until 1897; however, the building itself is likely the house shown in the 1895 plan (Figure 5-42), and in an 1897 article, Grant was reported to have made repairs and alterations to an existing house in this area (Tuapeka Times, 1897a).

The Government Valuation Roll from 1897 indicates that there were at least two houses in this R.A. constructed of wood, cob, iron, and thatch, both constructed around 1890. Along with the residential buildings there were two associated structures constructed in 1896: a stable and a dairy. Grant's R.A. is shown, defined by planted vegetation, in a 1903 photograph, similar to the 1897 plan (Figure 5-43 and Figure 5-41). Within the area, at least three of buildings identified in the valuation roll are visible. In the 1940s aerial of the area (Figure 5-44) only demolition remains of one of the buildings seen in the 1903 image were visible, though another building had been built between 1903 and the 1940s, behind those in the 1903 photograph. It was likely built, by Joseph Thomas Parker who had taken over the subdivided land in this area (in particular Section 91) to replace the earlier dwelling. This building was removed at some point in the second half of the twentieth century.

In 1897, the Golden Treasure No.2 Dredging Company started to be referred to as the Golden Bed Dredging Company (*Memorandum of Agreement as to Sale and Purchase of Special Claim over Section 65 Block VIII Benger Survey District*, 1899; Tuapeka Times, 1897b). The company secured a claim through Section 65 as shown in the 1897 plan (Figure 5-11). Reports that year indicated their tests of this land were successful, having sunk three shafts (7ft x

4ft). Peter Grant oversaw the work and was convinced of its potential success (Clutha Leader, 1897). The company hired the engineer Mr Cutten to design the Golden Treasure No. 2 Dredge, or what would become the Golden Bed Dredge, an electric dredge. In 1899, Cutten took the levels of the Clutha River/Mata-Au banks to aid in the design of the ladder and elevators need for the dredge (Tuapeka Times, 1899a).

Table 5-2. Summary key events for land occupied by Peter Cruickshanks Grant, the Golden Treasure No.2 Dredging Company, and the Golden Bed Dredging Company. For Section 97 (Pre-emptive Right A) refer to Table 5-1.

Year	Event	Source
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1890	Two houses constructed of wood, cob, iron and thatch constructed on Peter' Grant's R.A. Site	Government Valuation Roll, 1897
1896	Wood and iron stable and dairy constructed	Government Valuation Roll, 1897
1897	Extent of Grant's R.A. visible on plans by this date associated. Golden Bed Dredging Company secured claim over Section 65. Three test shafts were sunk.	SO 3225; (Clutha Leader, 1897)
1900	Golden Bed Dredging Company mining claim for Section 70 (formerly part Section 65). The Golden Bed Dredge was completed and started dredging through Section 70.	SO 3255; (Evening Star, 1900)
1903	Golden Bed Dredging Company started dredged into Section 70 this time remaining property forms the superseding part Section 79, as part of another mining claim for Golden Bed Dredge Company. At least two additional buildings constructed in the R.A. associated with Grant by this date.	SO 1903; (Unknown, 1903b).
1924	R.A. no longer present. Sections 84, 90 and 91 formed at this time	SO 3314
1931	Sections 93 to 95 and 102 established. By this time Golden Bed Dredging Company had mined through Section 95. Section 94 and 95 were purchased by Joseph Thomas Parker	SO 3328; CT208/149 and CT208/150
1944	All buildings constructed by 1903 removed, a new building for Parker had been built in Section 91.	
1951	Section 91 sold to Joseph Thomas Parker	CT270/85
1952	Section 84 sold to Robert Charles Skevington	CT360/183
1954	Section 90 sold to Robert Charles Skevington; Section 93 sold to John Francis Harris	CT 374/111
1955	Section 102 sold to Robert Charles Skevington	CT380/99

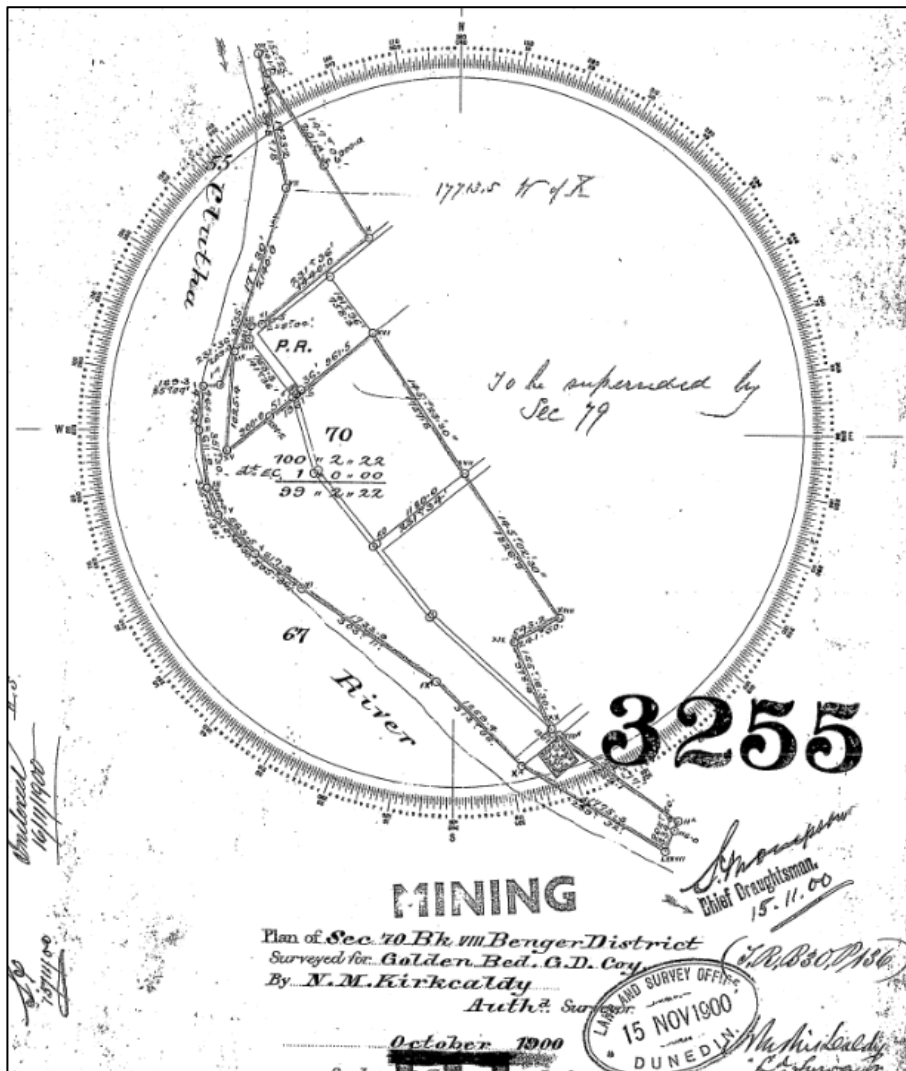


Figure 5-40. Detail of 3255 showing the mining lease of Section 70 to the Golden Bed G. D. Company.



Figure 5-41. Detail of SO 3225 (1897) showing P.C. Grant's R.A. with a building (circled red).

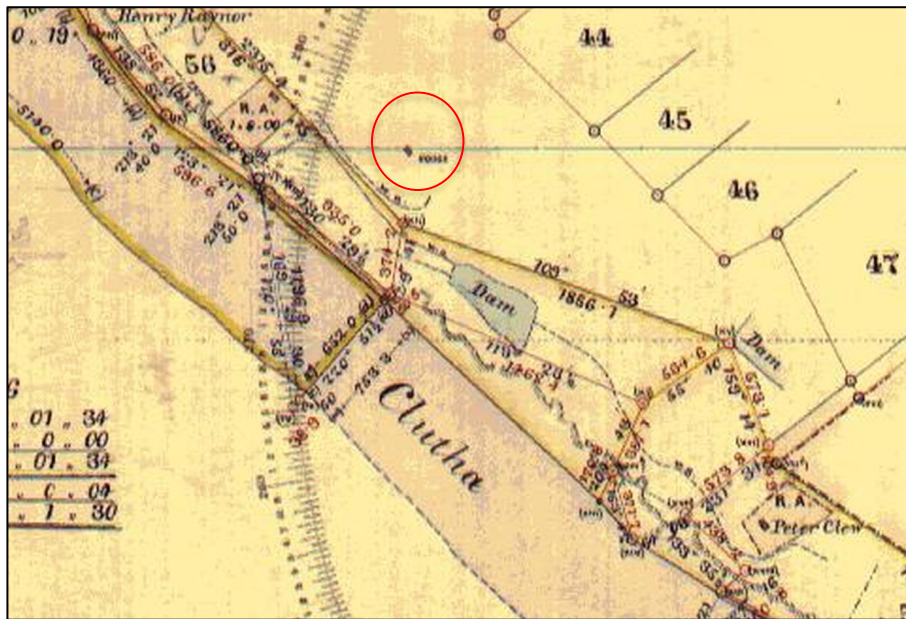


Figure 5-42. Detail of SO 3195 (1895) showing house possibly part of Grant's later R.A. (circled red).

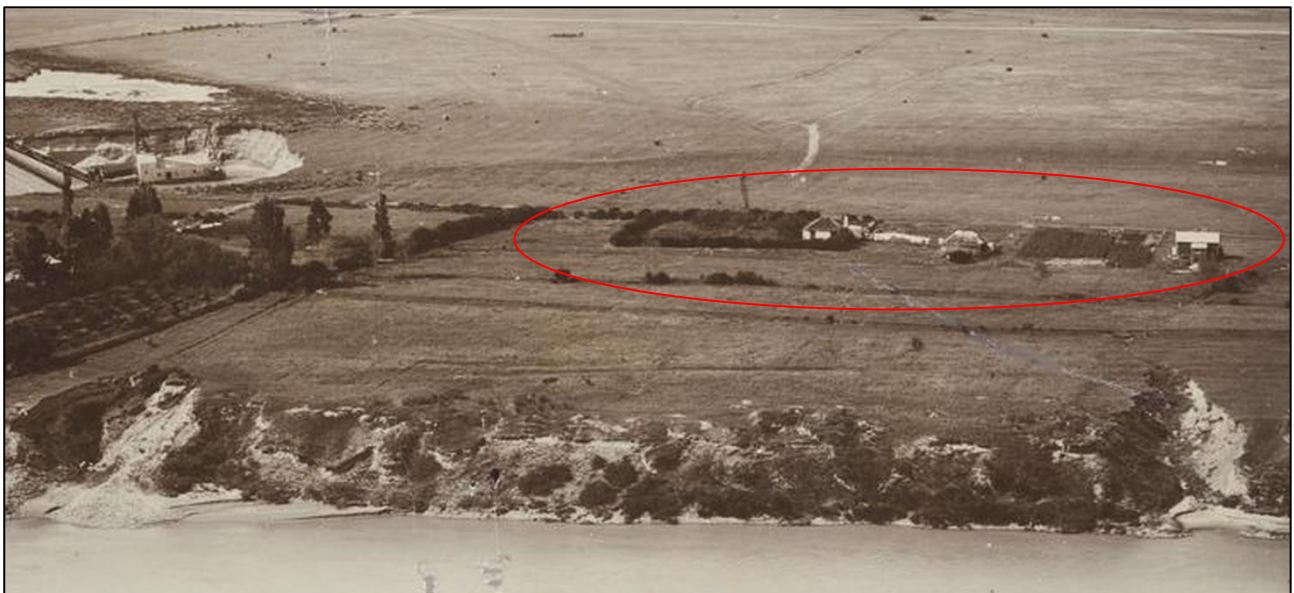


Figure 5-43. Detail of Part 2 of a Panorama taken of the project area around 1903 showing Grant's R.A. (Unknown, 1903b).

In September 1899 there were 40 dredges under construction in Dunedin across various well-known firms, including Cutten Brothers and Sparrow and Co (Ballantyne, 2015), the latter of whom took up production of the Golden Bed Dredging Company's dredge (Otago Daily Times, 1900; Tuapeka Times, 1900). It is likely the Golden Bed dredge was amongst these dredges counted that year (Ballantyne, 2015). At the turn of the century the Golden Bed Dredging Company took over mining through what would become Sections 93, 94 and 95 (Figure 5-40). The Golden Treasure appears to have been used along Miller's Flat until at least 1900, with a photograph of the dredge at this time shown in Figure 5-45. In December 1900, the Golden Bed Dredge (Figure 5-46) had been completed and started operating on the 22nd of the month (Evening Star, 1900). By February 1901, the dredge was successfully making its way into the river bank claim, obtaining over 10oz in one week (Otago Witness, 1901).



Figure 5-44. 1944 Aerial Photograph (Retrolens: SN291 Run 758/74) showing remnants of a nineteenth century building (green arrow), with twentieth century buildings behind (orange arrow).



Figure 5-45. Photograph of the Golden Treasure Dredge at Millers Flat (Muir, T., & Moodie, 1900).



Figure 5-46. Photograph of the Golden Bed Dredge at Millers Flat (Muir, T., & Moodie, n.d.).

SO 3264 (Figure 5-47) and photographs of the area (Figure 5-48) show the worked ground behind dredge extending through the project area at Millers Flat by 1903. The full extent of the dredging after 1903 can be seen in a 1931 plan, SO 3328 (Figure 5-49) as well as the 1944 aerial photographs (Figure 5-18). The latter also shows the extent of post 1900 dredging in Sections 97 as well. The Golden Bed Dredging Company also moved to the north, gaining permission from Mrs Fraser, the owner of the Ormaglade Station (see Section 5.3.6) and the Pre-emptive right (Section 97), to dredge the property in 1907 (Otago Witness, 1907). This post-1900 dredging has been previously recorded as part of archaeological site G43/232. Unfortunately, much of this later activity removed any trace of earlier activities through these areas, in particular the Kittos' 1874 building, possible 1895 building, as well as their 1897 dam and buildings. Any trace of the 1884 building relating to Smith, was also likely destroyed by these later mining activities.

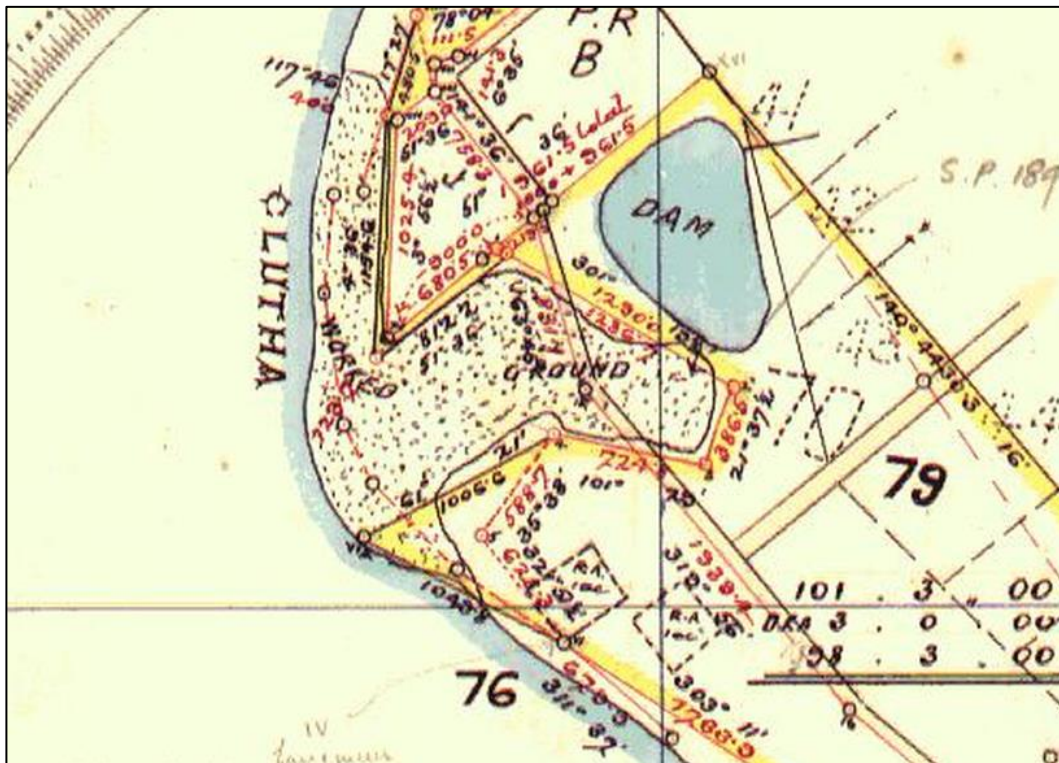


Figure 5-47. Detail of SO3264, dating to 1903, showing the existing worked ground. The highlighted yellow land parcels were part of the next Golden Bed D Company claim.



Figure 5-48. Part 1 (top) and 2 (bottom) of the panorama showing the dredging through the project area, in particular Sections 93-95 around 1903. Note the Golden Bed Dredge at the head of the worked area (Unknown, 1903a, 1903b).

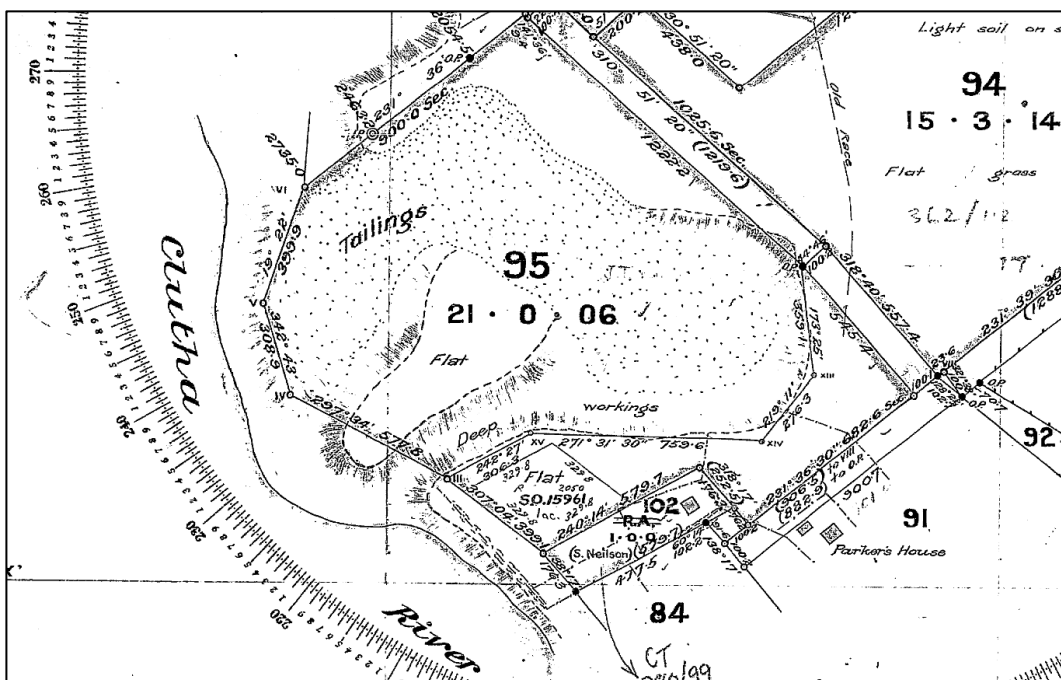


Figure 5-49. Detail of SO 3328 (1931) showing the tailings, a result of dredging in the early twentieth century.

5.3.2.1 Site Survey

A map is shown below of the features relating to Grant and the Golden Bed Dredging Company identified from historical maps and during the site survey (Figure 5-52). No evidence of the P.C Grant residential area was identified during the survey. The area was situated under modern farmland and the active mine (Figure 5-50). However, any structures or remains were removed prior to the current mining operations as discussed above. The remains of the post-1900 workings of the Golden Bed Dredging Company were extensive (Figure 5-51). These activities likely caused the demolition of much of the pre-1900 structures and infrastructure shown on the early plans along the riverbank. Today these areas have been largely wooded and landscaped, however evidence of the dredge works remains, with a haul rope (POI 26) discarded by the side of a large set of tailings (Figure 5-53).



Figure 5-50. Current mining operations by Hawkeswood Mining (facing east).



Figure 5-51. Post-1900 tailings associated with the Golden Bed Dredging Company (facing south-west and north).

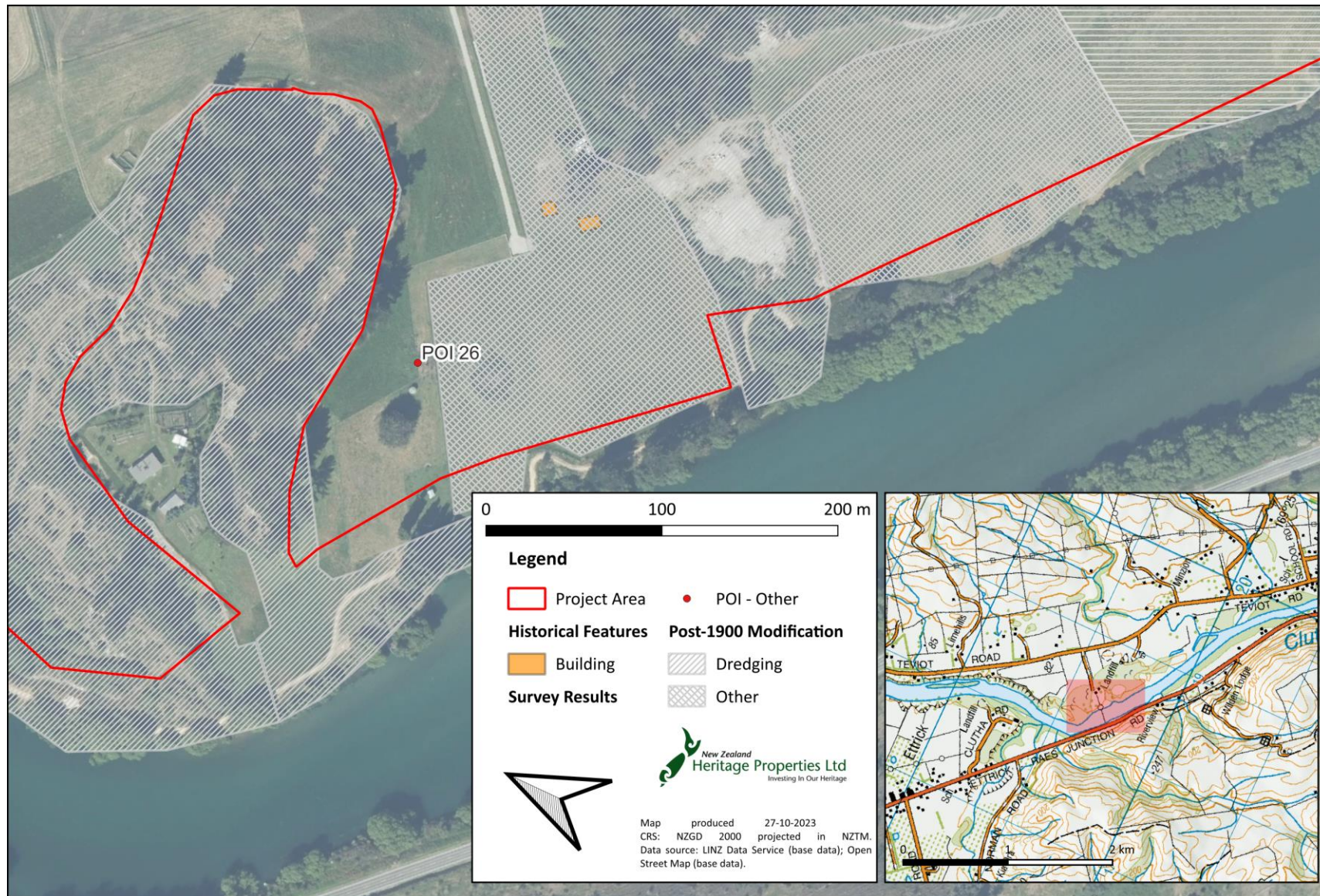


Figure 5-52. Plan of features associated with Grant and the Golden Bed Dredging Company identified from historical maps and during the survey. Post-1900 modifications within the project area are also shown. Note some of these post-1900 modifications are associated with the Golden Bed Dredging Company, the other areas are associated with the modern mine operations.



Figure 5-53. Discarded haul rope (POI 26).

5.3.2.2 Summary of Historical Research and Site Survey Results

Historic research identified one building (shown in slightly two different locations when historic maps were georeferenced) and a R.A. associated with Peter Grant in the 1890s within the project area. Any remains of this building were destroyed by later twentieth century dredging. In spite of this, the R.A. associated with Grant did extend beyond the extent of the later dredging. Grant was associated with the Golden Treasure No.2 Dredging Company, and the later Golden Bed Dredging Company who were responsible for a large portion of the post-1900 dredging throughout the project area. Haul rope (POI 26) was found adjacent to this area of dredging and is likely associated with the post-1900 works.

5.3.3 Smith, Bennet and Company

Beyond the extensive Kitto mining activities, there were other operations being undertaken throughout the project area in the 1900s. This includes W. Smith and the Bennet and Company which operated through the later Sections 90, 92, and 118 (Figure 5-7). A summary of key events associated with Smith and Bennet and Company are provided in Table 5-3. The 1884 plan (Figure 5-54) shows a house (as mentioned above) and water race belonging to Smith. As discussed above, any trace of Smith's building was destroyed by later mining works associated with the Golden Bed Dredging Company. Little is known about Smith; however, it is possible he formed part of Bennet and Company who ran the Excelsior Dredge, along with the namesake George Bennet and another individual named Henderson (Otago Witness, 1885; Tuapeka Times, 1888a).

This is supported by the 1897 plan which shows Smith's water race, instead labelled with Bennet and Company (Figure 5-55). Bennet and Company were the first miners in the area to shift from the wheel dredge to steam power (Otago Daily Times, 1898). The company had been dredging the Clutha River/Mata-Au from 1883 (Tuapeka Times, 1896a), and specifically at Millers flat from at least 1888 (Tuapeka Times, 1888a). Notably their race led to a dam reserve, and it is possible the dam was there from 1884, when the race was labelled "Smith". The corner of the dam itself can be seen in an 1895 plan (Figure 5-56). Bennet & Company had another race leading southwest from the dam and another running along almost the entire length of the western edge of the project area. The latter follows a similar alignment to an earlier Kitto family race and it is possible it is the same one. By 1899,

Bennett and Company (then formed of Bennett, Nailor and Henderson) were running the Excelsior Dredge (Otago Witness, 1899).

Table 5-3. Summary key events for land occupied by Smith, Bennet and Company.

Year	Event	Source
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1884	Smith has one building on the land by this date. Part of land subdivided into Sections 44 to 37 through which Smith's water run transected	SO 182
1895	Smith/Bennet and Company am present by this date	SO 3195
1897	Bennett and Company clearly associated with Smiths former race and dam, and new race established running parallel to Clutha River/Mata-Au	SO 3225
1900	Land becomes part of Section 70, included in the Golden Bed Dredging Company's mining claim.	SO 3255
1903	Golden Bed Dredging Company had dredged into Section 70 by this time, with the remaining property forming part Section 79, included in another mining claim for Golden Bed Dredge Company	SO 3264
1924	Section 90 formed at this time with twentieth century dredging having occurred through this section	SO 3314
1927	Railway reserve and Section 92 established across location of Bennet and company's former race	SO 3320
1928	Section 92 sold to Frederick Robert Parker	CT230/94
1944	Part of the Bennett and Company races modified by this date by post-1900 dredges, two further races present by this date	Retrolens: SN291 Run 758/74
1954	Section 90 sold to Robert Charles Skevington	CT 374/111
1971	Section 118 formed from railway reserve	SO 17282



Figure 5-54. Detail of SO 182 (1884) shown features relating to Smith including a water race (blue arrow) and building (red arrow).

The 1944 aerial photograph shows at least part of the Bennett and Company water races were destroyed by the post-1900 dredging (Figure 5-57). Beyond this there is no trace of the dam, though it appears the two races leading to and from it may still be visible connecting through the centre of the property. Also notable in the 1940s photograph (Figure 5-57) are two other races one leading southeast and south from the dam location. These are

not shown on the earlier plans; however, given their relationship to the dam location, it suggests they too were associated with Bennet and Company.



Figure 5-55. Detail of SO3225, dating to 1897, showing detail of occupation relating to Bennet and Company at this time including a water race (blue arrows) and other mining features (green arrows).

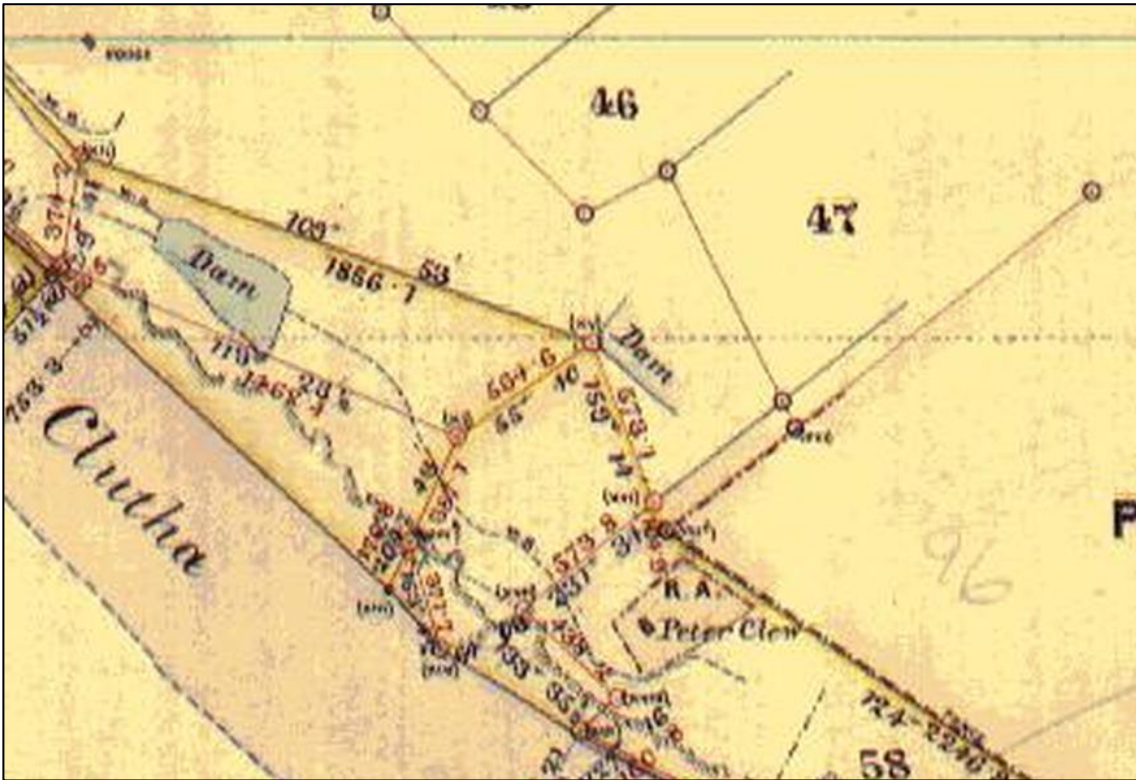


Figure 5-56. Detail of 1895 plan (SO3195) shown the corner of the dam within the dam reserve later associated with Bennet and Company.



Figure 5-57. Part 3 of a panorama showing the project area from around 1903 showing the Bennet and Company dam (green arrow) as well as both Bennet and Company, and Kitto's water races (blue arrows) (Unknown, 1903c)



Figure 5-58. 1944 Aerial Photograph (Retrolens: SN291 Run 758/74). By this time there is only a possible remnant visible of the Smith and Bennet and Company's race (dark blue arrow). Note the presence of two further possible water races (light blue arrows)

5.3.3.1 Site Survey

Similar to Kitto's mining activities, almost all remains of Smith, Bennet & Co.'s mining activities have been obscured by later activities. A map is shown below of the features relating to Smith, and Bennet and Company identified from historical maps and during the site survey (Figure 5-60). The Smith building on the 1884 plan Figure 5-54 was shown to be just outside the project area. However, given its proximity to the boundary, the area was surveyed for archaeological remains. This area had been destroyed by the 1903 dredge works that were shown on plan Figure 5-47. As a result, only the tailings of these dredge works remained, and these had been landscaped to form a domestic parcel including a house and garden (Figure 5-59).

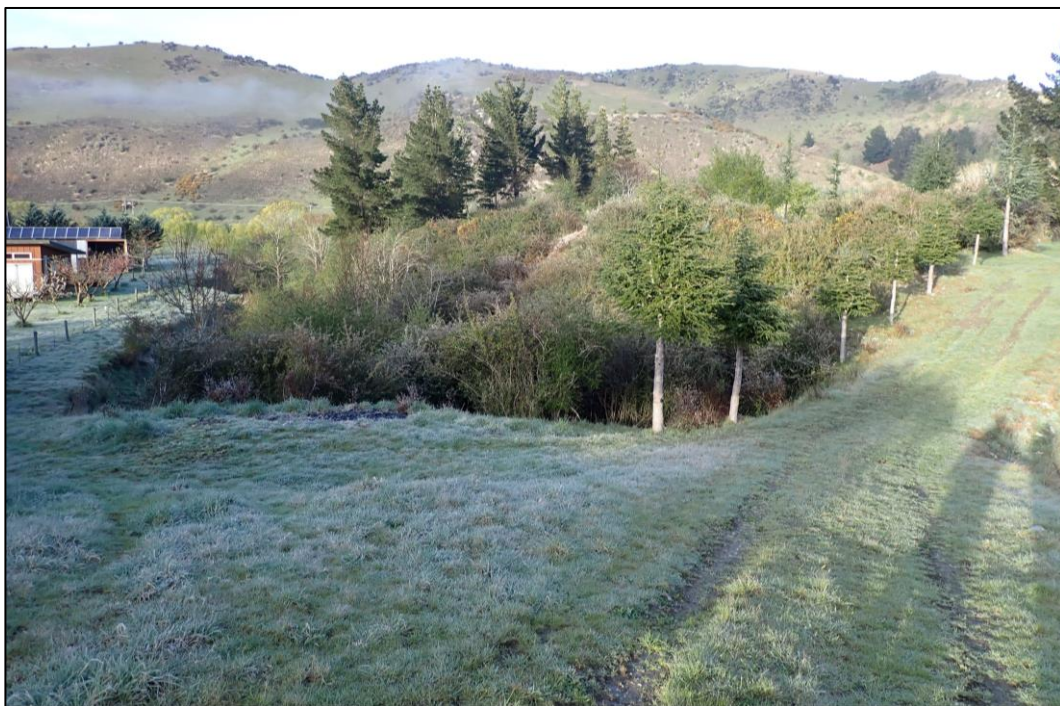


Figure 5-59. 1903 Tailings in the location of the Smith building (facing south-west).

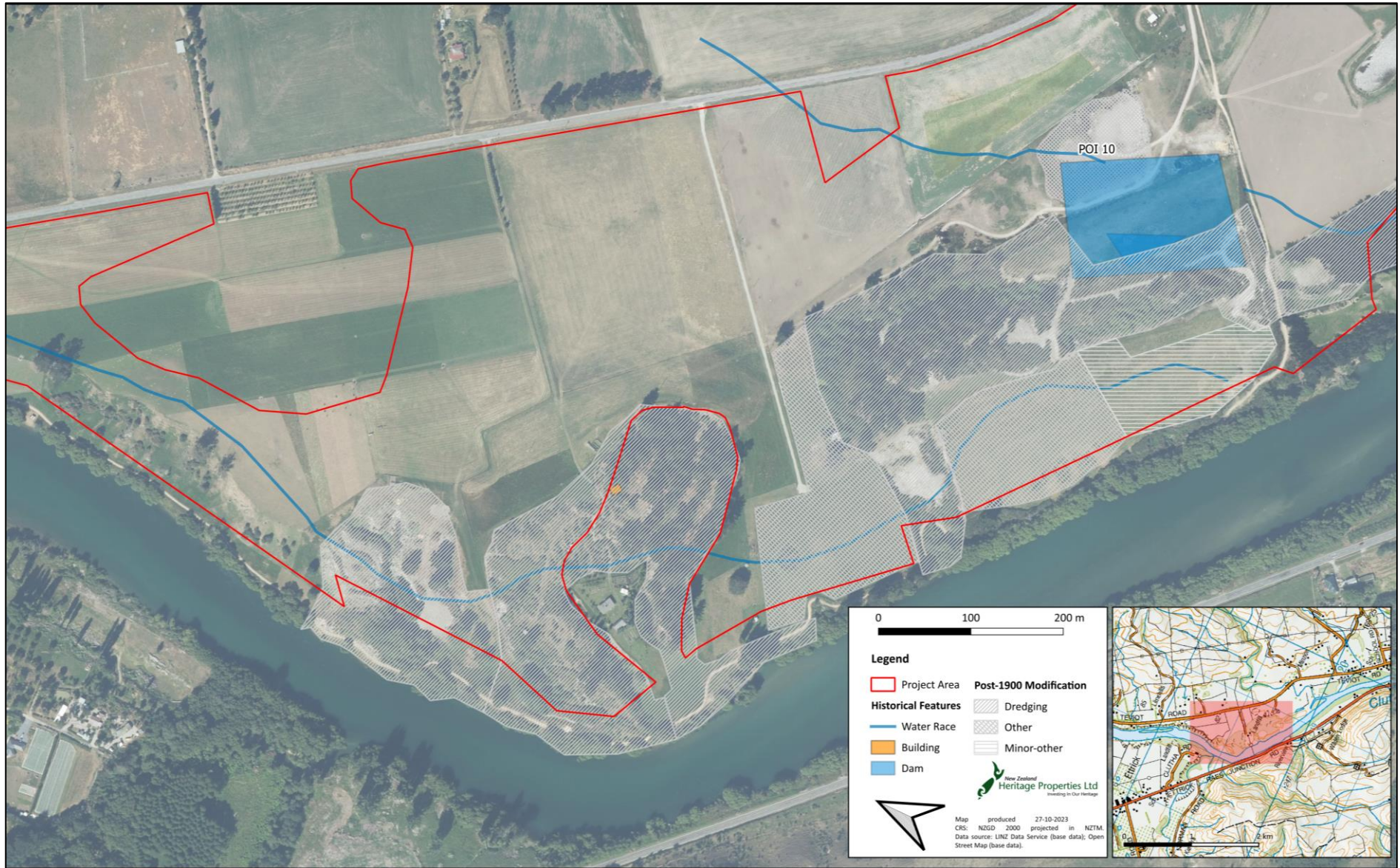


Figure 5-60. Plan of features associated with Smith, and Bennet and Company identified from historical maps and during the survey. Post-1900 modifications within the project area are also shown.

No remains of the large dam shown on both the 1895 plan (Figure 5-56) and 1903 photographs were located during the survey. The area where the dam is recorded is on a piece of flat land by previous dredge works on the outskirts of the modern mine area (Figure 5-61). It is possible that the area was flattened after the dredge works in the area as shown on the 1924 plans (Figure 5-49). There is also no sign of the races that fed the dam and were visible on the 1940s aerial photograph, however it is possible that these were destroyed during later excavations as a greenwaste dump (POI 10) had been dug to the north-east of the dam area (Figure 5-62). This covers a large portion of the races visible in the 1940s aerial and indicates that this is a relatively recent excavation. Any pre-1900 archaeological remains in this area, would have been destroyed by this land modification.



Figure 5-61. Recorded location of Bennet & Co. dam facing south.



Figure 5-62. Modern greenwaste dump to the north-east of Bennet & Co. dam (facing north).

5.3.3.2 Summary of Historical Research and Site Survey Results

Historic research identified one building on an 1884 plan associated with W Smith located within the centre of the project area. Water races and a dam associate with Smith and later Bennet were also identified. Any remains of the

building, part of the dam and water races were destroyed by later twentieth century dredging as well as a large greenwaste dump (POI 10). Part of the modern Hawkeswood mine did extend over one of the Smith and Bennet water races. However, it was not possible to identify if the feature had been removed prior to this. In spite of this, part of the Smith and later Bennet and Company dam and water race extend beyond these areas of modern modification. While no surface remains were identified during the site survey there is potential for remains to have survived subsurface.

5.3.4 Residential Areas: Nils Peter Clough, A Pringle & J Noble

Throughout the project area several sections of land were designated as Residential Areas (R.A.) on top of those associated with the Kittos and Grant discussed above. These were likely associated with miners who had or worked on claims nearby. These R.A. are location within the more recent land parcels of Section 106 and Crown Land (Figure 5-7). A summary of key events is outlined in Table 5-4.

Table 5-4. Summary key events for land occupied by Clough, Pringle and Noble.

Year	Event	Source
1872	Cob and thatch house established in what would become the southern R.A. in mining reserve	Government Valuation Roll, 1897
1874	R.A. boundary established within mining reserve by this date	SO 181
1881	Timber and iron house and associated wash house constructed in northern R.A. in mining reserve	Government Valuation Roll, 1897
1884	Southern R.A. contains building by this date, likely occupied by Peter Clough	SO 182
1896	Clough advertising sale of R.A. including two-roomed house and sledge hut. Land occupied by Richard Williams at this time.	(Tuapeka Times, 1896b)
1897	Southern R.A. with 1872 house is associated with Clough by this date. The northern R.A. is now occupied by A Pringle with the 1881 house present. A third R.A. established in Section 89 this year, containing a two-roomed cottage and outbuildings constructed by Kitto and occupied by J Noble.	SO 3225; (Tuapeka Times, 1897a)
1921	License for residential previously occupied by Clough granted to Joseph Thomas Parker and land eventually formally subdivide as Section 106.	OT1D/1456; SO 15961
1962	R.A. associated with Pringle subsumed as part of crown land prior by this date	(Penney, 1962)
1997	Crown land sold to Miriam Helen Park and Russell Douglas Checketts	18C/235

Within former mining reserve land there are two R.A. shown in the 1874 plan within the project area (Figure 5-63); however, there were no buildings shown on either section at this time. Yet, in spite of this, Government Valuation Rolls indicate there was a cob and thatch dwelling constructed on the site around 1872 in the southern R.A. The building is visible in the 1884 plan (Figure 5-64), and by 1895 this building and R.A. is occupied by Nils Peter Clough (also referred to as Kloogh or Clew) (Figure 5-65) (South Canterbury Times, 1882), who had married into the Kitto Family. Unfortunately, Clough found himself mixed up the Kitto family drama: after hearing the screams soon after John Kitto (Clough's brother-in-law) had shot Joseph Roggiero, Clough himself was shot (South Canterbury Times, 1882). This suggests that Clough had been living in the area since at least 1882, and it is possible that he occupied the building present in the 1884 plan from this date. Clough was working on the Clutha/Mata-Au next to Millers Flat from at least 1883 (Tuapeka Times, 1883), though the first record of an occupation license being issued to Clough at Millers Flat was in 1888 (Tuapeka Times, 1888c).

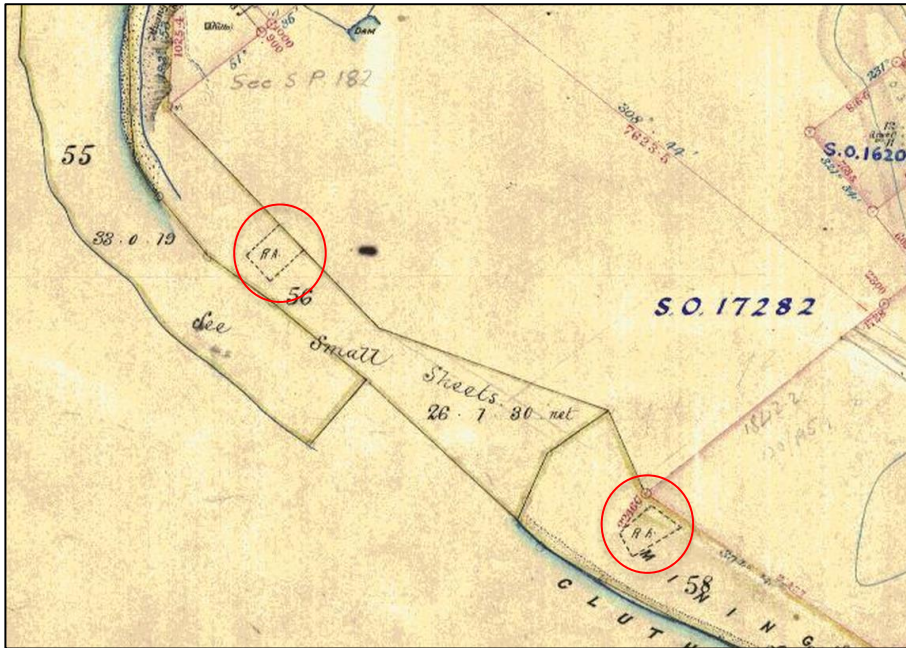


Figure 5-63. Detail of SO 181 (1874) showing two R.A. (circled red).



Figure 5-64. Detail of SO 182 (1884) showing R.A. with a building (circled red).

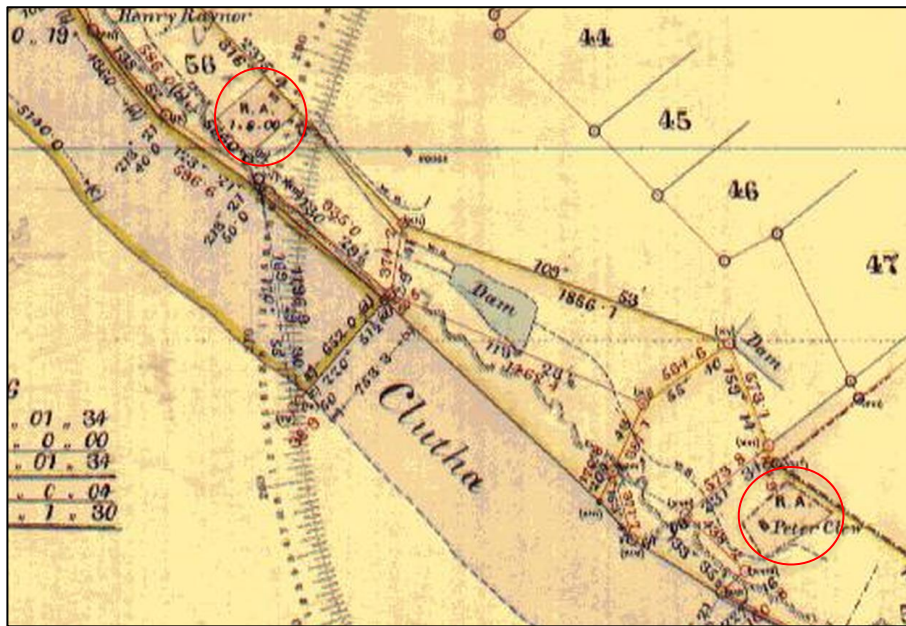


Figure 5-65. Detail of SO 3195 (1895) showing R.A. and buildings (circled red).

In 1896, Clough sold his R.A. at Miller's Flat, and the property was described to have "a two-roomed house (24ft x 12f), lined throughout with timber; a sledge hut (16ft x 9ft), with Occupation Area containing 12 acres of land, partly planted with all kinds of Fruit Trees" (Tuapeka Times, 1896b). Notably at this time the property was occupied by a Richard Williams (Tuapeka Times, 1896b), not Clough. Just two years later in 1897 (Figure 5-66), the Clough's property had been taken over by Adam Pringle. Pringle's property can be seen in the 1903 panorama of the area (Figure 5-67). Likely any trace of the Pringle's occupation area was removed as a result of early twentieth century dredging through this area (Figure 5-69). It is unclear if Adam Pringle was any relation to John Pringle who led Pringle and Party with Geroge McLay and John McKenzie (Otago Witness, 1899). Pringle and Party were running the Steam Gold Dredge near Miller's flat up until January 1895, and that same month they were also reported to be operating the Golden Run Dredge in 1895 (Dunstan Times, 1895; Otago Daily Times, 1895). Though by April of the same year Pringle and Party were ordering another dredge from Christchurch (Tuapeka Times, 1895), and by 1896 they were reported to have some of the best claims in the river as they operated the Pride of the Clutha Dredge (Otago Witness, 1896a, 1896c). A photograph referred to as "Pringle's Dredge" at Miller's Flat may one of those be associated with Pringle and Party (Figure 5-70).

The 1874 and 1895 plans showing the northern R.A. that would eventually become Section 106, do not show a dwelling present (Figure 5-63 and Figure 5-65). However, the Government Valuation Roll from 1897 indicates a timber and iron house and associated wash house had been constructed on the property from 1881. There is no name associated with the R.A. in either plan. However, it is likely that the property was occupied by Peter Clough (Kloogh/Clew) (Figure 5-66), as shown in the 1897 survey plans. However, that year the buildings were sold to Richard Kitto and occupied by the Millers Flat Storekeeper Mr McCoombe (Tuapeka Times, 1897a). Clough's, and later McCoombe's house can be seen in the 1903 panorama of the area (Figure 5-68). By this time Thomas Parker had taken over the buildings and R.A. (Government Valuation Roll, 1897). Given the association of Clough with the other R.A. it is possible that Clough never lived on this land. Despite the R.A. was still referred to as Clough's residential area up until 1921 when Joseph Parker obviously purchased the land on which the buildings sat (CT1D/1456). In the 1940s aerial of the area (Figure 5-69) the original building is no longer present, though another is visible behind the original location (likely a replacement constructed by Parker). This later building was removed at some point in the second half of the twentieth century.

To the north of the project area, in Section 89, another R.A. was occupied with two dwellings by J Noble. The buildings comprised a two-roomed cottage and outbuildings that had been constructed by Richard Kitto and sold to Noble (Tuapeka Times, 1897a). Only the very edges of the R.A. extend into the project area, with the houses

themselves well outside the project area. The buildings were not visible in the 1903 photograph or the 1940s photograph (Figure 5-67 and Figure 5-69).

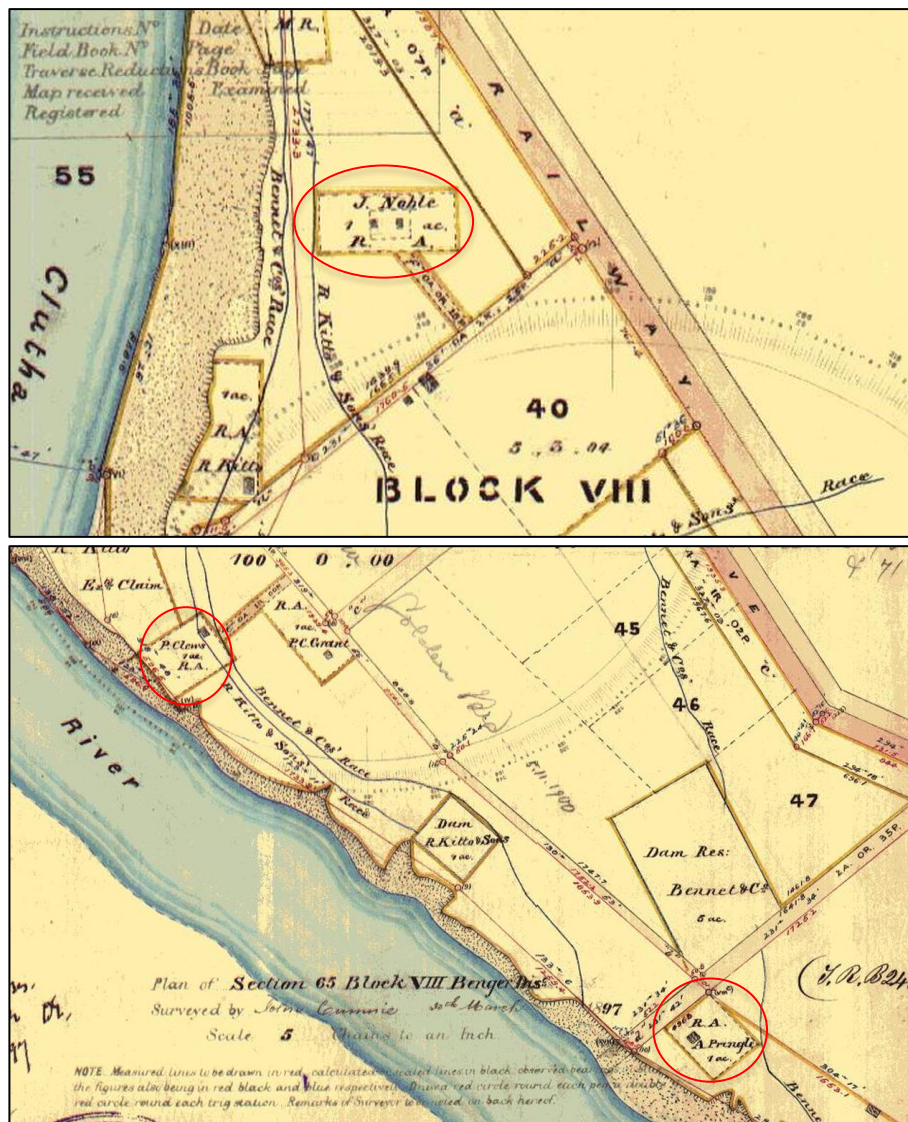


Figure 5-66. Detail of SO 3225 (1897) showing R.A. with buildings (circled red).



Figure 5-67. Detail of Part 4 of a panorama taken of the project area around 1903 showing R.A. (circled red) (Unknown, 1903d).



Figure 5-68. Detail of Part 2 of a Panorama taken of the project area around 1903 showing Clough and later Kitto's R.A. (Unknown, 1903b).

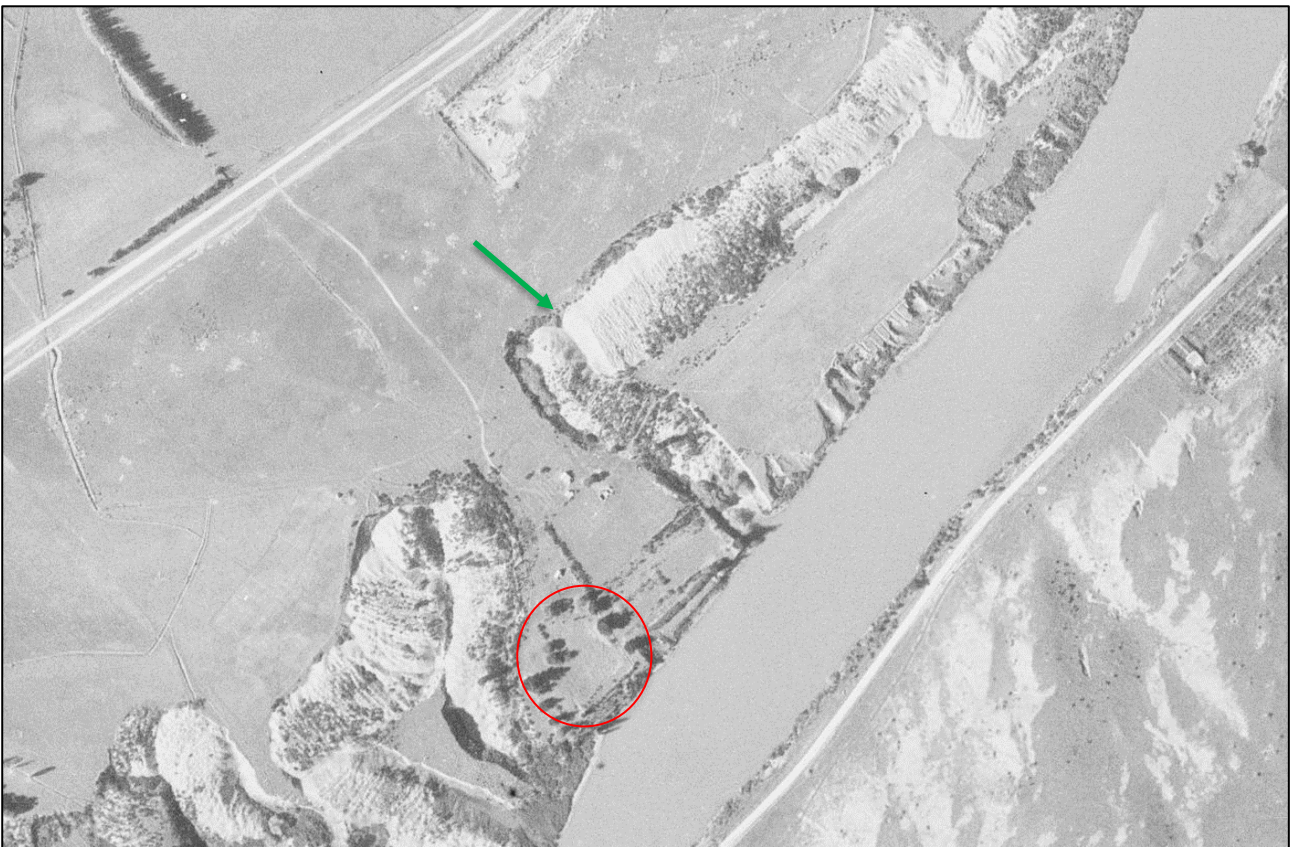


Figure 5-69. 1944 Aerial Photograph (Retrolens: SN291 Run 758/74) showing early twentieth century mining (green arrow) and R.A. associated with Peter Clough.

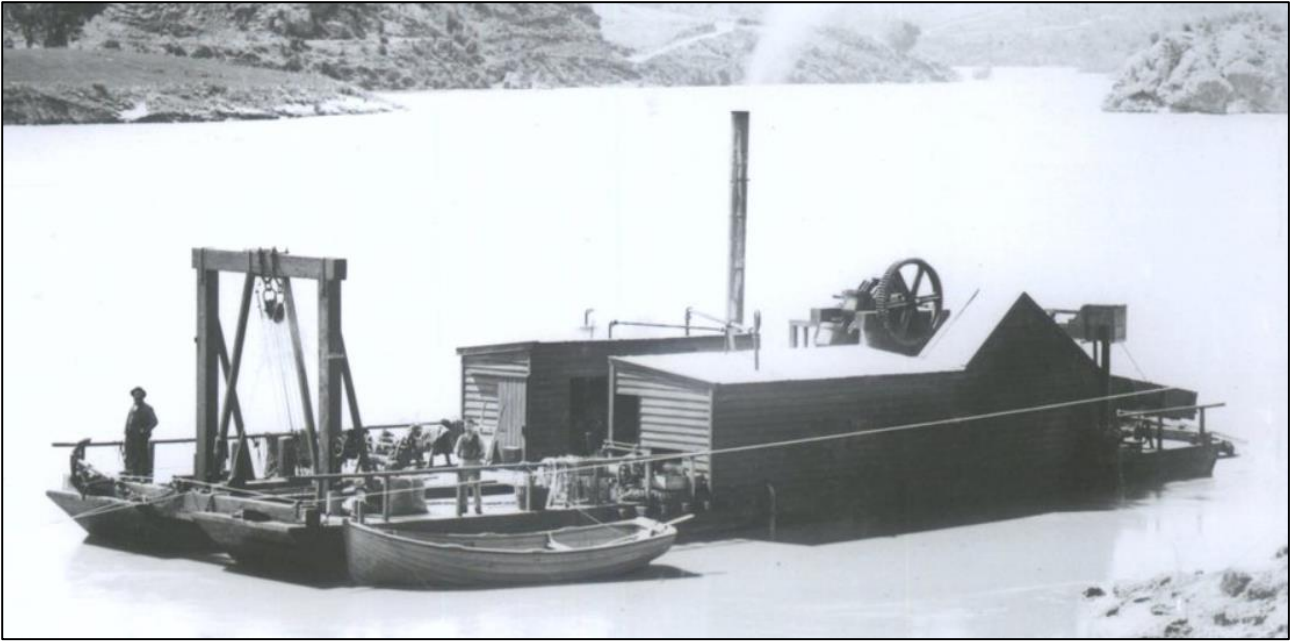


Figure 5-70. Photograph of Pringles Dredge at Millers Flat (*Pringles Dredge, Millers Flat, n.d.*).

5.3.4.1 Site survey

No conclusive remains associated with any of the R.A. were identified during the site survey. A map is shown below of the features relating to the R.A. identified from historical maps and during the site survey (Figure 5-72). The Clough and later A. Pringle R.A. was located in the southwestern corner of the project area. There were no visible remains of the building (Figure 5-71) within the boundary of the R.A. and the location has been heavily disturbed by dredging.



Figure 5-71. Left: Location of POI 21 (facing northwest).

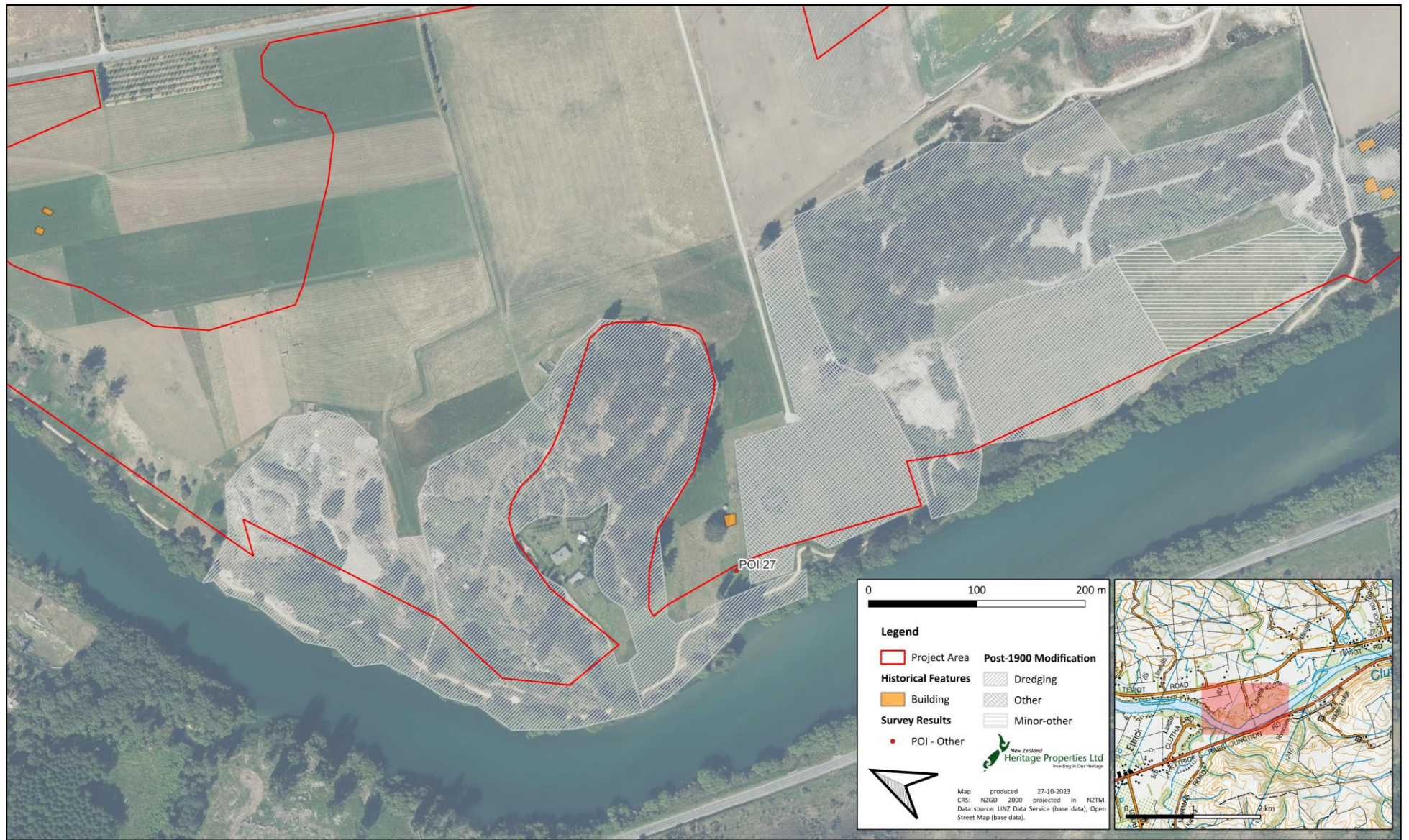


Figure 5-72. Plan of features associated with the R.A. identified from historical maps and during the survey. Post-1900 modifications within the project area are also shown.

The location of the P. Clough R.A. is now an area of flat farmland between the current mining area and the post-1900 tailings (Figure 5-73). While the land appears to be unaffected by mining activities, both modern and historic, there is no surface evidence of the single building recorded on the 1897 plan (Figure 5-66). There is a small structure (POI 27) within the current field boundary however this looks to be of later construction.



Figure 5-73. Left: Location of Clough’s R.A., POI 7 (facing north). Right: Later shed adjacent to the Clough R.A. (facing south-east).

The location of the Noble R.A. has undergone similar land changes to the Clough R.A. The Noble R.A. was located towards the northern extent of the project area (Figure 5-74). The majority of the R.A., including the marked buildings fell outside of the boundary, however the location was investigated as the recorded boundary of the area intersected with the project area. The area is now used as farmland with stock present in the fields and no visible features.



Figure 5-74. Location of Noble R.A. facing west.

5.3.4.2 Summary of Historical Research and Site Survey Results

Historic research identified several buildings and R.A. associated with Nils Peter Clough, A Pringle and J Noble from at least 1872 through to the turn of the century. The building associated with Clough and later Pringle (shown in slightly three different locations when historic maps were georeferenced) to the south of the project area were situated within twentieth century dredging and where any remains would have been destroyed. However, the extent of the R.A. did extend beyond the dredge extent. Remains Clough's later R.A. and house was not identified during the archaeological survey towards the centre of the project area. However, the area had been modified by farming activity and there is potential for subsurface remains to be encountered. The two buildings associated with J Noble sit outside of the project area. Like all other buildings they are no longer present but the extent of the R.A. they are associated with does slightly extend onto the northern boundaries of the project area.

5.3.5 Henry Raynor and Others

Beyond the R.A., there were other buildings established through former mining reserve land including two within the project area. Further pre-1900 sluicing is also present extending into the project area. These features were located within the later Section 95 and Crown Land (Figure 5-7). A summary of key events associated with Henry Raynor and Others is provided in Table 5-5.

The first building can be seen in an 1895 plan (Figure 5-75), just above an area of sluicing and tailings adjacent to the Clutha River/Mata-Au in Section 56 (which would later become part of Section 95). The building is identified as a hut belonging to Henry Raynor. Little is known of Raynor, and by 1897, the building is no longer visible on plans. By 1903 any trace of the building would have been lost to the dredging undertaken through this area (Figure 5-76).

Table 5-5. Summary key events for land occupied by Raynor and others.

Year	Event	Source
1880	Land part of mining reserve	Run Map - South Eastern District, 1880
1895	Hut associated with Henry Raynor within mining reserve	SO 3195
1897	Raynor's hut no longer present. Another unlabelled building present at southern end of mining reserve	SO 3225
1900	Location of unlabelled hut part of Golden Bed Dredging Company mining claim for Section 70. The Golden Bed Dredge was completed and started dredging through Section 70.	SO 3255; (Evening Star, 1900)
1903	Location of unlabelled hut part of Section 79, part of mining claim for Golden Bed Dredge Company (formerly Section 70). No building visible at this location in 1903 aerial	SO 1903; (Unknown, 1903b).
1931	Former location of Henry Raynor's hut within Section 95 established this year. By this time Golden Bed Dredging Company had mined through Section 95. Section 95 was purchased by Joseph Thomas Parker	SO 3328; CT208/150
1962	Location of former unlabelled hut part of crown land prior by this date	(Penney, 1962)
1997	Crown land sold to Miriam Helen Park and Russell Douglas Checketts	18C/235

At the other end of the project area, another building is shown in the 1897 image (Figure 5-77). This building is not labelled or identified in any way. However, it falls within the extent of a large land parcel established at this time: Section 65. This section extends across earlier subdivisions of Block VIII, including Sections 41-47 and former mining reserve. The parcel weaves around existing claims, dam reserves and R.A. and allows for adjoining races to continue through the property. This property would eventually be carved up through the 1900s into Sections 84, 91-95, 102, 110 and Crown Land. By 1903 the building was no longer present or visible in photographs (Figure 5-78). Dredging in the later twentieth century extended through this area, with the building location situated right on the edge of this mining area (Figure 5-79). Consequently, a large portion if not all trace of the building was likely destroyed at this time.

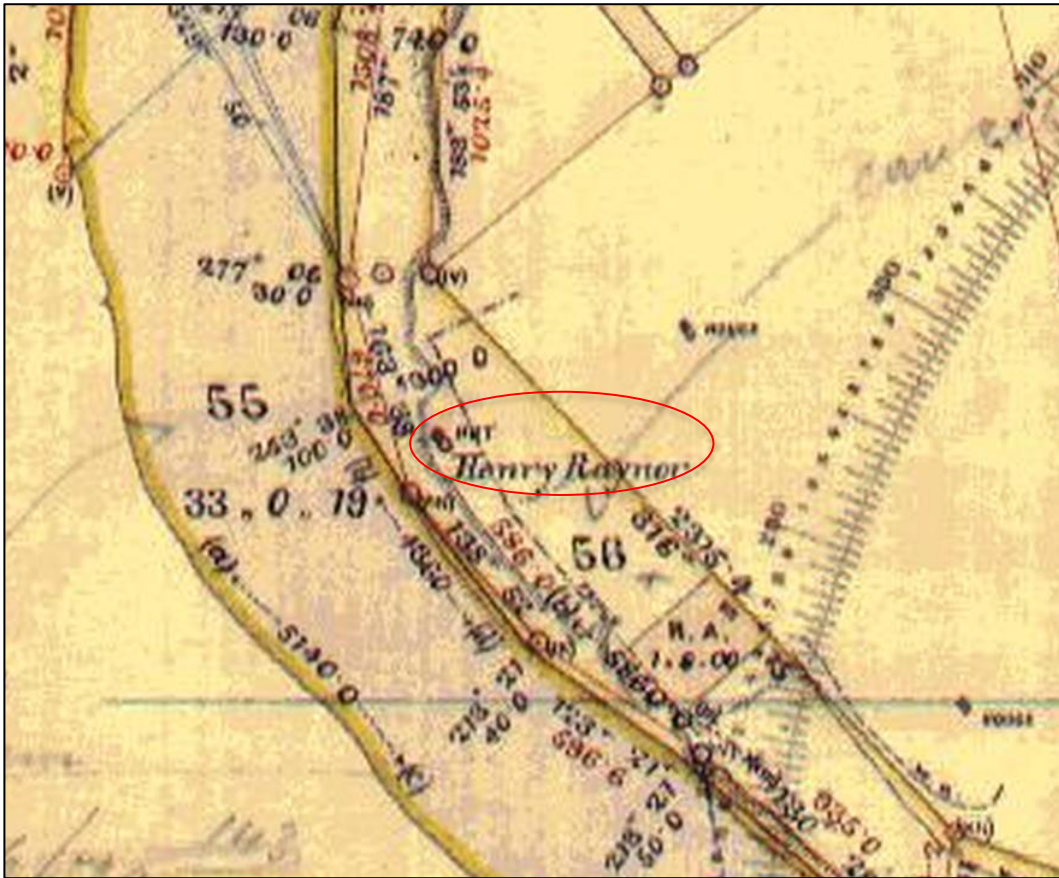


Figure 5-75. Detail of SO 3195 (1895) showing hut belonging to Henry Raynor (circled red).



Figure 5-76. Photograph showing the dredging through the project area by 1903, through the location of Henry Raynor's building (the approximate location shown by the red arrow (Unknown, 1903a).



Figure 5-77. Detail of SO 3225 (1897) showing Section 65 and an unidentified building within the property (circled red). Also note the slicing faces and tailings area extending along the edge of the project area (green arrow).



Figure 5-78. Detail of Part 4 of a Panorama taken of the project area around 1903 showing the approximate location of unidentified building no longer present (circled red) (Unknown, 1903b).

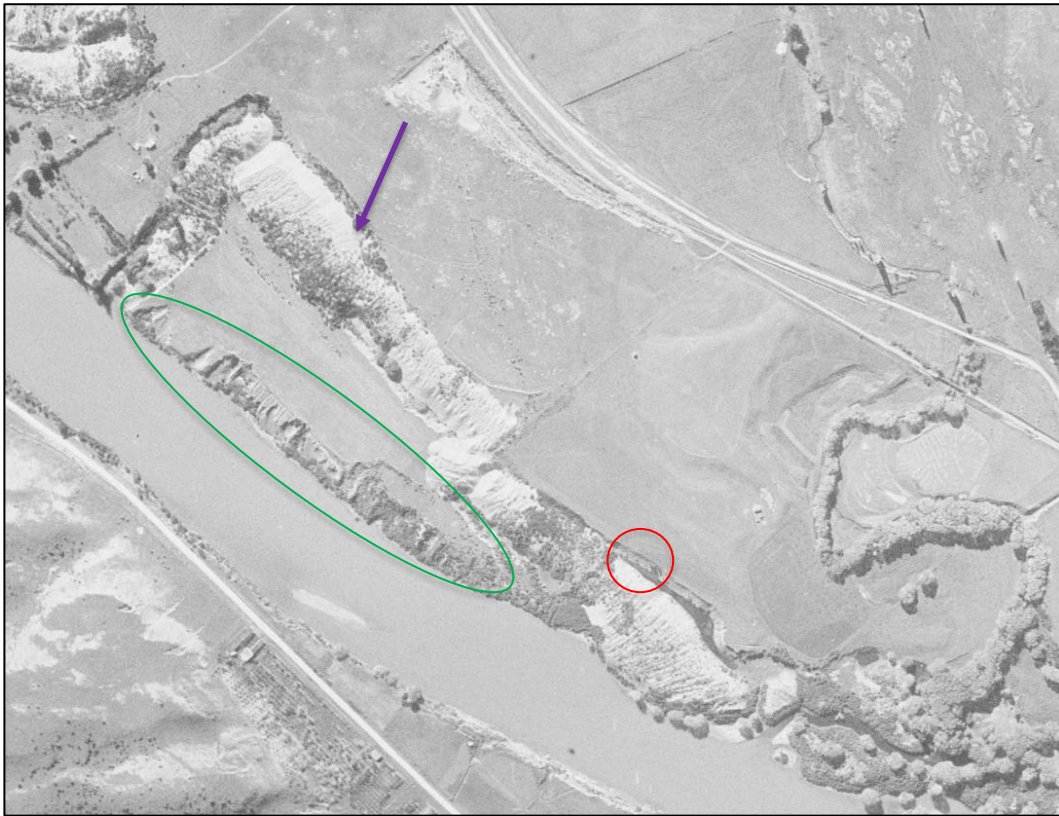


Figure 5-79. 1944 Aerial Photograph (Retrolens: SN291 Run 758/74) showing the approximate location of the 1897 building (circled red), nineteenth century sluicing area (circled green) and early twentieth century mining (purple arrow).

Several sluiced and tailings areas are shown on the 1884 and 1897 plans (Figure 5-77 and Figure 5-80). It is unclear exactly who worked this ground as there were various mining claims being made up and down this stretch of the Clutha/Mata-Au.



Figure 5-80. Detail of SO 1882 (1884) showing sluicing faces and tailings area extending along the edge of the project area.

5.3.5.1 Site Survey

A map is shown below of the features relating to Henry Raynor and others identified from historical maps and during the site survey (Figure 5-82). No remains of the named building belonging to Henry Rayner, along the southwestern edge of the project area were identified during the site survey as the location was part of the later dredging works along the riverbank. The area is now part of the landscaped post-1900 dredge tailings that are part of a domestic section and any remains have been completely destroyed by the dredging (see Figure 5-34).

The lone building on the 1897 plan (Figure 5-77), in the southeast of the project area had no visible remains (Figure 5-81) but there was a concentration of artefacts on the surface that appeared to reflect a pre-1900 deposit nearby (POI 16) (Figure 5-83). Predominantly glass, the material included the tops and bases of dark olive round bottles, case gin bottles as well as fragments of aqua blue and green bottles (Figure 5-84). Occasional ceramics were also noted including a flatware fragment with blue UGTP (Figure 5-84).

The artefactual material suggests the scatter was associated with pre-1900 activity. While artefacts were spread down a slight natural slope (an area of 41m x 6m), the main concentration of artefacts was located on the flat at the crest of the slope (an area of 15m x 5m). It is likely a rubbish pit on top of the slope has been disturbed by recent ploughing activities and archaeological material dragged down the slope. While the glass concentration cannot be conclusively linked to the structure at this point it likely reflects the domestic activities in this area. The artefact scatter has been recorded as archaeological site G44/159.



Figure 5-81. Location of unlabelled building on the 1897 plan (facing north).

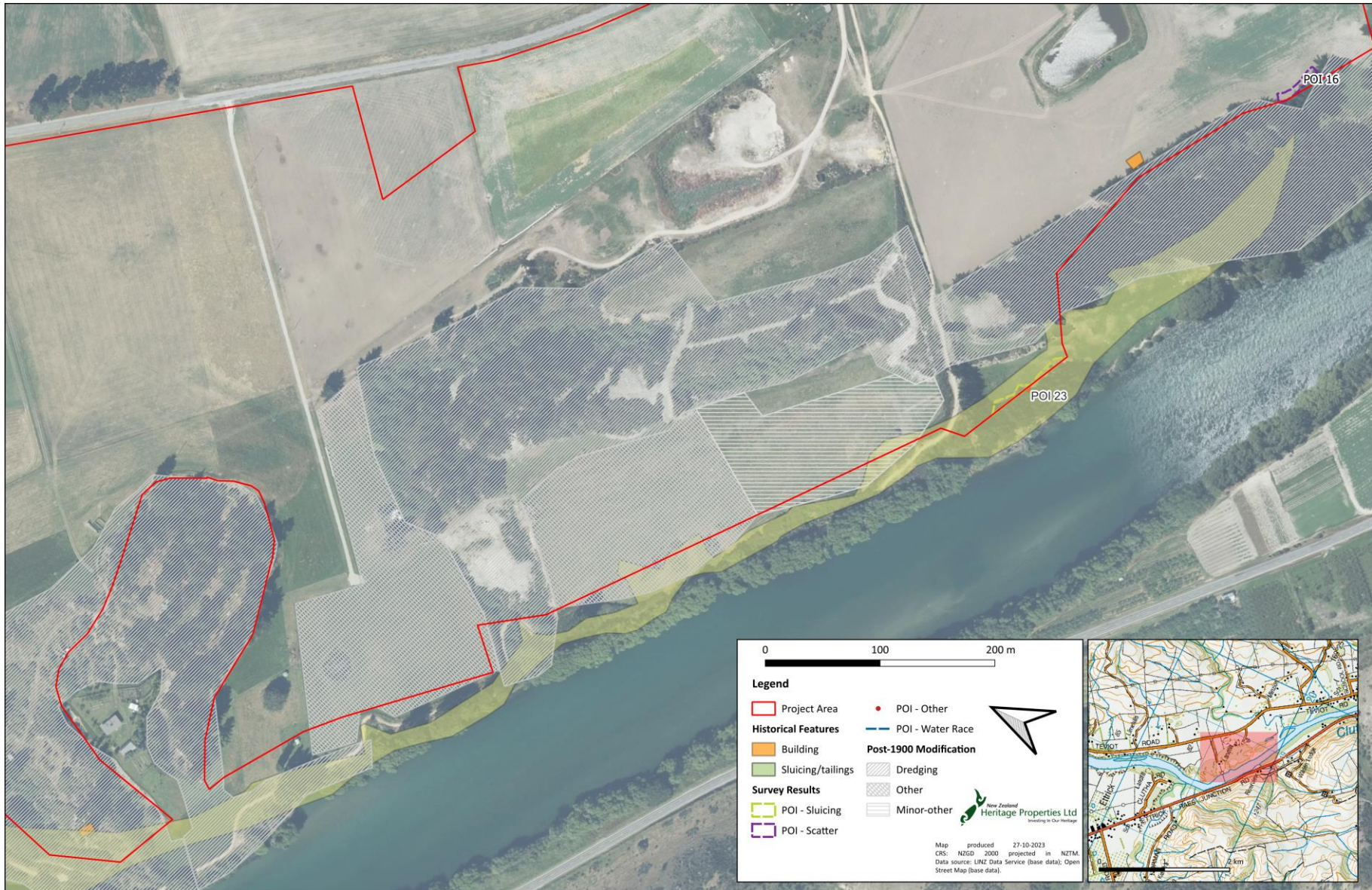


Figure 5-82. Plan of features associated with Henry Raynor and others identified from historical maps and during the survey. Post-1900 modifications within the project area are also shown, however the modern greenwaste tip is not outlined.



Figure 5-83. Left: Location of POI 16 - artefact scatter (facing northwest). Right: Central concentration of artefacts (facing southwest).



Figure 5-84. Surface scatter at POI 16.

Further sluice faces were identified in the southern part of the project area (Figure 5-86; POI 23). Like the other sluice faces in the northwest of the project area, these were also visible on the 1884 and 1897 plans. Portions of this area had been heavily damaged by the later post-1900 dredging; however, approximately 50m of the faces extend into the project area, with the tailings from the dredging run just inland from the faces. The majority of the sluice faces are outside of the project area, in the marginal strip (Figure 5-85). Modification of the ridges of these sluice faces is evident, resulting from tree clearance and the modern hydraulic excavators accessing the rivers' edge to undertake this clearance. Local accounts indicate some small-scale gold panning took place within the sluiced area in the mid-twentieth century, although evidence of this was not clear on the surface. In addition, there are various elements of dredges scattered around the area, including dredge buckets and haul ropes (Figure 5-87). These remains are situated within the extent of archaeological site G43/232 and consequently this archaeological site has been updated with the results of the site survey. It was noted during the site visit that little of this sluice face is visible from the current cycle track, due to the location and angle of the track in relation to the sluice, as well as the extensive vegetation cover.



Figure 5-85. Approximate extent of sludge face and tailings associated with Archsite G43/232. Area within project area is outlined in yellow.



Figure 5-86. Sluicing area along bank of the Clutha/Mata-Au (Left: facing southwest. Right: facing west).



Figure 5-87. Scattered dredge buckets and haul rope (facing southwest). Note the many felled trees across the sluice face.

5.3.5.2 Summary of Historical Research and Site Survey Results

Historic research identified two building on 1880s and 1890s plans. One towards the centre of the project area was associated with a Henry Raynor, the other was unlabelled and to date it has not been possible to identify to whom this building is associated. Raynor's building was located within the extent of later twentieth century dredging and any remains would have been destroyed. The unlabelled building sits right on the edge of twentieth century dredging extents; and while no remains of the building was identified during the survey there is still potential for sub-surface remains to have survived. Not too far away from this former building, a scattered artefacts deposit was identified during the survey in a recently ploughed field. The disturbed remains were likely associated with a pre-1900 rubbish deposit and have been recorded as archaeological site G44/159. Further pre-1900 sluicing and tailing remains (POI 23) aligning with historic plans were identified along the edge of the project area adjacent to the Clutha River/Mata-Au. The remains had avoided modification by later mining activities and a dredge bucket and haul roper were found in association with the pre-1900 worked areas; however, it was noted that more modern disturbance was evident on some sluice faces, including hydraulic excavator tracking. This area falls within the extent of archaeological site G43/233 and as a result the archaeological site record form has been updated with the findings of the survey.

5.3.6 Oven Hills Station

Section 96 covers a large portion of the southern extent of the project area, and it forms part of what was once the Oven Hills Station. The section is first shown in an 1865 plan, SO 16204 (Figure 5-88). Section 96 holds stock yards, a fenced off garden, house and store as well as a water race running through the area (Figure 5-88). However, all of these features sit to the northeast of the project area on the northeast side of Teviot Road. By 1880 the

section was established as Pre-emptive Right land (P.R. E; SO 169) established for Run 200 (like P.R. B; Section 5.3.1), but from 1867 it was recognised as his land was identified as a farm of Walter Miller (Millar). At this time the Crown Grant was issued for the property (SO 16204). Run 200 was one of the earliest runs in the Teviot Valley and the station became known as the Oven Hills Station. Subsequently the station was renamed to Armaglade and then Ormaglade by Miller (Crawford, 2006). Around 1870 John McDonald Henderson joined Miller (Crawford, 2006), with one 1878 plan referring to the farm as Henderson’s Station (Figure 5-89). By 1883 Miller had sold his shares to Henderson (Crawford, 2006). After the death of Henderson, Section 96 - P.R. E, passed to Dick and others, and eventually to Hendersons daughter Mrs Fraser in 1902 (Deed Index K, Folio 200). An agreement between Fraser and the Golden Bed Dredging Company was made in 1907 and it was likely that the company was looking to extend their mining operations into the extent of P.R. E within the project area. Fraser eventually sold this portion of P.R. in 1928.

Table 5-6. Summary key events for Oven Hills Station (Run 200; focusing on Section 96 - P.R. E) and the project area.

Year	Event	Source
1857	Lease applied for by Walter Miller, Station named Oven Hills	(Crawford, 2006)
Circa 1870	Captain John Henderson joins Miller	(Crawford, 2006)
1882	Run 200 subdivided into Run 200 and 200 A	(Otago Daily Times, 1882)
1883	Miller sells his share of Oven Hills (now known as Ormaglade) to Henderson	(Crawford, 2006)
1898	Pre-emptive rights transferred from Henderson to Dick and Others	Deed Index K Folio 200
1899	Millers Flat Electric Gold Mining Company prospecting	(Tuapeka Times, 1899b)
1902	Section 96 (Pre-emptive right E) transferred to Fraser	Deed Index K Folio 200
1928	Fraser sold Section 96 (Pre-emptive right E) to Penrose	Deed Index T Folio 670

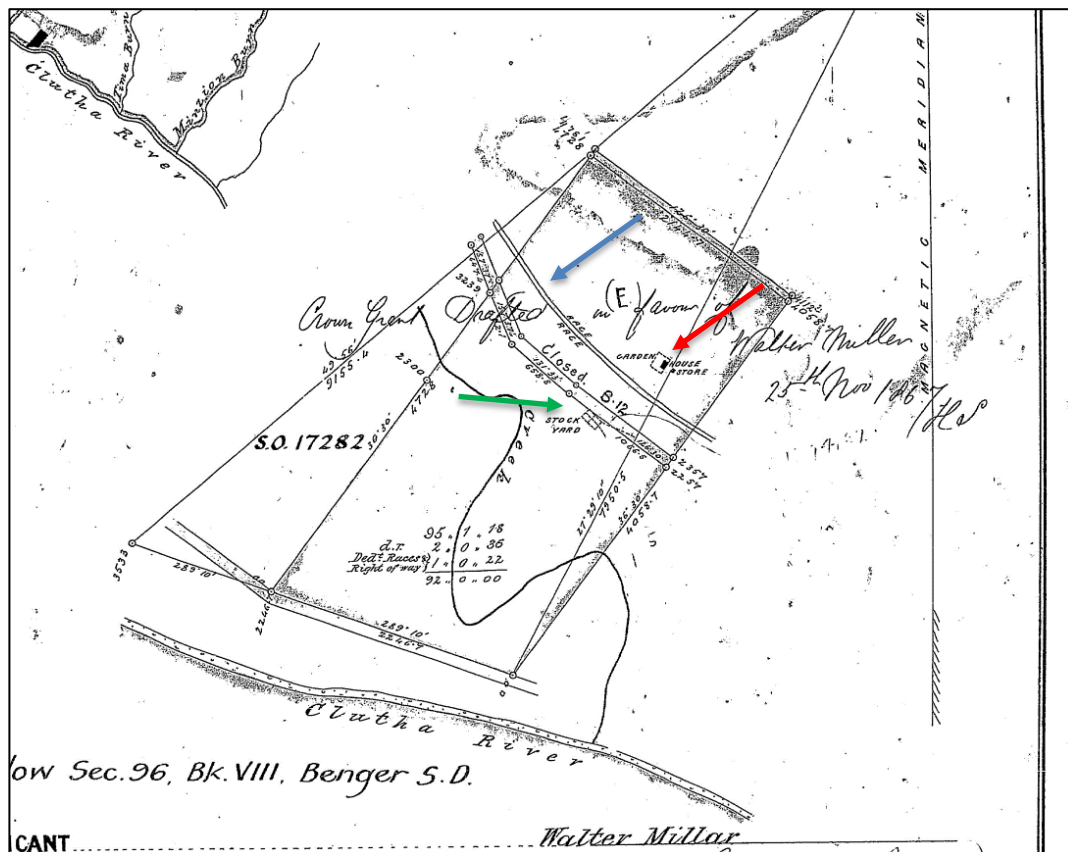


Figure 5-88. Detail of 1887 plan, SO 16204, showing Section 96, Block VIII, and detail of occupation at this time including a water race (blue arrows), buildings and other features (green arrows) and other buildings (red arrow). Note these features sit to the northeast of the project area.

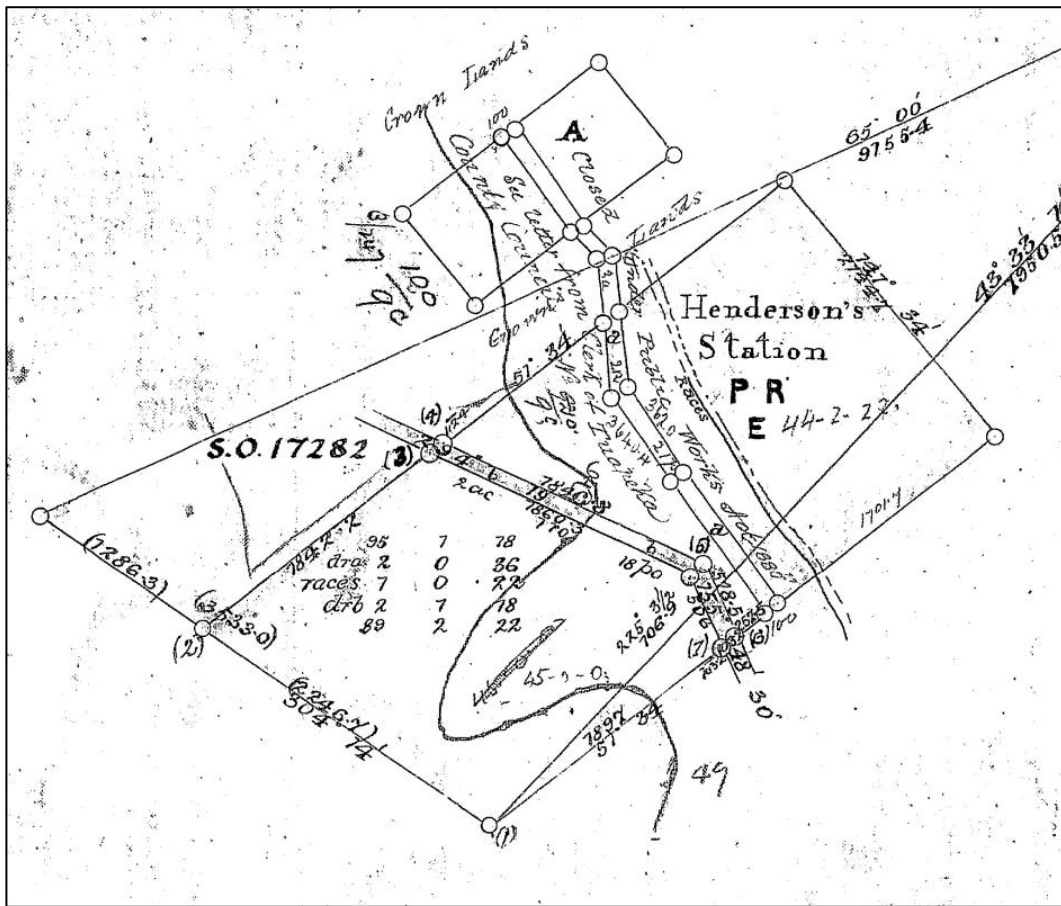


Figure 5-89. Detail of SO 9874 (1878), showing Section 96 – P.R. E.

It is unclear if or how the farm operations extended through the remainder of Section 96 - P.R. E as no evidence of buildings or other ancillary farm structures have been identified within the project area, south of Teviot Road prior to 1900. While predominantly farm land, along the edge of the Tima Burn, the land formation in 1927 is shown in SO 15177 (Figure 5-90) suggesting that some mining may have occurred around the banks of the river at this time. It is unclear if this is associated with the occupants of the farm land or if they allowed other miners to come in and work the banks. Old tailing remains are shown at the mouth of the Tima Burn in 1897 plans (SO 3217) and it is likely workings extended up the creek itself. There was prospecting undertaken on part of Ormaglade Station's pre-emptive right by Millers Flat Electric Gold Mining Company (Otago Daily Times, 1899). Notably the prospecting was undertaken by P.C Grant who was occupying one of the R.A. discussed above in Section 5.3.3.1. Grant undertook this exploration with the dredge master R. White. The results were positive with four shafts sunk through the section indicating the presence of "gold-bearing wash from within a few feet of the surface down to the depth of some 20ft, the greatest depth it was possible to sink without timbering" (Tuapeka Times, 1899b). The results were a good indication for the miners in the area that "the gold-bearing drifts are not confined to the present river-bed; and... that an equal area of the flat contains far more gold than the river-bed" (Tuapeka Times, 1899b).. There were also earlier applications for proposed water races opposed to by the manager of the Ormaglade Station claiming the works would cause damage to the property (Tuapeka Times, 1888b).

Anecdotal evidence suggests the Tima Burn alignment was altered in the late twentieth century, shifting southeast and removing the braided nature of the creek to form a single channel. This work was said to include the modification of the surrounding land, including the burning and bulldozing of the willows (Figure 5-91). Comparisons of historic aerials from 1944 and 1980 show the same alignment, however, when comparing this alignment to the modern hillside, the line of the Tima Burn has shifted to the east. Modern hillshade imagery clearly shows the current alignment of the Tima Burn (Figure 5-92), along with the shallow outline of the former alignment. This indicates the area was not entirely levelled during realignment, and therefore there is still potential for intact archaeological deposits in the surrounding soils.

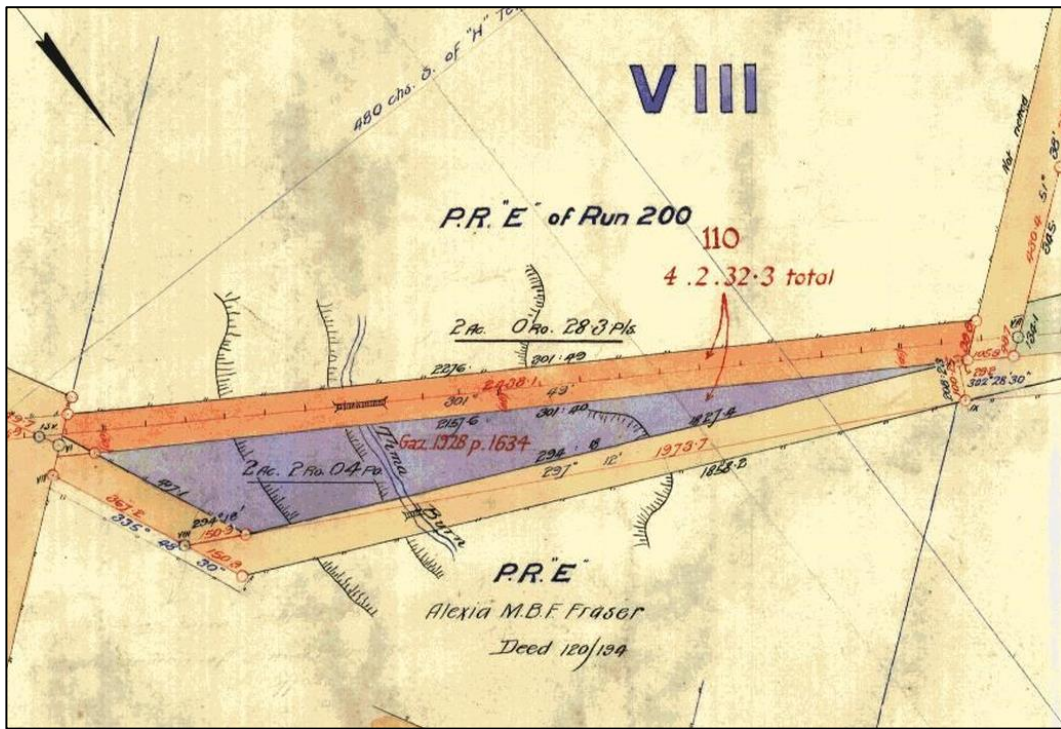


Figure 5-90. Detail of SO15177 (1927) showing land formation around Tima Burn at this time.



Figure 5-91. Retrolens aerial images showing the historic Tima Burn alignment in 1944 (left) and 1980 (right), with no visible change in alignment (LINZ, 1944, 1980). Current aerial image at the bottom shows the modern alignment has changed to drop south and east (LINZ, 2023).

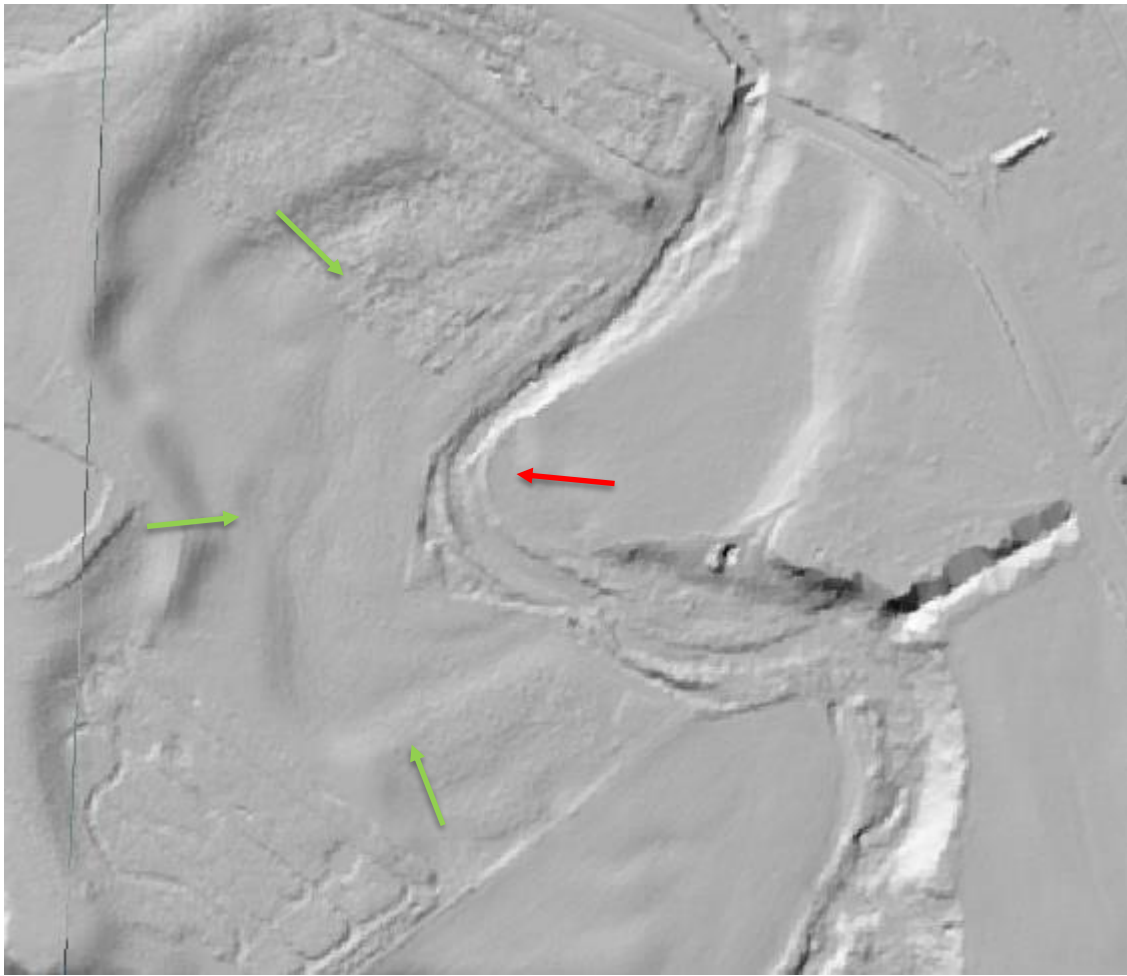


Figure 5-92. 2021 hillshade LiDAR imagery showing the project area boundary (red line), current Tima Burn alignment (red arrow), and historic Tima Burn alignment (green arrows) (LINZ, 2021).

5.3.6.1 Site Survey

A map is shown below of the features located with the Oven Hills Station area identified during the site survey (Figure 5-94). As expected, there were no visible remains associated with the water races, stock yards or domestic dwelling within the project area. The west bank of the Tima Burn had a mound of piled stone and dirt, similar to tailings seen in other areas (Figure 5-93). While this may be originally from tailings or mining of the creek, the current placement of this stone within the former east bank of the creek suggests that these stones have been disturbed, and likely placed here during the redirection of the creek in the later twentieth century. The Tima Burn has also previously been associated with pre-contact Māori occupation and so it was surveyed for any potential features. While there was no conclusive evidence of any Māori archaeology on the project area side of the creek, a single piece of unidentified shell (POI 13), was viewed in the recently ploughed field. There is potential this disturbed shell is evidence of historic disturbance of archaeological features, with the late twentieth century realignment of the creek churning up archaeological deposits of shell, and mixing them into the new paddock soils. The current banks of the creek was searched for any further shell deposits, but nothing was identified.



Figure 5-93. Left: Potential tailings adjacent to Tima Burn (facing north). Right: Piece of shell in ploughed field.



Figure 5-94. Plan of features within the Oven Hills Station identified during the survey. Post-1900 modifications within the project area are also shown.



Figure 5-95. Mining debris left on tailings along Tima Burn.

5.3.6.2 Summary of Historical Research and Site Survey Results

Historical research identified little in the way of historical features extending through the former property associated with Oven Hills, later, Ormaglade Station, within the project area. However, one plan did show land formations alongside the Tima Burn which may be indicative of former mining through this area, with later realignment of the creek itself also changing the landscape. During the archaeological survey, potential tailings were recorded (POI 14). While this was located beyond the extent of the project area, it is indicative of the potential for mining in the area. Just north of the Tima Burn a fragment imported shell (POI 13) was identified during the survey in a recently ploughed field. The origin of the shell is unclear; however, there is potential it relates to a disturb midden associated with manawhenua or Pākehā occupation of this area.

5.3.7 Paper Roads

There are two main paper roads through the project area. Portions of these paper roads start to appear from as early as 1874 and continue to expand through the survey pans of the 1880s and 1890s (Figure 5-96 and Figure 5-97). Roads were established along these routes and can be seen in the 1903 aerial (Figure 5-99). By 1944, only one of the roads is visible, the road through the centre of the project area (Figure 5-100). It is worth noting that the road has been altered by this time, curving south rather than north at the western end. It is likely that while the boundaries of the roads were established early on, the roads themselves were likely little more than dirt paths that could be easily shifted to make way for development of the project area throughout the nineteenth and twentieth centuries.

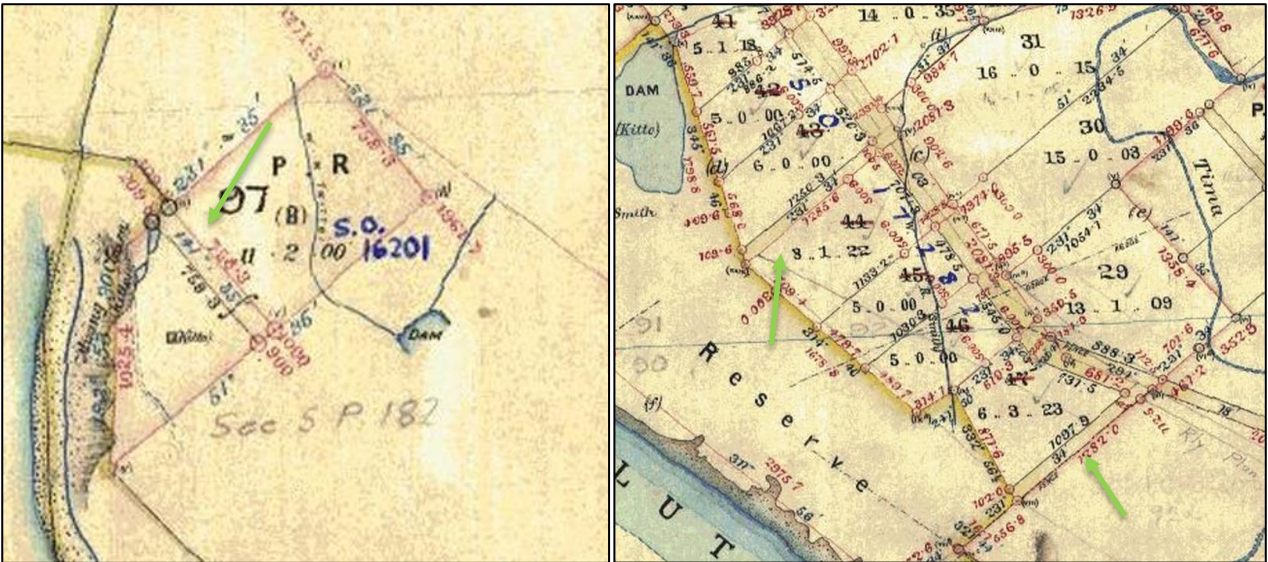


Figure 5-96. SO 181 (1874; left) and SO 182 (1884; right) showing paper roads (green arrows).

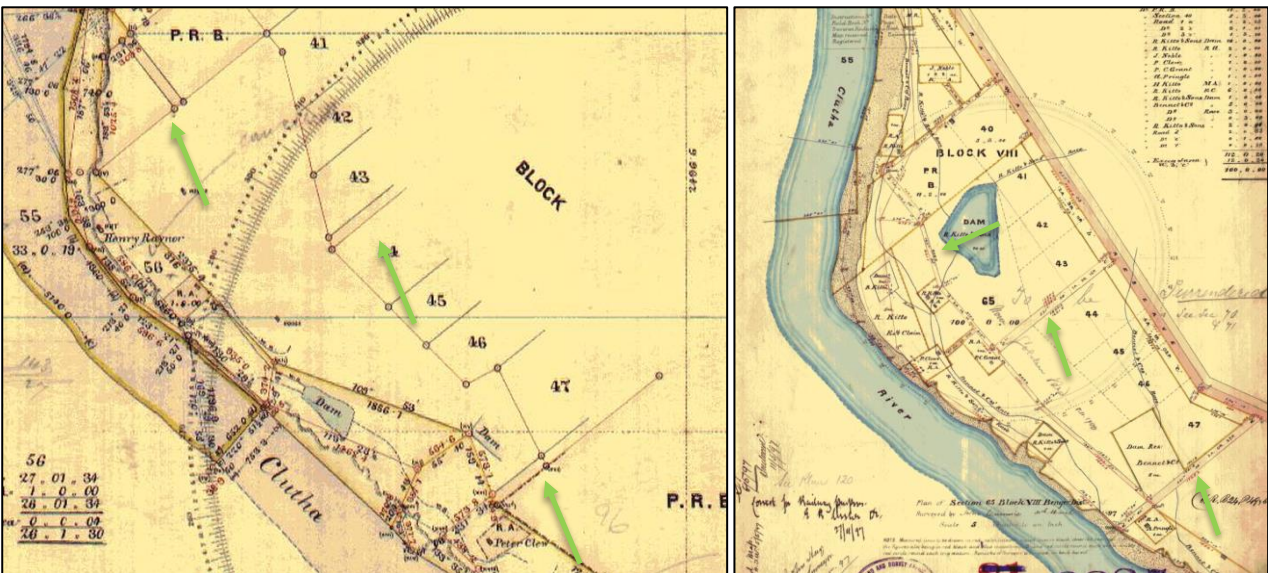


Figure 5-97. SO 3195 (1895; left) and SO 3225 (1897; right) showing paper roads (green arrows).



Figure 5-98. Part 2 of 1903 panorama showing pre-1900 roads (green arrows) (Unknown, 1903b).



Figure 5-99. Part 3 of 1903 panorama showing pre-1900 road (green arrow) (Unknown, 1903b).



Figure 5-100. 1944 Aerial Photograph showing road through the project area (yellow arrows) (Retrolens: SN291 Run 758/74).

5.3.7.1 Site Survey

Two of the paper roads shown on the aerials and historic plans were located during the survey. One is currently in use as the main access road to the active mining site and is a formed gravel up until the site office at the southeastern corner of the mine site. Within the same parcel, the Clutha Gold Trail has been constructed along the access road and around the current mine boundary until it reaches the riverbank where it continues, following the line of the riverbank (Figure 5-101). The other road identified is located on the other side of the current mine and has been formed for use as a farm track. Neither of the other paper roads could be identified during the survey.



Figure 5-101. Clutha Gold Trail cycleway next to access road for active mine site (facing north).

5.3.7.2 Summary of Historical Research and Site Survey Results

Two gravel roads were established historically through the paper road area. No evidence of the northern road was identified during the survey. The location of the southern road has been heavily modified as it has been adapted for use overtime. Presently a modern farm and mine access track run through this area along with the Clutha Gold Trail cycleway. There was no evidence of an older track identified during the survey.

5.3.8 Post-1900 Activity

As discussed above in Section 5.3.1, by 1900, the Golden Bed Gold Dredging Company had a mining lease for Sections 65, 70, 75, 79 Block VIII – what would become Sections 89, 93, 94 and 95, as well as Crown Land. By 1903, SO 3264 show dredge workings extending into what was previously Section 70. From there they continued the claim round and back towards the Clutha River/Mata-Au (Figure 5-102). After 1903, dredging was also undertaken over a smaller area to the northwest and a larger area to the southeast. Earlier occupation sites and mining features, as discussed in each section above, as well as any other potential archaeological remains that may have once been present throughout these areas, were destroyed by this twentieth century activity.

Along the northeast extent of the project area ran the Railway Reserve. While the reserve itself shows up in pre-1900 plans, the portion of the railway between Millers Flat and Roxburgh was not completed until the late 1920s (J. A. J., 1928). It is possible that earlier features such as water races were modified by the railway; however, it is likely that much of the track was built up, rather than cut for formation.

Throughout the twentieth century in the areas where mining and the railway reserve did not extend, the project area was predominantly used for farming activity, in particular for fields and stockyards. Consequently, much of the ground has been ploughed numerous times and levelled. Consequently, throughout the twentieth century many features seen in earlier photographs are no longer visible on the ground surface. However, it is worth noting that deeper archaeological features likely survived this farming activity, even if heavily modified, and may be present subsurface.



Figure 5-102. 1944 Aerial Photograph showing post-1900 dredging (green arrows), farmland, and railway line (purple arrow) (Retrolens: SN291 Run 758/74).

5.3.8.1 Site Survey

Several post-1900 land modifications and items were identified during the archaeological survey and historic research (Figure 5-94). Other areas of tailings were identified along the Clutha/Mata-Au riverbank that is associated with post-1900 mining. These areas appear to be the result of the 1903-1924 dredging. These activities likely caused the demolition of much of the pre-1900 structures and infrastructure shown on the early plans along the riverbank (Figure 5-103). Today these areas have been largely wooded and landscaped. Two dredge buckets (POI 19) associated with the post-1900 dredge runs were also identified which bear a striking similarity to the 1895 dredge buckets shown in the historic photo (Figure 5-105). While the buckets may have been first used prior to 1900, they would have likely been in use after as well.



Figure 5-103. Post-1900 tailings (facing south-west and south).

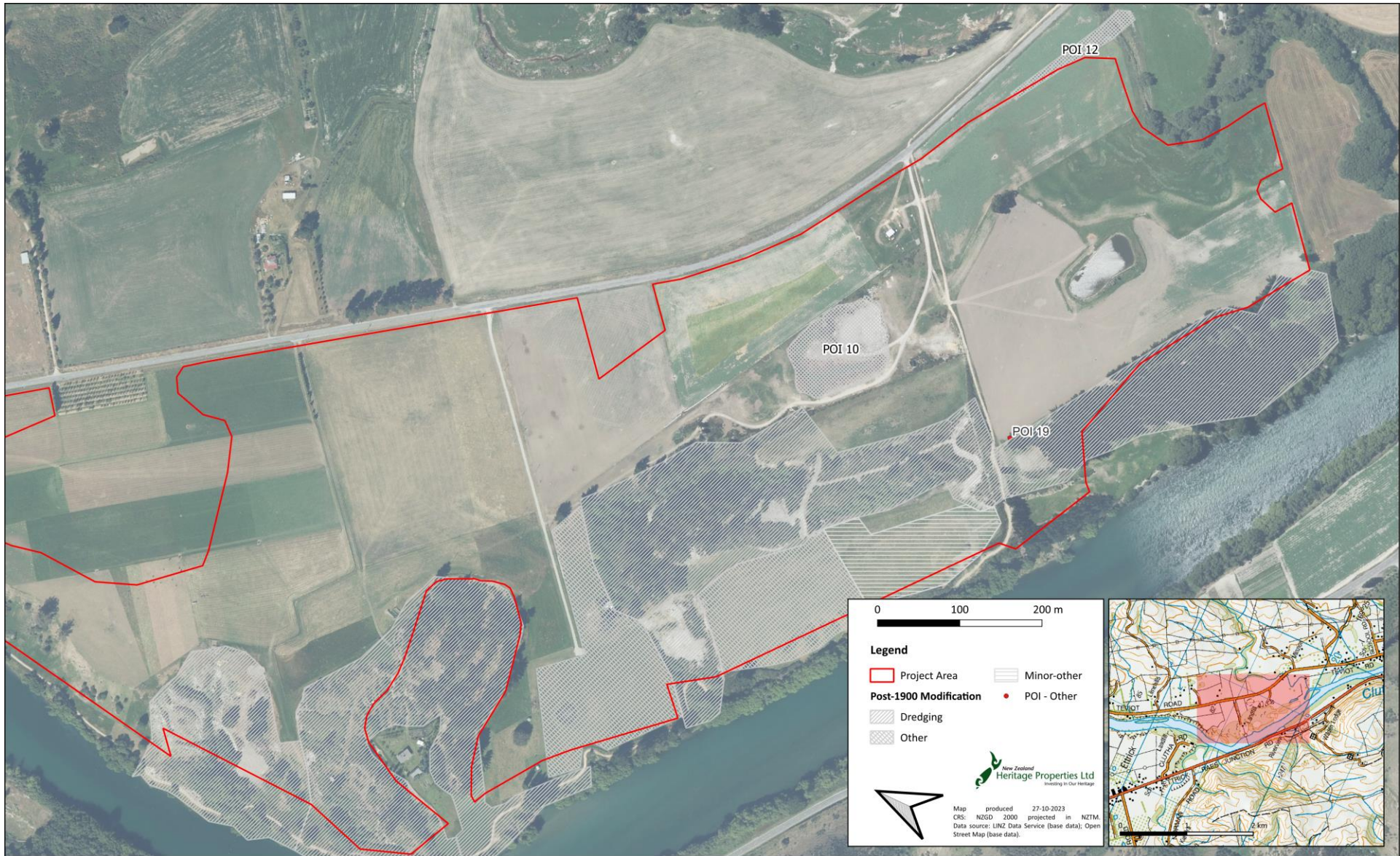


Figure 5-104. Plan of post-1900 modification and features through the project area.

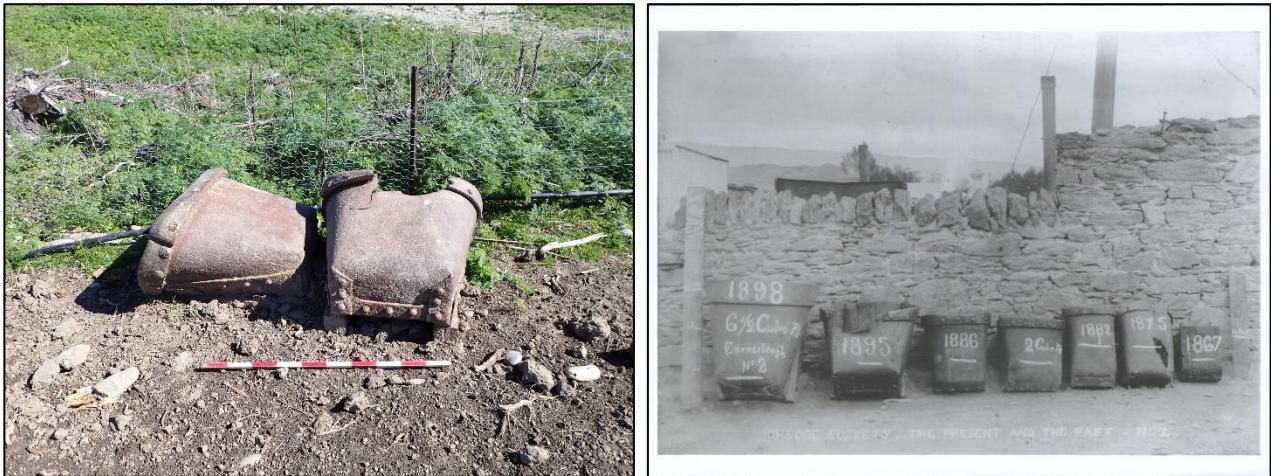


Figure 5-105. Left: Discarded dredge buckets (POI 19). Right: Evolution of dredge buckets (Unknown, n.d.).

Remains of the 1925 railway reserve was visible along a large portion of the northeastern boundary of the project area. These remains varied from a small mound of built up for the tracks to the concrete supports for the bridge (POI 12) across the Tima Burn at the southeastern corner of the project area (Figure 5-107). In general, the platform for the railway was lower and less raised at the northern end and rose to become more pronounced at the southern end as it met the bridge (Figure 5-106).



Figure 5-106. Platform for Railway; Left: at the northern end of project area (facing northwest). Right: Platform for railway at southern end with bridge supports in distance (facing southeast).

As identified in Section 1.2, Under Exploration Permit 60712, Hawkeswood mining has undertaken exploration of the site already within Sections 84, 90, and 91, Block VIII Benger SD. Earthworks undertaken so far include excavations to the northwest to approximately 1.5m deep (into natural gravels), and to 16m deep for the dredge pond these areas are identified as “Other” post-1900 modifications in Figure 5-104. Any archaeological features in these areas will have been destroyed. To the southeast of these areas, shallower excavations have been undertaken with stripping of topsoil (approximately 200-300mm). No surface features were identified through this area; however, a large portion of this area is currently being used for stockpiling, and grass regrowth. Thus, this shallower excavation area, shown as “Minor-other”, in Figure 5-104 is the only location where archaeological features may survive subsurface throughout the exploration area, cut into the deposits beneath the topsoil.

5.3.8.2 Summary of Historical Research and Site Survey Results

As discussed further twentieth century activity has heavily modified the project area. These include works for mining, farming a greenwaste dump (POI 10) and installation of the railway (POI 12). The most significant modifications are those relating to the post-1900 dredging, any pre-1900 archaeological remains in these areas will

have been destroyed. Two dredge buckets (POI 19) were identified within the project area, close to the extent of the twentieth century mining. However, while farming activity has also modified the ground surface, there is potential for subsurface features relating to earlier activity to still be present.



Figure 5-107. Concrete support for railway bridge (POI 12; facing north)

6 Previous Archaeological Investigations and Archaeological Context

The following sections will provide a background to the archaeological context for the project area. This includes examining previous archaeological investigations within the project area, the archaeological sites within the wider area as well as site types in the archaeological record that will or have the potential to be encountered during the proposed works. This includes mining, domestic occupation sites, and midden and ovens sites relating to manawhenua occupation.

6.1 Previous Research and Investigations within the Project Area

There are two previously recorded archaeological sites within the project area. The first is G43/232. This site was first recorded in 2011 as part of the Clutha Gold Cycle Trail construction (Site Record Form G43/232). The site at the time was recorded feature dredge tailings, dredge channels and a pond (Figure 6-1). The pond and surrounding dredge tailings to the north can be associated post-1900 mining activity by the Golden Bed Company. Those dredge tailings to those to south are associated with dredging undertaken even later in the twentieth century (it is unclear with which mining company this area is associated). Notably, while within the extent of the archaeological site, the presence of pre-1900 sluicing and tailings along the river's edge, not modified by this later mining, are not clearly defined from the post-1900 dredge remains (Site Record Form G43/232). As mentioned above in Section 5.3.5.1, the archaeological site record form has been updated with the tailings identified during the site survey and historical research. The cycle trail cut through a small portion of the dredge tailings and ran up the historic paper road within the current project area. These works operated under Archaeological Authority 2012/651 (Jacombs & Brooks, 2015).

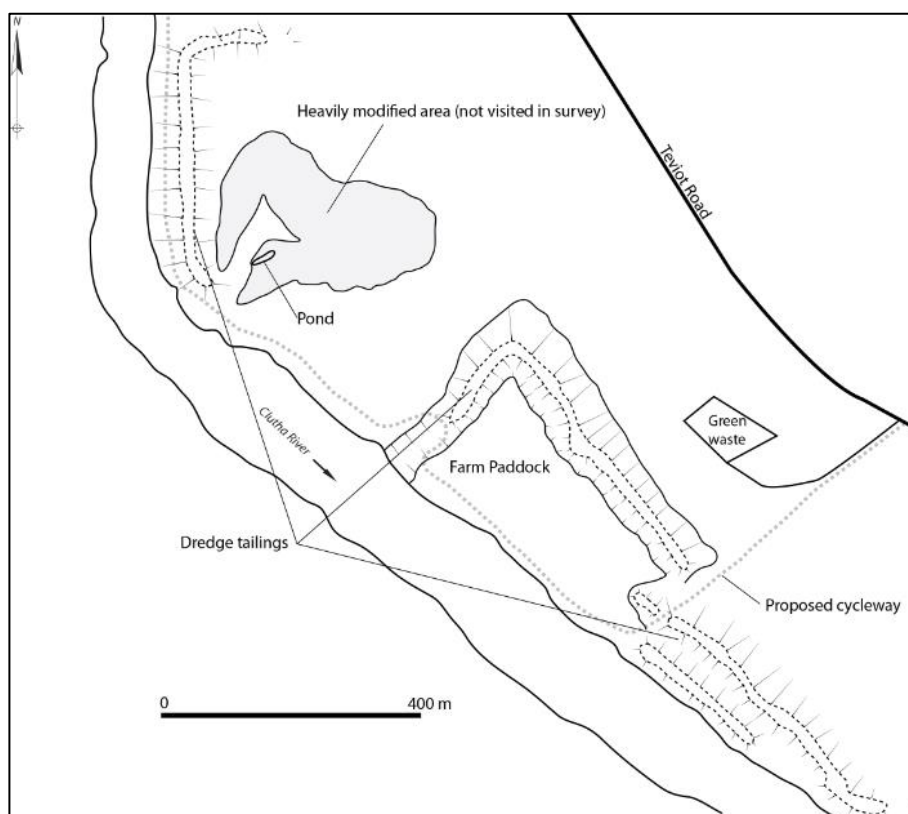


Figure 6-1. Plan of dredge tailings recorded as part of G43/232 (Brown et al., 2011).

Towards the northern end of the project area, another archaeological site G43/233 had been previously recorded. This site was also first recorded in 2011 as part of the Clutha Gold Cycle Trail construction. The site is described as an area of sluice faces as well as stacked tailings (Figure 6-2). When initially recorded it was noted that a portion of the site directly adjacent to the river had previously been bulldozed, and that the southern portion of the site had been truncated by the dredge tailings recorded as G43/232. As with G34/232, the cycle trail cut through a

small portion of the sluice face though this was outside the current project area. These works operated under Archaeological Authority 2012/651 (Jacombs & Brooks, 2015).

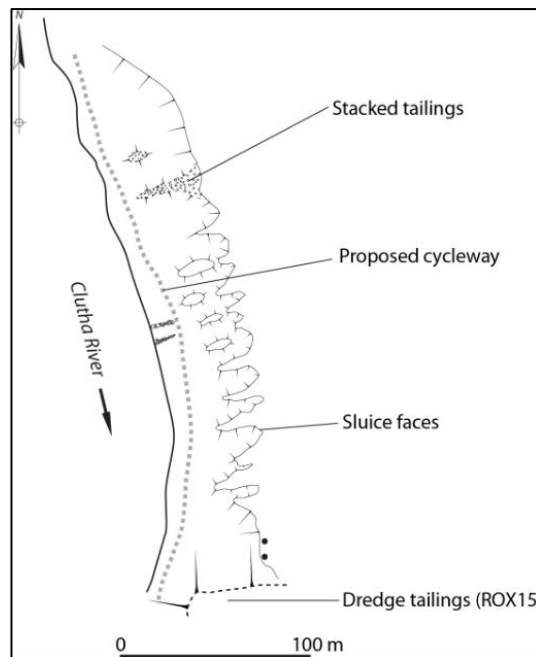


Figure 6-2. Plan of dredge tailings recorded as part of G43/233 (Brown et al., 2011).

Further works were undertaken at the site for the removal of three water troughs in 2013 under Archaeological Authority 2014/029 (Moyle et al., 2013). The troughs had been installed previously without an archaeological authority prompting archaeological mitigation under the Heritage Places Act 1993. Consequently, the troughs were to be removed Figure 6-3. At the time further damage was noted by NZHP that had occurred previously as part of the cycle trail project in particular, the construction of a fence line. The damage caused by the troughs were considered minor to the over values of the site (Moyle et al., 2013).

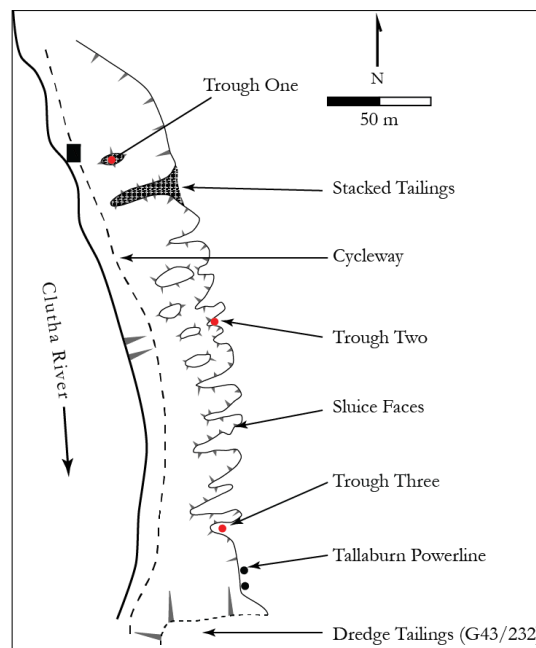


Figure 6-3. Plan of dredge tailings recorded as part of G43/233 and troughs to be removed under Archaeological Authority 2014/029.

6.2 The Wider Archaeological Context

Within 1 km of the project area there are 27 previously recorded sites (Figure 6-4 and Table 6-1). This includes the two mining sites (G43/232 and G43/233) discussed above. On top of this there are four further mining sites within the 1 km buffer. These sites recorded sluicing and tailings (G43/52), tailings (G43/70), dredge machinery remains (G44/24) and a dredge pond (G44/27). The dredge remains (G44/24) were recorded closest to the project area, immediately southeast on the true left of the Tima Burn. The remains have been associated with the Millers Flat Electric Dredging Company. Notably absent from these sites are recorded water races. However, as illustrated above in the history and site survey results there are remains of races through the project area, and these have been recorded as part of the archaeological assessment. Given the history of the project area, along with the features already described and recorded above there is further potential to encounter archaeological remains associated with historic-domestic activity as well as midden/ovens sites relating to pre-1900 Manawhenua activity.

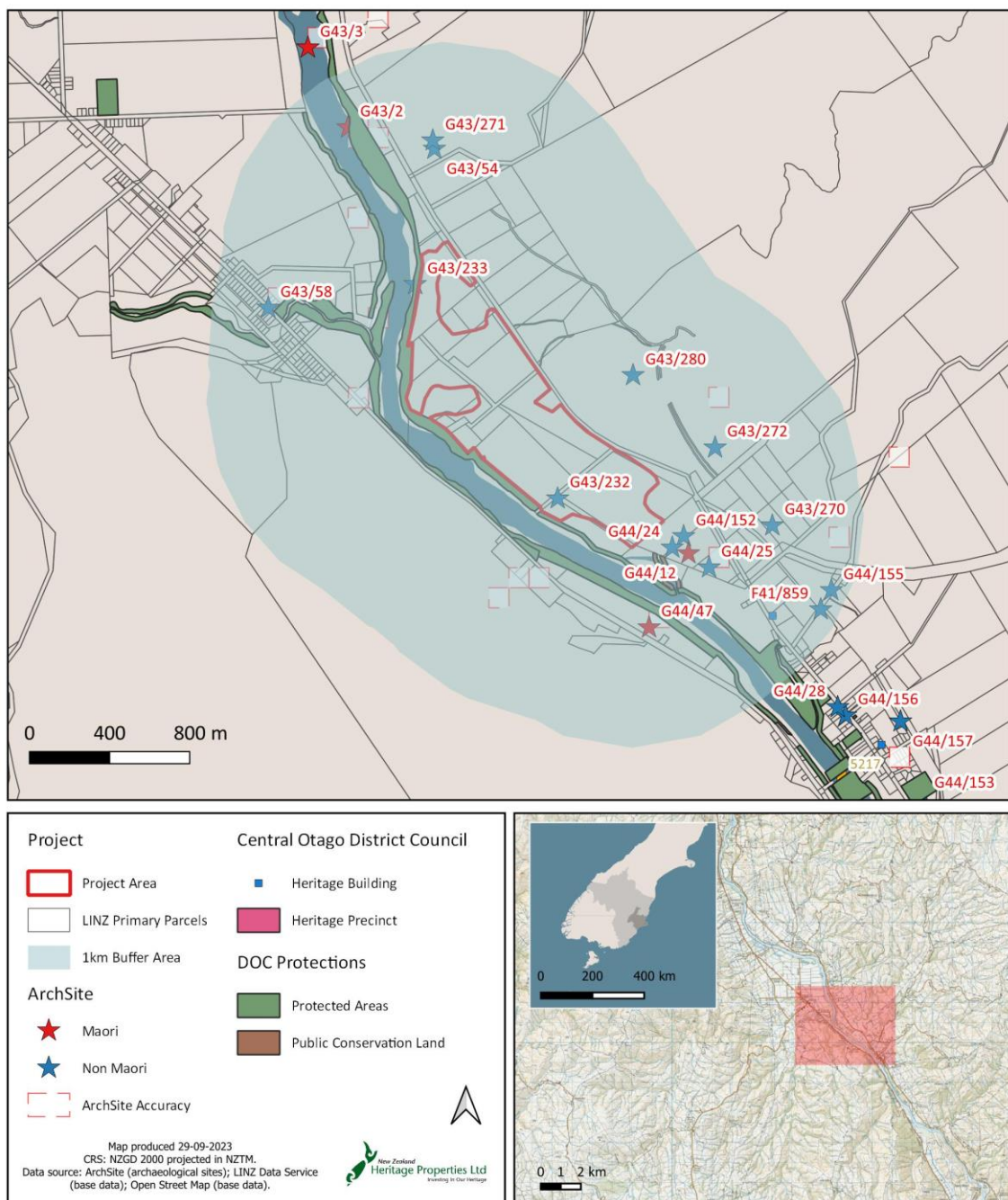


Figure 6-4. Plan showing previously recorded archaeological sites within 1km of the project area.

A stacked stone building relating to the Ormaglade Homestead is recorded as G43/272 to the east of the project area, over the other side of the Teviot Road (aligning with the location identified above in the history). Further agricultural remains were also found to the north, east and southeast of the project area including the Limehills Station Barn (G43/54), a stone barn (G43/107), a cookhouse (G43/57), an agricultural skin shed (G44/25) and slaughterhouse (G44/152). The latter is located along the edge of the Tima Burn. Just beyond this in Millers Flat to the southeast of the project area this were two further agricultural sites, a concrete weir (G44/155) and a rammed earth cottage (G43/270) as well as the only transport site within 1 km of the project area: a railway bridge (F41/859) and an unclassified chaffcutter (G44/23). The last agricultural site nearby is a pigsty recorded on the other side of the river (G44/42). A stoned walled dam on the west side of the Clutha/Mata-Au (G44/40). Three commercial buildings area also recorded included to the north a sod stables (G43/53), as well as a stone bakehouse (G43/57) and stone stables (G43/58) to the west of the Clutha River/Mata-Au. Three historic domestic sites are also located within 1 km of the project area including a hut two huts (G43/271 – to the norther of the project area – and G44/41 – on the other side of the Clutha) and a mud-brick house (G43/59), also on the other side of the Clutha/Mata-Au. It is notable that amongst the commercial, agricultural, and domestic building sites most buildings were constructed of stone, making use of the local Central Otago resources. This contrasts with the potential building remains that may be encountered within the project area as historical evidence indicates that they were constructed of cob, thatch, timber and iron. Based on the history of the project area outlined above, it is likely that further historic-domestic sites may be encountered through the project area. These sites a would likely be associated with occupation relating to miners working in and along the banks and terraces of the Clutha/Mata-Au.

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

NZAA ID	Imperial ID	Name	Site Type	Short Description
F41/859			Transport/ communication	Railway bridge
G43/106	S153/36		Agricultural/ pastoral	Stone barn
G43/2	S152/1		Midden/Oven	A surface scattering of oven stones and waste flakes were found in a small area near fence line. Flake material in Otago Museum D.73.153-161.
G43/232			Mining - gold	The site is a very large area of dredge tailings, dredge channels and a pond.
G43/233			Mining - gold	The site is an area of sluice faces and stacked tailings.
G43/270			Agricultural/ pastoral	Rammed earth cottage
G43/271			Historic - domestic	Stacked schist hut
G43/272		Ormaglade Homestead	Agricultural/ pastoral	Stacked stone building walls and chimney
G43/280		Cookhouse/bakery, Ormaglade Station	Agricultural/ pastoral	Stone building
G43/52	S152/13		Mining - gold	Sluicing
G43/53	S152/14		Commercial	Sod stables
G43/54	S152/15	Limehills Station barn	Agricultural/ pastoral	Stone barn
G43/57	S152/18		Commercial	Stone bakehouse
G43/58	S152/19	Moa Flat Hotel	Commercial	Stone stables
G43/59	S152/20		Historic - domestic	Mud-brick house
G43/70	S152/32		Mining - gold	Tailings
G44/12	S153/3		Midden/Oven	Oven
G44/152			Agricultural/ pastoral	Slaughterhouse
G44/155			Agricultural/ pastoral	Concrete weir
G44/23	S153/37		Unclassified	Chaffcutter
G44/24	S153/38		Mining - gold	Dredge
G44/25	S153/39		Agricultural/ pastoral	Skin shed
G44/27	S153/40		Mining - gold	Dredge pond
G44/40	S153/61		Industrial	Dam
G44/41	S153/62		Historic - domestic	Hut
G44/42	S153/63		Agricultural/ pastoral	Pig sty
G44/47	S153/86		Midden/Oven	Ovens and flakes, recorded from local accounts.

The last three sites relate to Manawhenua occupation, and record midden/oven remains: G43/2; G44/12 and G44/47. G44/12 is located closest to the project area, 230m to the south east. Notably, many features of such sites in the Teviot Valley were not visible from the ground surface but up to 2m below the ground surface, such as the umu/ovens recorded at G44/12. Anecdotal evidence indicates that quartz or chert flakes were eroding from

the site, in the banks over the lower terrace. G44/47 is located directly opposite on the west side of the Clutha/Mata-Au and again is recorded based of anecdotal evidence of ovens encountered during ploughing. G43/2 is located to the north of the project area on a Clutha River/Mata-Au terrace. In a ploughed field, a surface scatter of oven stones and flakes were recorded in 1973. Given the proximity of G44/12 to the project area it is possible that remains relating to manawhenua occupation could extend in the project area, in particular immediately north of the Tima Burn on the lower terrace (see Figure 6-5) similar to that on which site G43/12 sits on the other side of the waterway.

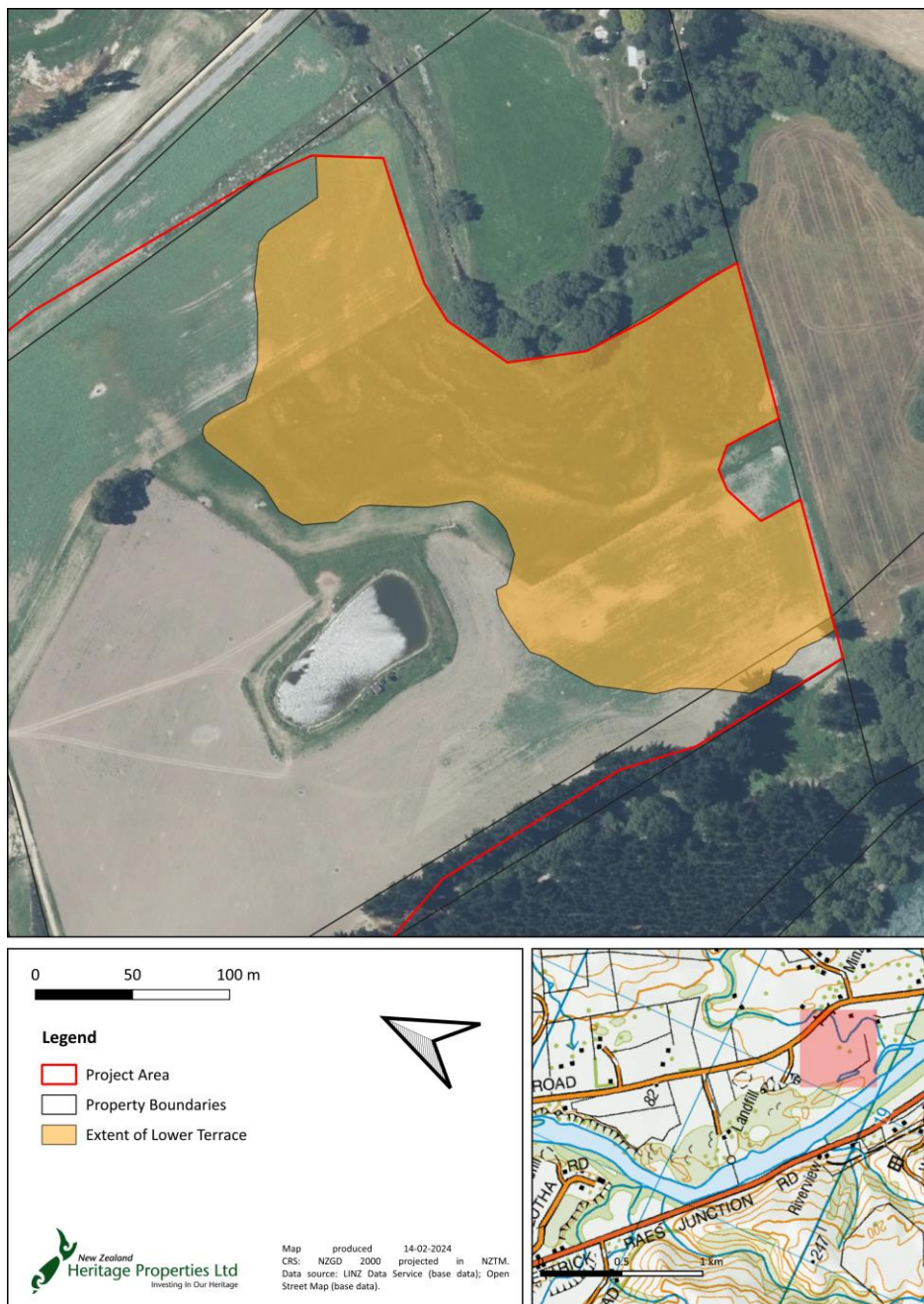


Figure 6-5. Plan showing the extent of lower terrace within the project area.

In 1973 Stephen Bagley undertook a survey along the Clutha/Matau-au (Bagley, 1973). Bagley's survey (1973) was focused along the Clutha/Matau-au and specifically on sites that had already been recorded and were likely to be affected by hydro-electric development. Although just outside of the scope of his survey, he did record a series of oven sites on the hills around Millers Flat including sites around the Project area including G44/12. The new sites recorded were those that had been brought to Bagley's attention by local farmers and rabbiters.

6.3 Mining Sites in the Archaeological Record

Across the South Island, there are more than 2000 mining – gold sites and a further 167 mining sites associated with other forms of mining recorded in the ArchSite database. Sites are concentrated in Central Otago, along the West Coast and in smaller pockets in Marlborough, Tasman, and Southland Districts. The nature of gold mining sites is varied as features relate to different working aspects of the gold fields and trace 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 (dredge, stamper battery, machinery). In addition, there are also features and materials associated with the domestic lives of miners living in close proximity to gold workings (e.g., stone and sod huts, hut floors, artefacts).

The gold mining landscapes of central Otago have undergone a significant number of archaeological surveys, with high frequencies of archaeological sites recorded. However, the expansive and complex nature of goldfields paired with rugged isolated terrains and challenges with site access, mean that many landscape features remain unrecorded. Surveys have often addressed technological aspects of visible features and machinery, with only select excavations taking place.

Along the Clutha/Mata-Au, several sites were modified as part of installation of the Clutha Gold Cycle Trail beyond those discussed in Section 6.1. This includes a small portion of the extensive dredge tailings site close to the project area, G44/139. Little additional information was gained from the project as works were designed to avoid archaeological features (Jacombs & Brooks, 2015). Several other gold mining sites were recorded during this work along the Clutha River. The features recorded at these sites include tailings (G43/203; G43/205; G43/214; G43/223; and G44/139); sluicing (G43/206; G43/209; G43/211; G43/212; G43/217; G43/220; G43/224; G43/227-G43/229; G43/231 and G44/141); water races (G43/97; G43/210; G43/216 and G43/226); ponds (G43/195); dredge workings (G43/230); mine drive (G43/222); as well as hut sites and other structural remains (G43/204; G44/140). However, like G44/139 many sites were avoided or design to only minimally impact the associated archaeological features, so few archaeological investigations were required (Jacombs & Brooks, 2015).

More widely across Otago there are a number of other extensive archaeological excavations that have occurred, though the hut and camp sites of miners have been the primary features investigated. For example, in 1993 Bristow excavated a miner's hut in the Old Man Range (F42/154). This site revealed important aspects of hut construction and uncovered several artefacts, including three tin matchboxes, a Chinese button and a broken alcohol bottle (Bristow, 1995). Three miner's huts were also excavated by Petchey at Macraes Flat in 1999 (Petchey, 1999). Similarly, aspects of hut construction were investigated, and several deposits containing faunal remains and artefacts were uncovered. Midden contents included pig and sheep bone fragments, as well as several Worcester sauce bottles, coffee and chicory bottles, ring-seal beer bottles, spirit bottles and Chinese ceramic fragments. Many other hut and mining camp sites have been investigated elsewhere in Otago, including a select few closer to the project area; however, these sites have been classified by a different site type (e.g., historic – domestic). One seminal project that has informed archaeological investigations in Otago and beyond, is the Clutha Archaeological Project. Prior to the construction of the Clyde Dam, and the formation of Lake Dunstan, a series of archaeological investigations including several surveys and excavations were undertaken throughout the area. Mining sites (i.e., tailings; dams, water races, shafts, prospecting pits) were largely recorded by survey only; however, numerous huts and occupation sites associated with Chinese minors were excavated. Part of the project also involved attempts at salvaging remains of gold dredge remains from the Kāwarau River (Ritchie, 1987).

Smaller, isolated excavations have also occurred on several other mining sites across the wider region: such as recording of tailings and associated artefacts (H45/112) near Glenore (Moyle, 2023), trenching across the Enterprise Race (H41/90) at Naseby (Hamel, 1999), investigations of the Eldorado water races (H44/1019 and H44/1020) and nearby tailings at Deep Stream (Watson, 2000), as well as the nearby Deep Creek Water Race

(H44/1061) (Jacombs, 2010). Due to the limited scale of excavations, there was limited information garnered from these investigations; however, several provide comparative information for the construction and formation of such features as water races.

6.4 Historic-Domestic and Historic-Land Parcel Sites in the Archaeological Record

The Otago region has more than 1100 historic – domestic sites recorded in ArchSite, and an additional 128 historic – land parcel sites. These sites often contain structural features associated with buildings (e.g., farmsteads, cottages, huts), although other domestic features such as rubbish pits, artefact deposits, garden features, boundary walls and fencing have also been classified as historic/domestic site types. Of the 1100 sites, approximately 400 sites are recorded as huts, many of which relate to periods of goldmining and the homes of miners. While many archaeological excavations have investigated historic sites in the Otago region, the University of Otago excavations at the Lawrence Chinese Camp (H44/1018) recorded as a historic-land parcel site along the Clutha/Mata-au have uncovered some of the largest quantities of material associated with miners. For example, a recent study reports on the production and trade of Chinese opium pipe bowls from Southern China to Lawrence (Wu et al., 2020). Structural remains of buildings, paths and drains was identified at Lawrence and 300 bags of artefacts were removed from the site (Jacomb, McGovern-Wilson, & Walter, 2005). Preliminary results describe various glass artefacts including alcohol, food and medicinal bottles and jars. Ceramics comprised over 10% of the material cultural assemblage with Chinese and European ceramics identified. Other materials include various metal items, including coins, boxes, and tins. Opium bottles, pipes, cooking utensils, buttons, gambling tokens and footwear were also identified. While quite different to the potential occupational sites that may be encountered within the project area, it is likely that similar features and deposits may be encountered. Such as remains for domestic structures, landscaping features (paths), horizontal infrastructure (drains) and artefacts relating to the occupation of these buildings.

Few historic – domestic sites G43/265 have been excavated closer to the project area. However, in Roxburgh on the opposite side of the Clutha/Mata-Au, excavations at a historic – domestic site G43/265 encountered an artefact deposit related to early 1860s occupation. However, rather than relating to gold mining activity directly the remains were tied to the ancillary running of Herron’s Hotel, the first commercial building in Roxburgh likely frequented by the gold miners (Cook & Wooller, 2022).

Further along Lake Roxburgh, excavations were undertaken on two hut sites: G42/311 and G42/114. While not explicitly tied to gold mining, the final archaeological report (Brooks, Jacomb, & Brown, 2010) suggests that given the activity in the immediate surrounding area they were likely occupied by minors working at the nearby Doctor’s Point, an area of extensive 1880s and 1930s sluicing. The remains recorded included the structural remains of the stone huts, including the walls, a flagstone floor and a fireplace, as well as artefact remains (i.e., glass bottles, nail and matchboxes) (Brooks et al., 2010). Moving back towards the project area, recent investigations were undertaken at Mrs Heron’s Cottage (G43/18), associated with the Herons who mined a claim at the nearby Fourteen Mile Beach from the 1860s to 1870s. The stone cottage was restored as part of the wider works, during which archaeological investigations of the building identified three main construction phases from initial construction around 1863, an extension in undertaken prior to 1875, and a twentieth century corrugated iron extension added by later occupants (Schmidt, 2019). Associated excavations also found remains associated with wooden barrels, potentially used to collect fresh rain water, black beer bottles, penny ink bottles, as well as landscaping features such as schist stone pavers.

6.5 Midden/Oven Sites in the Archaeological Record

There are nearly 800 identified midden / oven sites in the Otago region. Of these 400 explicitly record the presence of an oven and only 64 of these identify the oven as an umu tī. Umu tī were steam ovens that were used to cook the roots of the cabbage tree (*Cordyline australis*) or tī kōuka. Cabbage trees are recorded present in Fruid Burn which is outside the project area to the south-west (Department of Conservation, 2010), but are known to grow in areas of swamp and river terraces and with clearance of the trees for European farming practices (Orwin, 2007).

There is also ethnographic evidence to suggest that Māori groups often planted cabbage trees on their travels to mark their trails, demarcate boundaries or mark locations of significance (Best, 1931; Simpson, 1997; Department of Conservation, 2021). Cabbage trees, or tī kōuka, were utilised by Māori communities as sources of food, medicine, and fibre for textiles. Edible parts of the cabbage tree include the roots, stem and top, each of which requiring specific processing (Best, 1931). It is important to note that it is possible for cabbage trees to survive for centuries, with the oldest cabbage tree in Aotearoa documented to be around 500 years old (Simpson, 2000).

When Bagley (1973) undertook his survey along the Mata-Au he noted that all the ovens he encountered, with the exception of G43/9, were sunken with raised rims that he identified as typical of umu tī. Hamel (Hamel, 2001) explicitly mentions the large cluster of ovens around Lake Onslow and Millers Flat and records that thirty-seven have the raised rim indicative of umu tī. Although it is not known if the sites at Tima Burn and Oven Hill Creek feature the raised rim. She also records that at least nineteen ovens in the area had already been destroyed. It also noted that none of these sites have a date beyond their association with a “higher than usual” density of sites containing moa bones. As comprehensive investigations have not been undertaken identification of the umu has mostly been limited to what can be sighted on the surface.

7 Research Results

The historical and archaeological research as well as archaeological survey indicates there are surviving pre-1900 archaeological remains throughout the project area relating to historic mining and historic-domestic occupation that will be impacted by the proposed works. Figure 7-1 shows the results of the archaeological research across the site. There is further potential, despite extensive later twentieth and twenty-first century modifications, that subsurface archaeological remains survive throughout the project area that may also be affected by the proposed excavations. Such remains if encountered likely relate to historic mining activity, historic-domestic occupation, as well as earlier manawhenua activity in the form of midden/oven sites.

As a result of the work above two new archaeological sites were recorded, and two existing sites were updated on the NZAA site recording scheme. The boundaries of these sites have been defined by the extent of the archaeological features identified during the survey. The first site recorded (G43/285) relates to the Kitto family and their mining activity with three pre-1900 water races recorded from historical maps and during the site survey. Two further mining sites were updated as a result of the site survey and historic research: G43/232 and G43/233. Sluicing and tailing areas associated with these sites extend into the project area. While it is not possible to identify exactly which individual miners or companies were associated with these pre-1900 worked areas, given their extensive presence through the area it is possible the Kitto family may have worked the northern area recorded as part of G43/233. The last site was identified during the archaeological survey. This was G44/159, which records the location of a likely pre-1900 artefact scatter.

The archaeological and historical research indicates that potential unrecorded remains will likely include features associated with mining activity. Based on this research mining features that are known to have been present in the project area include tailings, sluicing areas, dams and water races as recorded already across the project area. Associated with these features we also expect ancillary structural and artefactual remains. While additional archaeological features were not identified during the archaeological survey, many of these features likely cut into the deposits below the topsoil. Consequently, there is potential to encounter intact features even where later twentieth century activity such as ploughing has modified the top of the feature rendering them indistinguishable on the ground surface or in current aeriels. For features such as dams and water races, this is especially so as there is potential for these cut features to have been filled in to create level ground.

Historical research further identified the location and extent of several domestic occupation sites dating from at least 1874 through to the 1890s. These relate to various individuals and mining companies. Indeed, it is likely that many occupants of the buildings were miners working claims in the area or on dredges in the Clutha River/Mata-Au such as Richard Kitto or Peter Grant. Many of these building sites or features were later modified or completely destroyed by twentieth century mining. However, the features identified during the archaeological survey suggest that there still a high potential for features that extend beyond the later dredging extents to survive subsurface even if modified by such farming activities as ploughing. The historic research provides a good understating of where such sites may be encountered. Previous excavations of archaeological such archaeological sites and the historical research can provide some information of the types of features that may be encountered at these occupation sites. This includes structural remains associated with the buildings (i.e. remnants of cob walls, floor surfaces, and timber pile foundations); latrines; artefact deposits; paths and paving; and drains.

Research further suggests that there is potential to encounter archaeological remains associated with manawhenua activity. Previous early manawhenua sites have been recorded along the Clutha/Mata-Au, with the closest site G43/12 within 250m of the project area, to the south of the Tima Burn. There is potential for midden/oven sites to be encountered through the project area, but especially near the Tima Burn, where imported shell was identified during the archaeological survey and there is a lower terrace (shown in Figure 6-5) similar to that on which site G43/12 sits on the other side of the waterway.

As alluded to above, post-1900 dredging was undertaken within the project area, in particular a smaller area to the northwest and a larger area as shown in Figure 5-104. Earlier pre-1900 occupation sites and mining features, as well as any other potential archaeological remains such as those relating to manawhenua activity that may have once been present throughout these areas, would have been destroyed by this twentieth century activity.

Beyond the post-1900 dredging areas, twentieth century farming activity has also occurred across the project area. Consequently, much of the ground has been ploughed numerous times and levelled. As a result, many features seen in earlier historic photographs are no longer visible on the ground surface. However, deeper archaeological features as described above, likely survived this activity, even if heavily modified, and may be present subsurface immediately beneath the topsoil.

7.1 Constraints and Limitations

There were several constraint and limitations encountered during the course of preparing this archaeological assessment. For the historical research there was limited documentary sources, especially those relating to activity prior to 1874 in the project area. It was further difficult through the historic research to distinguish associations between various individuals and their associations with companies; as well as the claims had throughout the 1900s and early twentieth century. Similarly, there was limited photographic evidence of pre-1900 activity throughout the project area. During the site survey, the weather was generally fine; however, fog did limit visibility in the early mornings. The survey comprised a walkover of the project area at 15m intervals; however, the topography in some areas was too steep to travers in this way (especially in areas of twentieth century dredging), and instead the areas were surveyed following the ridgeline and valleys of such areas.

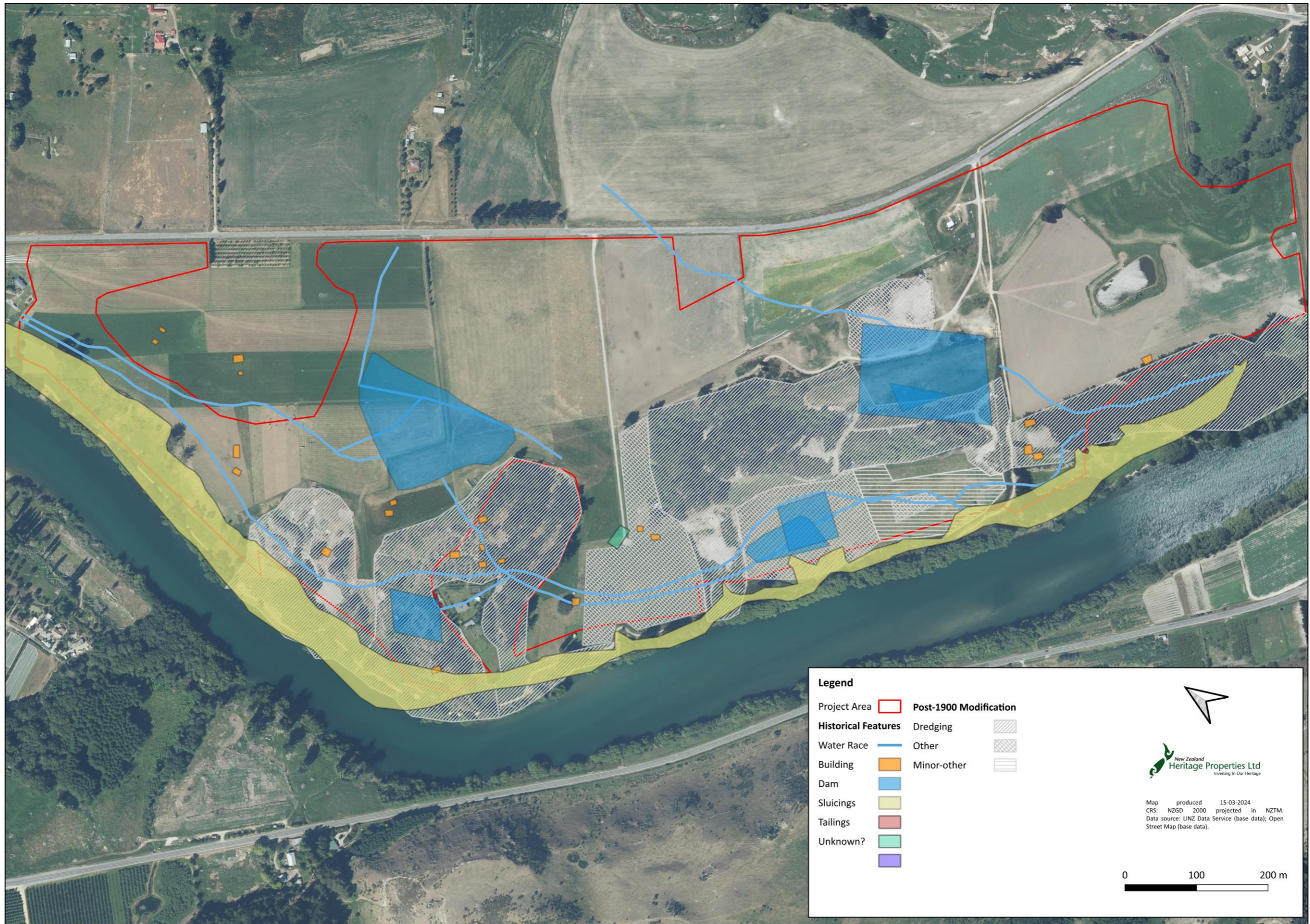


Figure 7-1. Map showing all features identified as a result of the archaeological research, including pre-1900 features and post-1900 modifications.

8 Archaeological and Other Values

Section 46 of the HNZPTA 2014 requires an assessment of archaeological values as well as Māori and other relevant values to the archaeological site. The criteria for the assessment of values is provided by HNZPT (HNZPT, 2019), including the condition of the site, its uniqueness, contextual value, information potential, amenity value, and cultural associations. This is followed by an overall statement of archaeological significance, as based on the methods provided in Section 3.

An evaluation of the archaeological values is provided for G43/232 in Table 8-1. Overall, site G43/232 is considered to have **low-moderate** archaeological value due to the condition of the site as it has low information potential, low amenity values and is relatively common in this region. However, it has high contextual values with other mining sites in the region.

Table 8-1. Summary of archaeological values for G43/232.

Value	Criteria	Assessment
Condition		Fair. A large proportion of the pre-1900 sluice face is intact, however the areas to the north and south have been destroyed by post-1900 dredging and landscape modification.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Low. Sluice faces are a relatively common feature of pre-1900 gold mining sites. This area as well as the wider Central Otago region was heavily mined during the 1860s.
Contextual Value	Does the site(s) possess contextual value?	High. The site possesses contextual values, both on the local and wider scales. It has contextual values to a number of other mining sites in the area as it is an example of the mining activities of the area. The site also has contextual value to other sluicing sites across the region as it is an example of a relatively widespread method of extracting gold.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Low. The site possesses low information potential as all that can be learned from it is the extent of the mining. Sluicing is a relatively well understood process and little more can be gained as from this site about the process, or the machines used.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. The site has low amenity value as the sluice faces are not visible to public and are not open to interpretation.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

An evaluation of the archaeological values is provided for G43/233 in Table 8-2. Overall, site G43/233 is considered to have **moderate** archaeological values. This is due to the condition of the site, low information potential and commonality. The site has been damaged by later mining activities and has limited potential to add to our understanding of sluice mining. Despite this, the site does hold high amenity values, as it forms a striking part of the landscape for the Clutha Gold Trail, as well as contextual values with the other mining sites in the region.

Table 8-2. Summary of archaeological values for G43/233.

Value	Criteria	Assessment
Condition		Good. The northern section of the sluice faces and tailings is in excellent condition; however, the southern section has been destroyed by post-1900 dredging and landscape modification.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Low. Sluice faces are a relatively common feature of pre-1900 gold mining sites. This area as well as the wider Central Otago region was heavily mined during the 1860s.

Value	Criteria	Assessment
Contextual Value	Does the site(s) possess contextual value?	High. The site possesses contextual values, both on the local and wider scales. It has contextual values to a number of other mining sites in the area as it is an example of the mining activities of the area. The site also has contextual value to other sluicing sites across the region as it is an example of a relatively widespread method of extracting gold.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Low. The site possesses low information potential as all that can be learned from it is the extent of the mining. Sluicing is a relatively well understood process and little more can be gained as from this site about the process, or the machines used.
Amenity Value	Does the site(s) have potential for public interpretation and education?	High. This site has a large amount of amenity value as the Clutha Gold Trail runs along the entire extent and the cliff faces have become part of the landscape. The site is extremely visible from the trail and removing it would decrease the public's view. As a result, the site has the potential to be interpreted by the public.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

An evaluation of the archaeological values is provided for the water races associated with the Kitto Family mining complex in Table 8-3. Overall, site G43/285 is considered to have **moderate** archaeological value due to the high contextual values and information potential. The site is in poor condition with low amenity values due to the identified features being only partial visible. However, the site has high contextual values as the water management system can be related to a specific family and their mining activities. The site also holds moderate information potential as further archaeological investigations could also uncover more about the construction and function of the features.

Table 8-3. Summary of archaeological values for G43/285.

Value	Criteria	Assessment
Condition		Poor. The races located were only partial lengths and hard to distinguish from natural diverts and slopes. However, at least one of the races continues largely undisturbed outside of the project area. Other features may survive subsurface.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Low. Water management systems (dams and water races) are relatively common features of Central Otago due to its history of gold mining.
Contextual Value	Does the site(s) possess contextual value?	High. The site has high contextual values as it is a system of water management for the purpose of gold mining. It also has contextual value to other sites in the area, including later mining site as well as water management systems elsewhere in Central Otago.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Moderate. The site has moderate information potential as more of the races and the dam system could be uncovered through further archaeological investigation. This could provide information on the development and construction of the water races and its use for gold mining.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. The site has very limited amenity values as the identified races are not very visible against the natural landscape. They are also on private land and not easily accessible to the public.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

An evaluation of the archaeological values is provided for the artefact scatter in Table 8-4. Overall, site G44/159 is considered to have **low** archaeological value due to its low rarity and poor condition. The site has been heavily modified by ploughing which has affected its condition and amenity values. However, due to its potential to inform on the domestic activities of the miners on the site, it still has information potential and contextual values.

Table 8-4. Summary of archaeological values for G44/159.

Value	Criteria	Assessment
Condition		Poor. The site has been damaged by farming activities resulting in the scattering of the artefacts across the field.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Low. Historic – domestic sites, particularly rubbish pits are relatively common in towns and cities in Otago. They are slightly rarer in mining sites likely due to the decreased population density.
Contextual Value	Does the site(s) possess contextual value?	Moderate. The site has moderate contextual values as it relates not only to other historic – domestic sites in Roxburgh, but also to the people who were working the mining sites in the area.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Moderate. The site has moderate information potential as even though the site has been heavily modified, the contents could be analysed. These results could inform on the lifestyle and diet of the miners in the area.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. The site has low amenity value as it appears to have been heavily modified. Any intact sections are located subsurface and not visible.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

An evaluation of the archaeological values is provided for unrecorded mining sites in Table 8-5. Overall, unrecorded mining sites are considered to have **low-moderate** archaeological value due to the variety of possible features and ranging information potential. As identified through the historical and archaeological research, earthworks have the potential to encounter a variety of subsurface remains. These range from tailings, sluice faces, water races, and dams, as well as ancillary structural and artefactual remains associated with the mining process. While not identified during the archaeological survey, unrecorded features like these likely cut into the deposits below the topsoil. As a result, even where later farming activity (i.e., ploughing) has occurred and archaeological features are not visible on the ground surface or aerials, there is still potential to intact remains subsurface. For features such as dams and water races, this is especially so as there is potential for these cut features to have been filled in to create level ground. Depending on the feature and its condition, some mining sites such as dams and other water management systems could have high contextual values and information potential. Other sites such as isolated portions of water races and sluice face would have lower values.

Table 8-5. Summary of archaeological values for unrecorded mining sites.

Value	Criteria	Assessment
Condition		Unknown. Beyond, the recorded mining features associated with G43/232, G44/233 and G43/285, any further mining features are subsurface, and the condition is unknown. While the top of the features may have been modified by ploughing, many features likely extended below these depths. The is especially so for features such as dams and water races, which may have been filled in to level the ground.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Low-moderate. The rarity of these sites will vary. Isolated water races, sluice faces, and tailings will be relatively common while dams and more substantial water management systems will be slightly rarer.
Contextual Value	Does the site(s) possess contextual value?	High. These sites have the potential to have high contextual values as this area has multiple stages of mining activities recorded in both the archaeological and historical record. As a result, any further physical remains exposed will likely be associated with these activities. They could also have contextual value with mining activities in the wider area.

Value	Criteria	Assessment
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Low-High. These sites have a range of information potential. More common sites like isolated water races and sluice faces will not add much to our understanding of the site. However, dams and associated water races have much higher information potential as these could inform on the construction of these larger features as well as water management in the area.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. These sites would have low amenity values. Any dams or water races would have been filled in and so only the cut would be visible and of little interest to the public. Sluice faces have the potential to be more visible to the public, however these have all likely been destroyed by twentieth century dredging.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

An evaluation of the archaeological values is provided for unrecorded historic-domestic sites in Table 8-6. Potential archaeological remains associated with historic-domestic sites within the project area may include structural remains associated with the buildings (i.e. remnants of cob walls, floor surfaces, and timber pile foundations); latrines; artefact deposits; paths; and drains. As with previously unrecorded mining features, there is potential for many of these features to extend below ploughed ground. Overall, unrecorded historic-domestic sites are considered to have **medium** archaeological value due to the relative rarity, high contextual values and information potential. In this area, sites and features associated with mining are relatively common, with the domestic sites associated with these activities being notably less common. These sites have the potential to inform on the domestic lives of the miners who worked the land as well as their families.

Table 8-6. Summary of archaeological values for unrecorded historic-domestic sites.

Value	Criteria	Assessment
Condition		Unknown. Any further historic-domestic features are subsurface and the condition is unknown. While the top of the features may have been modified by ploughing, many features likely extended below these depths.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Medium. Historic – domestic sites are relatively common in towns and cities; however, they are notably less so in rural areas with mining activity. In the surrounds of the project area, those domestic and other buildings recorded, most were constructed in stone. Yet, historic records indicate that the pre01-900 buildings within the project area were constructed of timber, iron, cob and thatch. Adding another layer of rarity for any potential historic-domestic sites encountered.
Contextual Value	Does the site(s) possess contextual value?	High. Unrecorded occupation sites in this area would have high contextual values as they would be associated with the well recorded mining activities around them. They would also have contextual value to the wider area, in particular with other rural domestic sites.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Moderate-high. Depending on the condition, these sites could have high information potential. Little is known about domestic life within the mining activities in the area. Lots of features and areas associated with mining have been identified, while only a one, heavily disturbed, historic- domestic site has been recorded.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. These sites have low amenity values as they are subsurface and any remains are likely to be destroyed during works.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

This area also has some values as a heritage landscape. The Clutha Gold Trail runs through the middle of the project area and is open to the public at all times. Multiple phases of historic mining have created this landscape that is viewed and interpreted by the public.

The project area also has potential Māori values as an oven site (G44/12) has previously been recorded on the eastern side of the Tima Burn, on a terrace above the Clutha River. While no Māori archaeology has been identified within the project area, it was noted that the oven site at nearby G44/12 was 2m below the surface. Therefore, it is possible that midden/oven sites relating to early manawhenua activity as seen in the wider surrounding area may be encountered during works. This is especially so along the lower terrace adjacent to the Tima Burn. Along with midden and ovens, there is potential to find associated features such as artefact deposits. Overall, these sites are considered to have **low to high** archaeological values depending on what is encountered (Table 8-7).

Table 8-7. Summary of archaeological values for unrecorded midden/oven sites.

Value	Criteria	Assessment
Condition		Unknown. Any midden/oven features are subsurface and the condition is unknown. While the top of the features may have been modified by ploughing, many features likely extended below these depths. Similarly, some may exist at greater depths (possibly up to 2m) due to later flood deposits burying these features as suggested by previously recorded sites nearby.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	Moderate. Midden/oven sites are common throughout the wider area. However, few have been archaeologically investigated as many have been recorded based on anecdotal evidence.
Contextual Value	Does the site(s) possess contextual value?	Moderate-high. Given the presence of similar sites throughout the wider area, such sites could hold high contextual values as faunal and stone material could be compared with local and non-local sources and use patterns between sites. Depending on the number of features there is also further potential for comparisons within site, looking at the distribution of features and their contents.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)?	Moderate-high. Depending on the condition, these sites could have high information potential on early sites relating to manawhenua activity. This includes information on resource access and management, chronological date, and manawhenua lifeways.
Amenity Value	Does the site(s) have potential for public interpretation and education?	Low. These sites have low amenity values as they are subsurface, and any remains are likely to be destroyed during works.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups?	Pākehā

9 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 archaeology.

9.1 Assessment of Effects on Archaeological and Other Values

The proposed works involving excavations up to 16m below ground level across the project area will result in the total destruction any archaeological remains encountered.

This includes archaeological remains associated with the mining sites G43/232, G43/232, G43/285, and the domestic occupation site G44/159. The works as proposed will result in the removal of the pre-1900 sluice faces and tailings associated with G43/232 and G43/233. The works on the latter site will have a moderate impact given only a small proportion of the pre-1900 features extend into the project area; however, almost the entire footprint of the pre-1900 sluice faces and tailings of G43/233 sit within the project area so the works will have a major impact on the archaeological values, especially the condition and the amenity values. The latter is especially so as the Clutha Gold Cycle Trail runs directly adjacent to the site, and removal of the features will decrease the public's ability to interpret the historic mining features and the wider historic mining landscape.

For the water races recorded as G43/285, given that they have already been disturbed by previous farming activity and that there is evidence that at least one of the races extend beyond the project area and survives intact, the impact to the site will be moderate. This is especially so as there is a high potential that further features associated with the site, tied to the Kitto family, will be exposed during works increasing the impact of the works as it represents a complex of archaeological remains relating a single family, heavily involved in local nineteenth century mining activity over an extensive period of time. The artefact scatter recorded as G44/159 will also be entirely removed as a result of the proposed works. Despite the current poor condition of the site, the effects of the works on the site will be major, yet archaeological recording during removal may provide information not available in the historical record regarding the nineteenth century associations of this deposit.

The research outlined above further indicates there is a high potential for further unrecorded archaeological features to be encountered, also associated with historic mining activity, historic-domestic occupation, as well as midden/oven relating to early manawhenua activity through the project area. Many of these remains are associated with a wider complex of features and sites, both relating to historic mining but also early manawhenua activity along the Clutha/Mata-Au.

Due to the extent of earthworks required the works will likely have major impact on the values of the potential sites. Due to the potential for remains relating to early manawhenua activity to be encountered during works **NZHP recommends that manawhenua must be engaged prior to commencement of any works** that may affect these sites. This includes consultation at the archaeological assessment phase. Protocols for engagement will be provided in the AMP in consultation with manawhenua.

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

The following sections present NZHP recommendations to reduce the overall adverse effects on archaeology. The include avoidance of archaeological remains, as well as to ways to minimise and mitigate the adverse effects of the proposed works on the archaeological including archaeological briefing, monitoring, and recording. This section outlines recommendations on how works should be undertaken so that archaeological investigations and recording can be undertaken in relationship to the wider works programme so that the impacts of the works can be managed accordingly.

9.2.1 Sites and Features to be Avoided or Protected

The history and recorded sites throughout the project area are indicative of the palimpsest of mining activity from the mid to late 1800s through into the 1900s. There are two sites recorded, G43/232 and G43/233, that include pre-1900 remains on the edge of the project area that remain intact despite various twentieth century developments (further mining, cycle trail construction, farming). These sites are highly discernible features in the landscape, especially tailings of G43/233 which form a pre-eminent feature visible to all travelling along the public cycle way. There have been active efforts to protect and preserve the character and values of G43/233, with avoidance of the features as part of the cycleway construction (where the designed path routes followed previously disturbed areas under Archaeological Authority 2014/029), as well as active efforts to remove and restrict modifications associated with farming activity (removal of the water troughs Archaeological Authority 2012/651). It should be noted that portions of both site G43/232 and G43/233 are located outside of the project area, and therefore will not be impacted by the proposed works (see Figure 5-37, Figure 5-85).

NZHP recommended an exclusion of G43/232 and G43/233 from the proposed works, and Hawkeswood Civil considered feasibility for retention of these archaeological sites with other environmental reports and recommendations. Hawkeswood Civil determined that it was not feasible to retain the sites within the project areas for the following reasons:

- The Assessment of Noise Effects (Hegley, 2022) requires a 4m high, minimum 5m wide, bund along the north western boundary adjacent to G43/233. Based on the plant to be used on site, noise levels were predicted for dredging operating close to existing dwellings (i.e., Figure 9-1). To ensure compliance with predicted noise level, the bund is necessary at its planned location, which will affect G43/233 and G43/232.
- An objective of the Central Otago District Plan is the maintenance / enhancement of rural amenity values. The Landscape Assessment (Moore, 2023) identified that the use of bunding as part of the mitigation on the impact to the rural amenity values would be adverse/moderate-low (minor). The bunding is shown in Figure 9-2 along the Clutha/Mata-Au project area extent within G43/233 and G43/232.
 - o Note the Landscape Assessment did not take archaeological values into consideration.
- The cycle trail is located close to the edge of the pit along the northwestern boundary. The noise/visual bund will consequently serve as an important barrier to discourage the public accessing this area.
- The existing power services running along above ground poles through the centre of the project are required to be buried underground along the north and northwest boundaries, part of which is in line with this proposed bund (see Figure 1-3). These new cables are required for the continuation of service connections between the national grid and Millers Flat township. The cable path cannot be moved further in land due to increased risk of damage with machinery during mining.

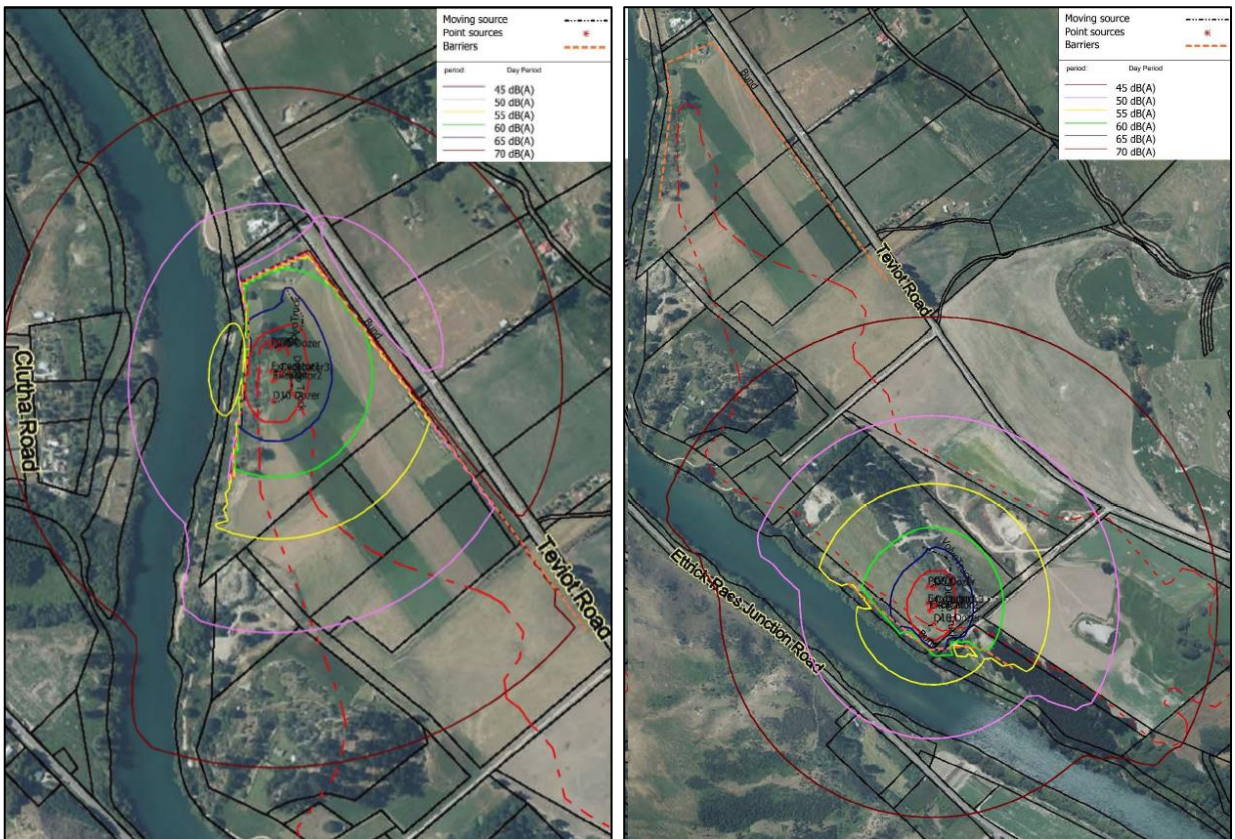


Figure 9-1. Noise contours for initial stages of mining at the northern end of site closest to G44/233 (Hegley, 2022).

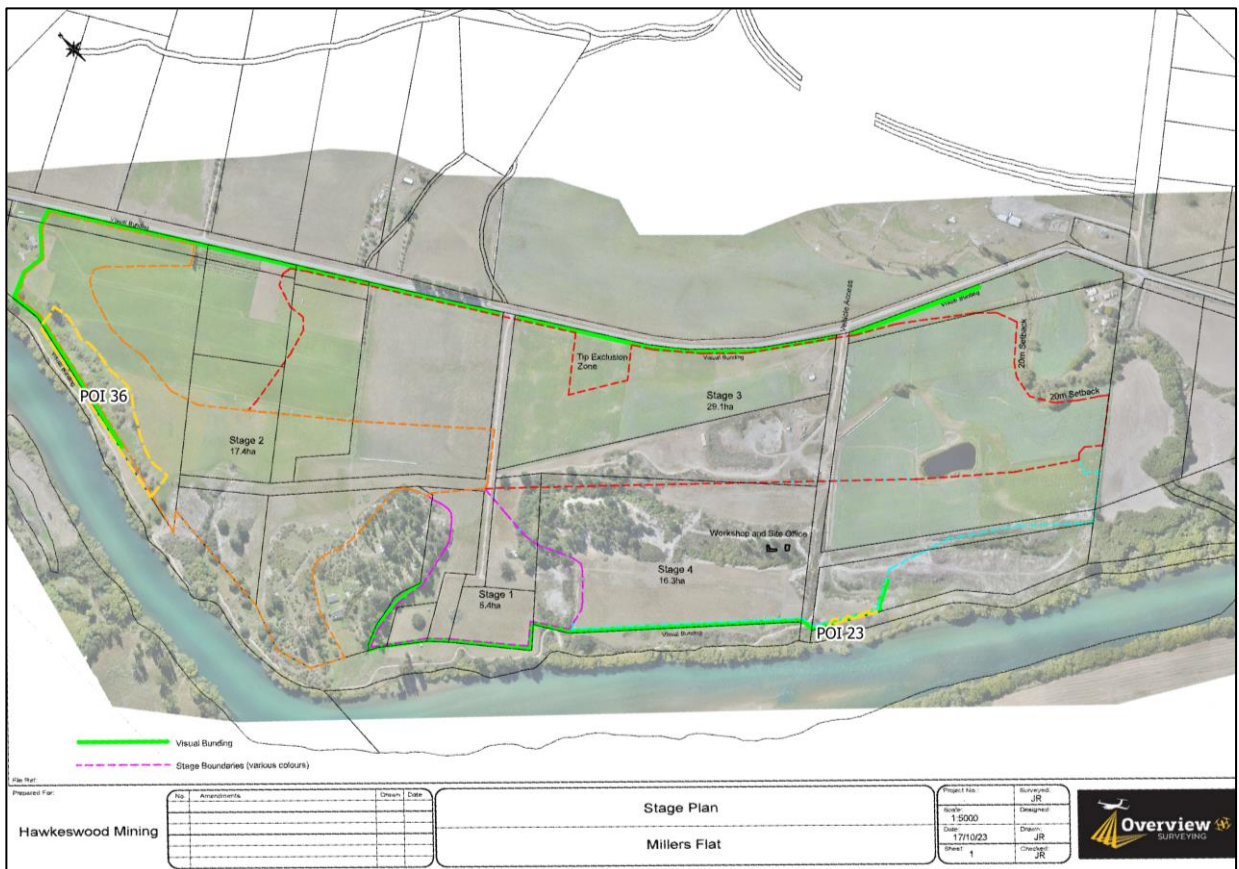


Figure 9-2. Plan showing the location of visual bunding around the project area (marked by stage outlines) (image provided by MacDonell Consulting Ltd.) showing archaeological sites G43/232 (POI 23) and G43/233 (POI 36) within the project area.

9.2.2 Mitigation for Information Loss

Due to the scale of the required earthworks, it is not possible to redesign the works as described above in Section 9.2.1 to avoid archaeological remains. To mitigate any information loss, NZHP recommends that an archaeologist monitor all earthworks that are likely to encounter archaeological remains until it can be shown that no archaeology survives. NZHP recommends this involve archaeological monitoring of topsoil stripping in areas deemed to be high risk for encountering archaeological material, as well as test trenching and potential excavation of archaeological sites.

Based on the historical and archaeological research, as well as the archaeological site survey, NZHP has identified areas where there is a higher potential for archaeological remains to be encountered that should be monitored by an archaeologist. These areas include features noted in historical maps and those identified during the archaeological survey (including those recorded as archaeological sites). Due to potential error in historical plans as well as the georeferencing of those plans, and the potential for subsurface features to extend beyond those identified on the surface, a 10m buffer has been extended around these features. The areas where NZHP recommends archaeological monitoring are shown as red zones in Figure 9-3. By having an archaeologist on site in high-risk areas, the features can be identified as they are exposed (rather than after they are truncated or heavily disturbed) and recorded following best practice.

Extensive mining in the twentieth century has been excluded from red zones, as the excavation depths of the twentieth and twenty-first century mining works extend into natural gravel deposits. The only exception to this is the most recent earthworks under Exploration Permit 60712, where only topsoil was removed (Figure 1-2). Red zones for monitoring thus extend into this area as there is still potential for subsurface archaeological remains to be present.

NZHP recommends that topsoil stripping, in red zones where archaeological monitoring is required, be undertaken over consecutive days, at the beginning of each stage of works and prior to any other earthworks taking place in this stage. As shown in Figure 9-4, the areas recommended for archaeological monitoring frequently overlap the different stages of works for the proposed mining. Due to constraints of open ground, as required to meet resource consent, the archaeological monitoring will largely align with these mining phases, with some exceptions where access or open ground limits mean an area will be completed in the next stage. None of the proposed works in the earlier stage (for example, Stage 3) will not occur within the archaeological risk zones until the later stage (for example, Stage 4). Proposed staging of monitoring and mining is therefore outlined in Figure 9-4. Following the completion of the archaeological risk areas, the project could proceed without the involvement of the archaeologists in the remainder of the stage area.

Within the red zone, where archaeological monitoring is recommended, excavations should be undertaken with a hydraulic excavator (not a bulldozer) so that any features exposed are not immediately disturbed further by bulldozer tracks during the process of excavation. Excavations undertaken by hydraulic excavator should be done in systematic scrapes across the archaeological areas to be monitored until natural deposits are reached. As archaeological features are exposed, they will then be excavated by hand and recorded by the archaeologist(s).

Any archaeological features or deposits encountered must be recorded to current best practice, and any remains of structures recorded to a minimum Level II standard as defined in HNZPT's guide, *Investigation and Recording of Buildings and Standing Structures* (Heritage New Zealand Pouhere Taonga, 2018). Such structures may include water races, as well as the remains of cob and timber buildings which have not been extensively archaeologically recorded or excavated in the wider area but are historically known to have once been present throughout the project area. If archaeological features extend beyond the red zones, archaeological monitoring and recording should continue until the archaeologist is satisfied that no further archaeological material survives.

Archaeological research has also shown the potential to encounter archaeological remains associated with pre-1900 Māori activity, to a depth of around 2m. Beyond a single shell find, no other indicators were identified during the

archaeological survey. However, there is still potential to find deeper remains, not visible on the ground surface, as indicated by the hillshade LiDAR imagery (see Figure 5-92). NZHP has identified the most likely area where such deep remains may be found is located close to the Tima Burn, in particular the lower terraces adjacent to the waterway. Consequently, NZHP recommends two further test trenches (shown as orange zones in Figure 9-3) to identify any earlier archaeological remains present beneath flood deposits.

These test trenches should be done before all other works as with the excavation of the red zones. The test trenches, undertaken using a hydraulic excavator, should be 1.5m wide and 2.5m deep. The recommended depth is based on the previously recorded archaeological site (G44/12) while accounting for potential error or variation in previously reported depths. To record the stratigraphy or investigate potential archaeological deposits, the trenches will be benched out to allow safe entry and archaeological recording within the trench where required. If archaeological deposits are encountered, these will be left in situ and a new authority will be sought for excavation of these features. Should a buried topsoil be encountered within the test trenching, NZHP believes there is potential for intact archaeological deposits to remain in the surrounding layer, and therefore works in this area should also seek a new authority, to provide an opportunity to better understand these deposits prior to excavation. The extent of this area will be confirmed on site, following the results of the archaeological test trenching.

Existing tracks will be used to allow heavy machinery throughout the project area. Some tracks do not run directly to red or orange zones. However, the ground surface leading to these areas has been heavily modified by plough and tractor previously, so it is unlikely access to areas identified for archaeological monitoring and investigation, will impact archaeological remains further.

Beyond the red and orange zones, works should operate under On-Call Protocols (OCP). Under OCP, if potential archaeological remains are encountered during works then an archaeologist should be contacted to advise further. If it is determined that the remains are archaeological, they should be recorded as described above, and archaeological monitoring should resume (with earthworks undertaken with a hydraulic excavator), until the archaeologist is satisfied that no further archaeological material survives.

NZHP recommends that the client, project manager(s), and all contractors involved in earthworks undergo an archaeological briefing outlining their requirements under the HNZPTA 2014 prior to any works commencing. The initial briefing should be done on-site, though for those unable to attend in person, the briefing can be done via videoconference (i.e., Zoom, Microsoft Teams, Skype). The briefing, delivered by the Section 45 approved person or a nominated person on their behalf, will outline the likelihood of encountering archaeological evidence, how to identify possible archaeological sites during works, the archaeological work required under the conditions of the authority, and contractors' responsibilities regarding notification of the discovery of archaeological evidence to ensure compliance with the authority conditions.

NZHP recommends that work be guided by an Archaeological Management Plan (AMP) to ensure that archaeological requirements and involvement are clearly outlined. The Archaeological Management Plan (AMP) will include areas where an archaeologist must be present and where works can proceed under OCP. The document will also provide for variation of archaeological involvement. Methods to protect archaeological sites and features are also discussed, as are procedures for archaeological monitoring, protocols for the discovery of Māori archaeology and kōiwi tangata, and on-call protocols for the unexpected discovery of archaeology. Any changes to the AMP will require prior written agreement of HNZPT.



Figure 9-3. Map showing recommended areas for archaeological monitoring and test trenching (based on historic and archaeological research, and results of the site survey).

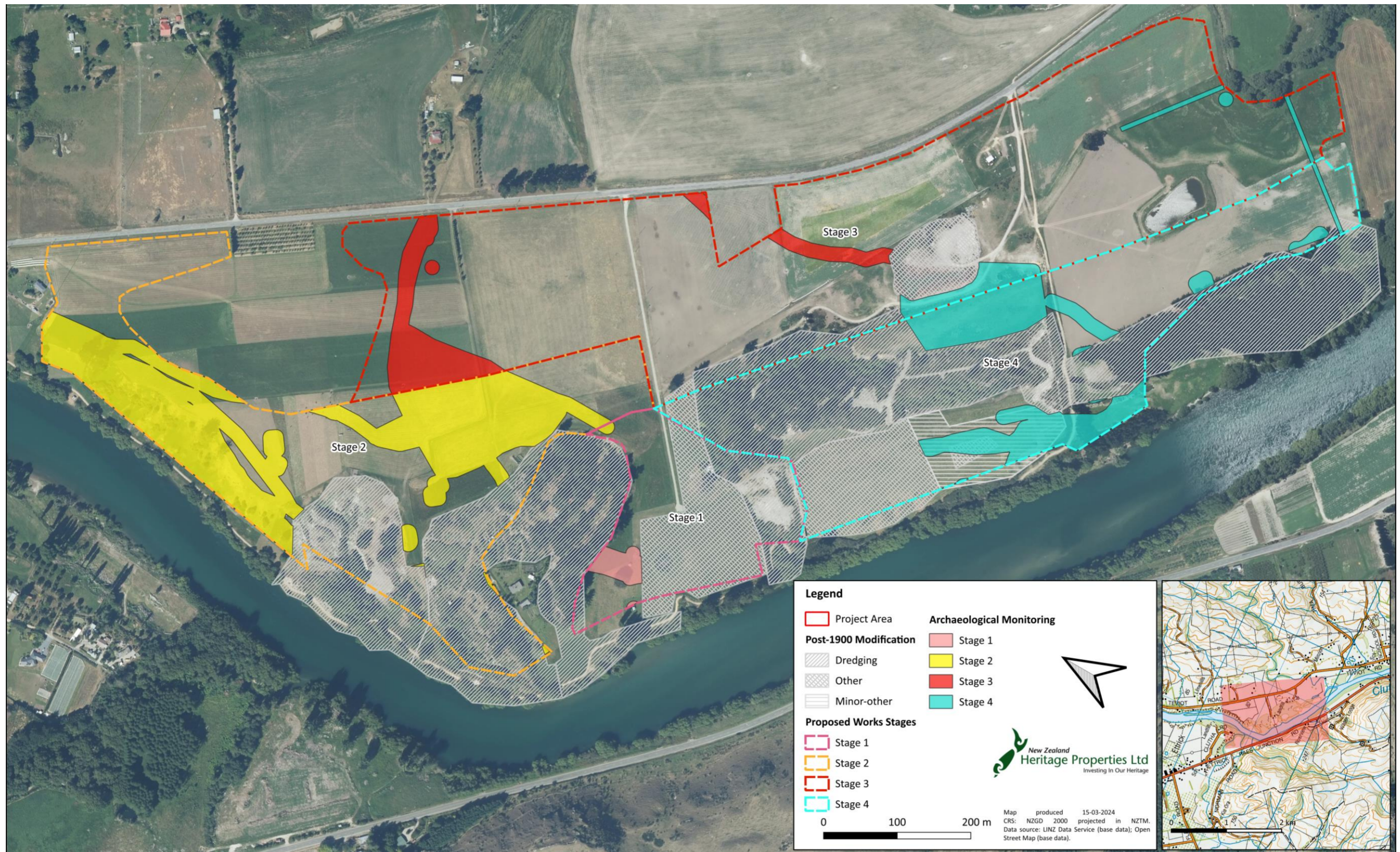


Figure 9-4. Map showing recommended areas for archaeological monitoring and test trenching in relation to phasing.

Several visible artefactual remains were noted during the survey. This includes the dredge bucket (POI 23) and spindle axle (POI 38) associated with archaeological sites G43/232 and G43/233, as well as two dredge buckets (POI 19) and haul rope (POI 26) identified adjacent to early twentieth century locations. Associated with both nineteenth and twentieth century dredging, they still hold heritage values and are easily movable. As such, NZHP recommends that the items are salvaged, stored securely during works at a location to be advised to HNZPT, and reinstated as part of the rehabilitation close to the cycleway. Hawkeswood Civil has identified that at that time they wish to erect interpretive signs outlining the history of the project area and the outstanding features (including G43/232 and G43/233), so that some physical remnants of the twentieth century heritage will survive, along with public interpretation of the long history of the site.

9.3 Summary of Effects on Archaeological Values

The works as proposed will remove all archaeological remains within the project area. NZHP considers that the works will have major impact on the pre-1900 remains associated with G43/233 (sluicing faces and tailings); a moderate impact on the pre-1900 remains associated with G43/232 (sluicing faces, tailings and in situ features) and G43/285 (Kitto family mining complex); and a major impact on G44/159 (artefact scatter). There is also potential for further historic mining activity, historic-domestic occupation archaeological, as well as midden/oven relating to early manawhenua activity through the project area. As the works will destroy any remains encountered associated with these site types, the impact will be major.

NZHP considers that the overall impact of the proposed works on the proposed will be major. However, with the mitigation recommendations outlined above, the adverse effect will be reduced; and NZHP supports an application for an archaeological authority to modify these sites.

10 Conclusions and Recommendations

This archaeological assessment has identified that archaeological sites G43/232, G43/233, G43/285 and G44/159 will be affected by the proposed establishment and operation of an alluvial gold mine at 1346-1536 Teviot Road, Roxburgh. These sites relate to mining activity throughout the project area and include such features as tailings, sluicing faces and water races, as well as artefact scatter relating to historic-domestic activity. These sites are considered to have **low to moderate** archaeological values. There is also potential for further mining sites, historic-domestic sites as well as midden/oven sites (relating to early manawhenua activity) to be encountered throughout the project area. If encountered, depending on their condition, extent, and complexity the archaeological values of such sites could range from **low to high**. Due to the nature of the proposed works the overall impact of the works on the archaeological values of both recorded and unrecorded sites will be major. However, with the recommended mitigation outlined in Section 9.2, the overall impact of the works would be reduced.

Table 10-1. Sites affected by the development of 1346-1536 Teviot Road, Roxburgh.

NZAA Site Id	Site Location	Brief Description
G43/232	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318894; N 4938374)	Large area of pre-1900 sluice faces and tailings as well as post-1900 dredge tailings and channels
G43/233	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318182; N 4939445)	Area of pre-1900 sluice faces and tailings.
G43/285	Between Teviot Road and the Clutha/Mata-Au (E 1318444; N 4939033)	Water races relating to the Kitto family mining complex
G44/159	Between Teviot Road and the Clutha/Mata-Au (E 1319190; N 4938182)	Artefact scatter likely relating to historic-domestic occupation

Based on the results of this assessment, NZHP makes the following recommendations:

- **Protection of sites/features:** As a first principle, every practical effort must be made to avoid damage to any archaeological site, whether known, or discovered during any redevelopment of the site.
 - Artefactual remains relating to pre- and post-1900 mining (POI 19, POI 23, POI 26, and POI 38) should be salvaged, stored and reinstated close to the public cycleway with public interpretation following the goldmining operations.
 - All excavation in the areas of archaeological features must be undertaken by a skilled operator.
- **Authority Application:** As the proposed works described in Section 1.2 will affect site G43/232, G43/233, G43/285 and G44/159, as well as 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 (Section 1.2), then HNZPT and NZHP must be alerted, as any changes may alter the assessment of effects or invalidate the authority.
- **AMP:** All works must be carried out in accordance with AMP. Any amendments to the AMP will require prior written approval from HNZPT.
- **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.
- **Recording of Structures:** Any subsurface unrecorded structures, such as cob or timber building remains and water races, should be recorded to a Level II 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.

- **Archaeological Monitoring:** All earthworks that may affect an archaeological site must be monitored by the s45 approved person (or person nominated on their behalf) in accordance with the plan shown in Figure 9-3 and the AMP.
 - Excavations within the red and orange zones should be undertaken prior to any other works occurring on site, with a hydraulic excavator and monitored by an archaeologist.
 - Excavations within the red zones should be undertaken until natural deposits are encountered and there is no further potential for archaeological remains to be present.
 - Excavations within the orange zones, should be undertaken to 2.5m in depth as there is a higher risk of deeper archaeological remains to be present beneath natural flood deposits in these areas.
 - Any archaeological features and material encountered shall be recorded, analysed, and interpreted in accordance with current archaeological practice and as outlined in the AMP, with the exception of potential Māori archaeology in the area of the Tima Burn, where no archaeology will be impacted under this authority.
- **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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki and HNZPT and in accordance with the AMP.
 - 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.
- **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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki, HNZPT, and the police. The Ngāi Tahu policy for kōiwi takata shall also be followed (Te Rūnanga o Ngāi Tahu, 2019).
- **Reporting:**
 - Within 20 working days of the completion of on-site archaeological work, the site record forms must be updated or submitted to ArchSite.
 - Within 12 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 Hokonui Rūnanga, Te Rūnanga o Ōtākou, Kāti Huirapa Rūnanga ki Puketeraki, Toitū Otago Settlers Museum, Tūhua Otago Museum and the NZAA Central Filekeeper.

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Appendix A 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
G43/232	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318894; N 4938374)	Large area of pre-1900 sluice faces and tailings as well as post-1900 dredge tailings and channels
G43/233	Adjacent to the Clutha/Mata-Au on true left bank between Teviot and Millers Flat (E 1318182; N 4939445)	Area of pre-1900 sluice faces and tailings.
G43/285	Between Teviot Road and the Clutha/Mata-Au (E 1318444; N 4939033)	Water races relating to the Kitto family mining complex
G44/159	Between Teviot Road and the Clutha/Mata-Au (E 1319190; N 4938182)	Artefact scatter likely relating to historic-domestic occupation



Site Record Form

NZAA SITE NUMBER: G43/232

SITE TYPE: Mining - gold

SITE NAME(s): Golden Bed Dredging Company

DATE RECORDED: 30/08/2011

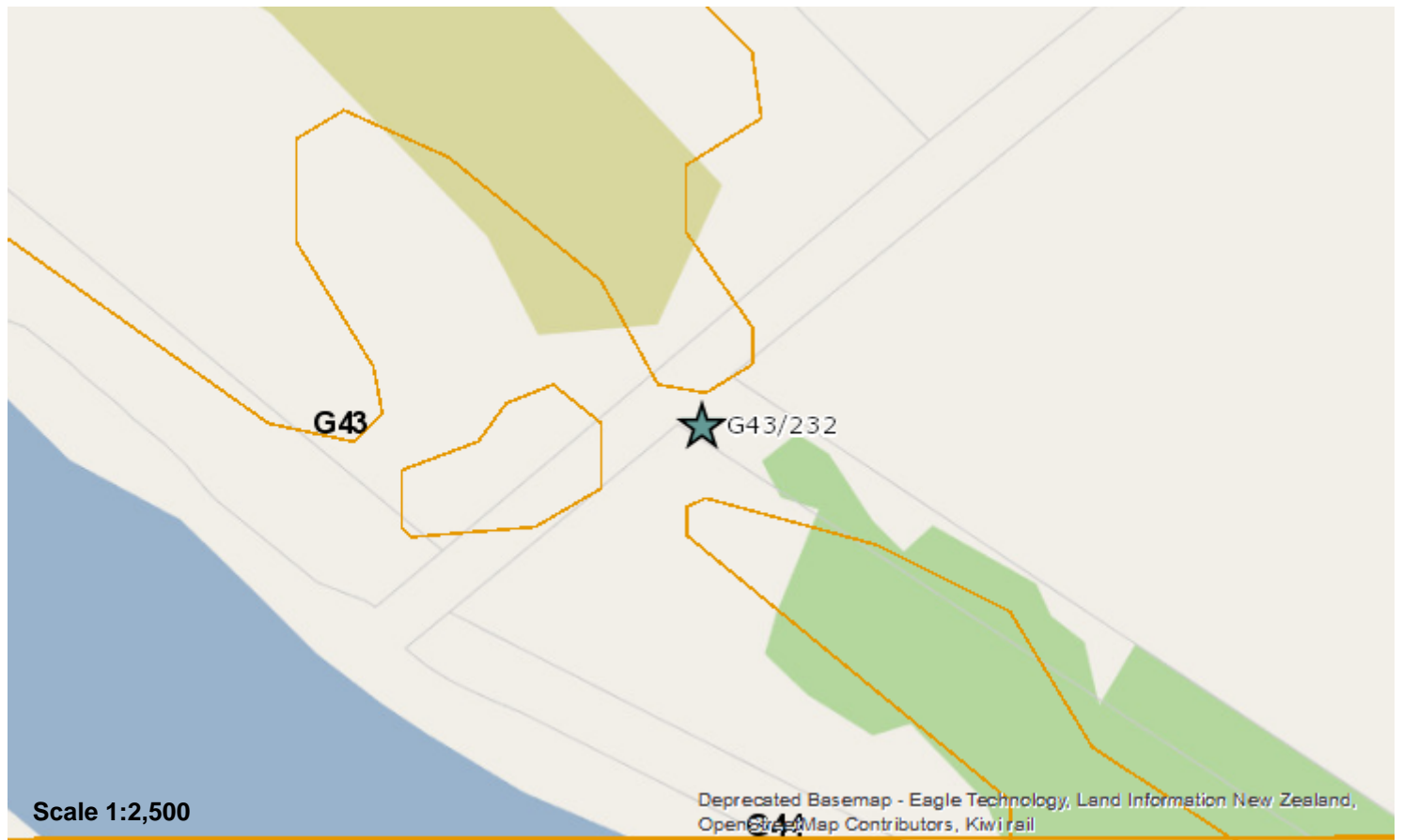
SITE COORDINATES (NZTM) Easting: 1318894

Northing: 4938374

Source: Handheld GPS

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER:



Finding aids to the location of the site

Drive to the Millers Flat green waste dump and walk toward the river. The site is visible from this point as a large, linear tailing stack.

Brief description

Very large area of dredge tailings, dredge channels, pond, on river edge

Recorded features

Pond, Sluicings/ sluicing face, Tailings

Other sites associated with this site

SITE RECORD HISTORY**NZAA SITE NUMBER:** G43/232**Site description**

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 25/09/2023 by Lawrence, Megan
Grid reference (E1318894 / N4938374)

On the 25th of September 2023, the site was visited by New Zealand Heritage Properties archaeologists Megan Lawrence and Oliver Walne as part of a wider survey (Figure 1). Prior to 1900, this area was used for sluicing along the riverbank (Figure 4). The area was then taken over by the Golden Bed Dredging Company and several sections were dredged from 1900 onwards which resulted in a lot of the dredge tailings which are now present (Figure 2 and Figure 3). Portions of the sluicing area has been heavily damaged by the later dredging; however, a small section of pre-1900 sluice faces remain intact, with the tailings from the dredging running just inland and around the sluice faces (Figure 5 and Figure 6). Along the top of the sluice faces there are remains of dredging (likely operating in the Clutha/Mata-Au adjacent) scattered around the area, including dredge buckets and haul ropes (Figure 7 and Figure 8). These remains are situated within the extent of archaeological site G43/232.

Updated 01/10/2015 (Field visit), submitted by emmabrooksedit , visited 11/01/2015 by Jacomb, C., Easdale, S.
Grid reference (E1318894 / N4938374)

The site was inspected following construction of the Clutha Gold Cycle Trail. There was minor damage through cutting into the sluice face.

See also Final Report on Clutha Gold Trail Construction. Authority numbers 2012/143, 2012/199, 2012/651. Southern Pacific Archaeological Research 30 September 2015.

Updated: 30/08/2011, Visited: 20/07/2011 - NZTM E1318894 / N4938374 (Handheld GPS). The site is a very large area of dredge tailings, dredge channels and a pond. See also attached site plan (ROX15.png). Inspected by: Brown, A.

Condition of the site

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 25/09/2023 by Lawrence, Megan

While the overall site condition of the site is good, the pre-1900 sluice faces have been damaged by later twentieth century mining activities. A proportion of the pre-1900 sluice face is intact, however the areas to the north and south have been destroyed by post-1900 dredging and landscape modification. As a result, this portion of the site is considered to be in fair condition.

Updated 01/10/2015 (Field visit), submitted by emmabrooksedit , visited 11/01/2015 by Jacomb, C., Easdale, S.

The site was inspected following construction of the Clutha Gold Cycle Trail. There was minor damage through cutting into the sluice face.

Statement of condition

Updated: 05/09/2011, Visited: 20/07/2011 - Good – Majority of visible features are intact, but some minor loss of definition and/or damage

Current land use:

Updated: 16/10/2023 - Grazing, Cropping, Rural residential, Industrial/ commercial

Threats:

Updated: 16/10/2023 - Stock trampling, Farming practices, Road/ track formation or maintenance, Ploughing/ cultivation, Quarrying

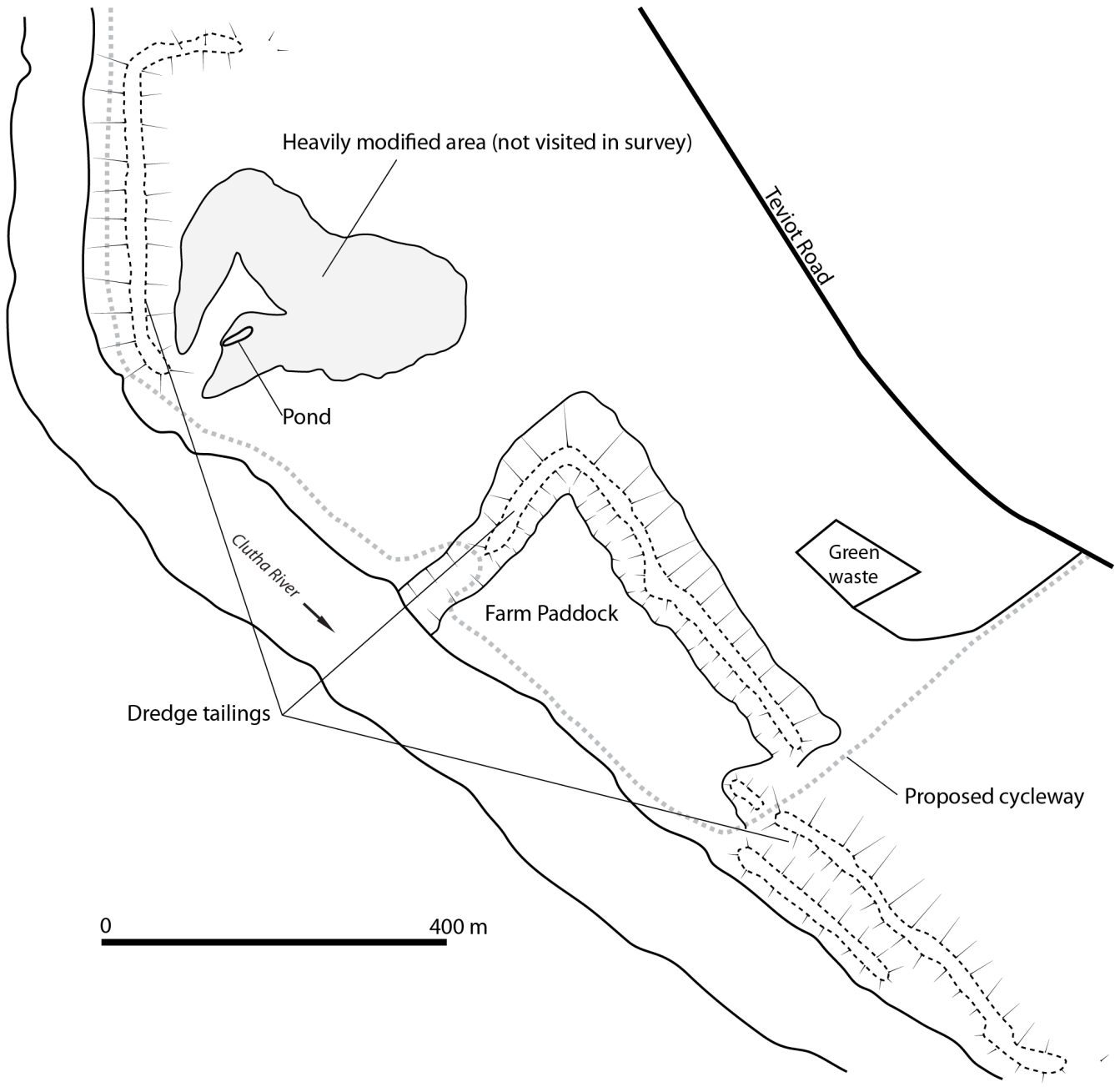
Updated: 09/12/2015, Visited: 11/01/2015 - Road/ track formation or maintenance

Supporting documentation held in ArchSite

There was minor damage through cutting into the sluice face (C. Jacomb, Jan. 2015).



Plan of site



Plans and images from archaeological survey at Millers Flat (Site G43/232).

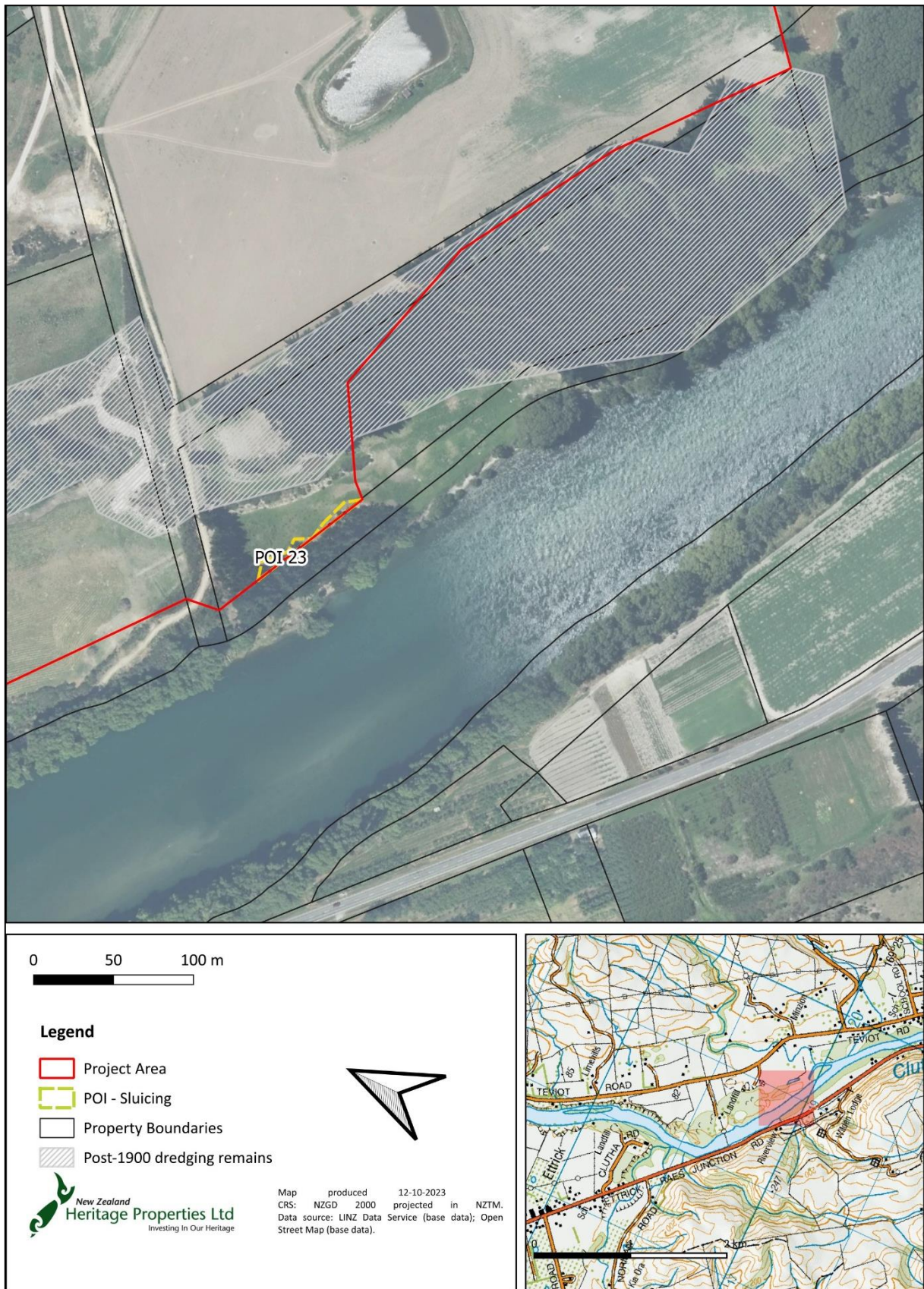


Figure 1. Site plan showing areas visited during the site survey (G43/232 continues beyond the survey area) with the pre-1900 sluice faces outlined yellow.



Figure 2. Detail of Part 1 of a Panorama taken of the sluicing area around 1903 showing the Golden Bed Dredging Company's dredge in the background. (CLUTHA RIVER - Goldmining Dredging C1903 (Left) from near Ettrick to (Right) Miller's Flat [Part 2 of 4 Part Panorama], 1903).

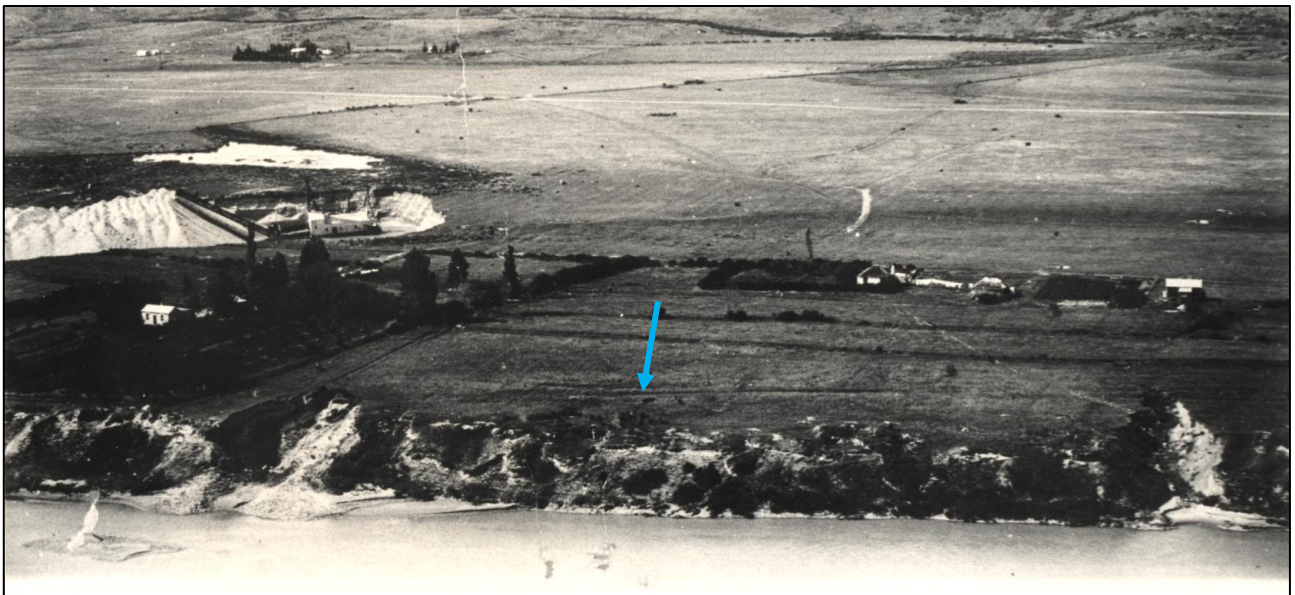


Figure 3. Detail of Part 2 of a Panorama taken of the sluicing area around 1903 showing the Golden Bed Dredging Company's dredge in the background. (CLUTHA RIVER - Goldmining Dredging C1903 (Left) from near Ettrick to (Right) Miller's Flat [Part 2 of 4 Part Panorama], 1903). Pre-1900 mining sections shown with blue arrow.

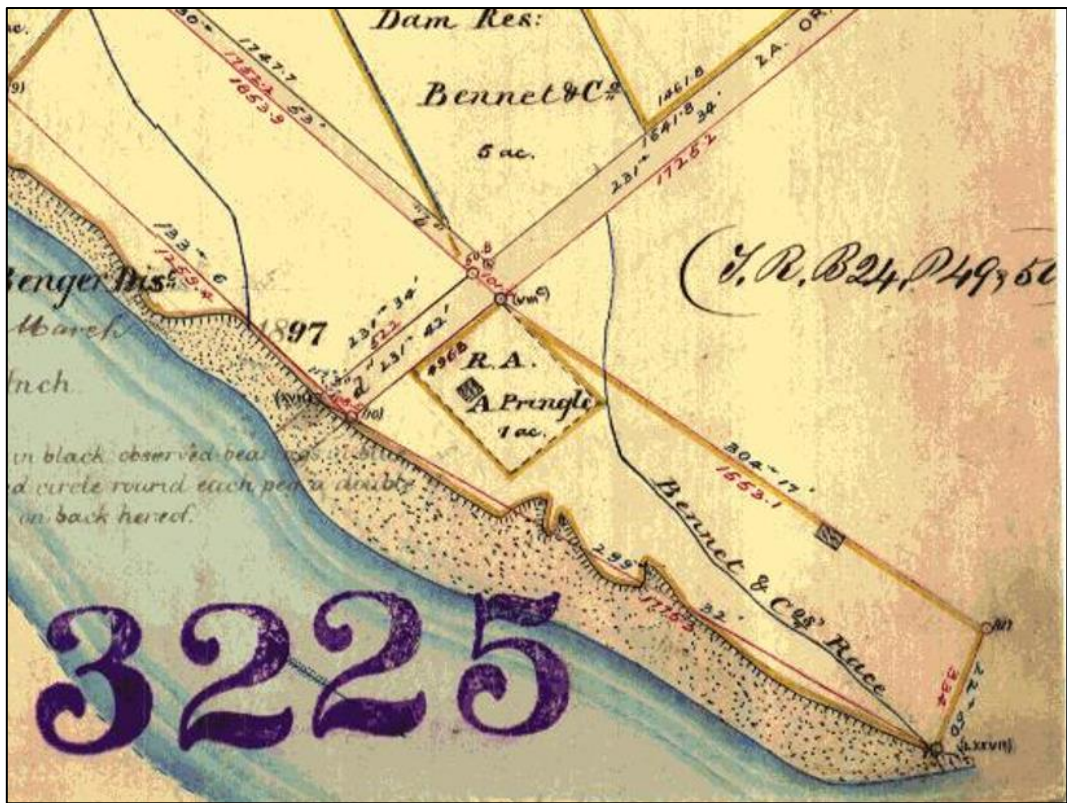


Figure 4. SO 3225 (1897) showing the pre-1900 sluicing area along the Clutha Riverbed.



Figure 5. Sluicing area along bank of the Clutha/Mata-Au (facing southwest).



Figure 6. Sluicing area along bank of the Clutha/Mata-Au (facing west).



Figure 7. Discarded haul rope (facing southwest).



Figure 8. Discarded dredge bucket (facing southwest).



Site Record Form

NZAA SITE NUMBER: G43/233

SITE TYPE: Mining - gold

SITE NAME(s):

DATE RECORDED: 30/08/2011

SITE COORDINATES (NZTM) Easting: 1318182

Northing: 4939445

Source: Handheld GPS

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER:



Finding aids to the location of the site

From Teviot Road, locate the power lines associated with the Talla Burn power scheme and follow them to the Clutha River. The site lies directly upstream from the point where the lines cross the river.

Brief description

Area of sluice faces and stacked tailings, beside river.

Recorded features

Sluicings/ sluicing face, Tailings

Other sites associated with this site

SITE RECORD HISTORY**NZAA SITE NUMBER:** G43/233**Site description**

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 26/09/2023 by Lawrence, Megan
Grid reference (E1318182 / N4939445)

On the 25th of September 2023, the site was visited by New Zealand Heritage Properties archaeologists Megan Lawrence and Oliver Walne as part of a wider survey (Figure 1). The sluice faces now form a ridge at the edge of the farmland and have been grassed over (Figure 3, Figure 4 and Figure 5). At the base of the faces, sit small piles of tailings. The area was recorded as 315m in length and spanned approximately 62m. Within this area was what appeared to be a metal ladder axle that was likely from mining activities in the area (Figure 6). It is possible that the axle comes from the ladder of a dredge which would have carried the buckets of gravel working along the Clutha/Mata-Au.

It appears that the area would have continued to south however, this has been destroyed by twentieth century dredge runs in the area recorded as part of G44/233.

Updated 01/10/2015 (Field visit), submitted by emmabrooksedit , visited 01/10/2015 by Jacomb, C., Easdale, S.
Grid reference (E1318182 / N4939445)

The site was inspected following construction of the Clutha Gold Cycle Trail. There was minor damage through cutting into the sluice face.

Updated: 30/08/2011, Visited: 20/07/2011 - NZTM E1318182 / N4939445 (Handheld GPS). The site is an area of sluice faces and stacked tailings. The portion of the site directly adjacent to the river has been bulldozed, however the areas further inland remain in excellent condition. The site is truncated to the south by the presence of large dredge tailings which have clearly been deposited after the working of the ground in G43/232. This is a unique site as it clearly shows the impact of later dredging on the preservation of features associated with previous mining activity. See also attached site plan and image (P1030003; ROX16). Inspected by: Brown, A.

Condition of the site

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 26/09/2023 by Lawrence, Megan

The northern section of the sluice faces and tailings is in excellent condition, however the southern section has been destroyed by post-1900 dredging and landscape modification.

Statement of condition

Updated: 16/10/2023 - Good – Majority of visible features are intact, but some minor loss of definition and/or damage

Updated: 06/09/2011, Visited: 20/07/2011 - Fair - Some intact features, but others may be unclear or damaged

Current land use:

Updated: 16/10/2023 - Grazing

Threats:

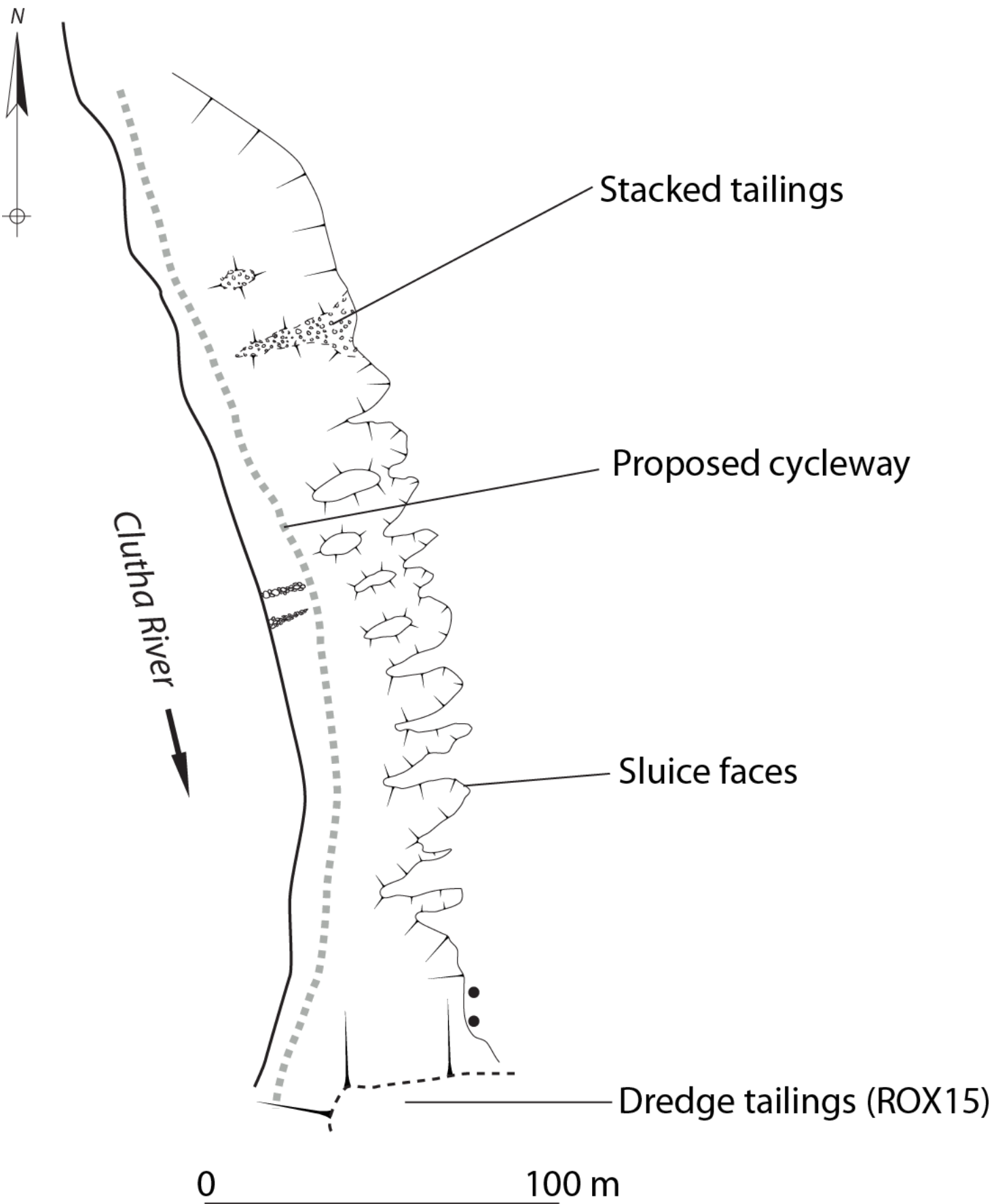
Updated: 16/10/2023 - Stock trampling, Farming practices, Road/ track formation or maintenance

Updated: 05/01/2018, Visited: 01/10/2015 - Road/ track formation or maintenance

SITE RECORD INVENTORY

NZAA SITE NUMBER: G43/233

Supporting documentation held in ArchSite



Photograph of a line of tailings



Plans and images from archaeological survey at Millers Flat (Site G43/233).

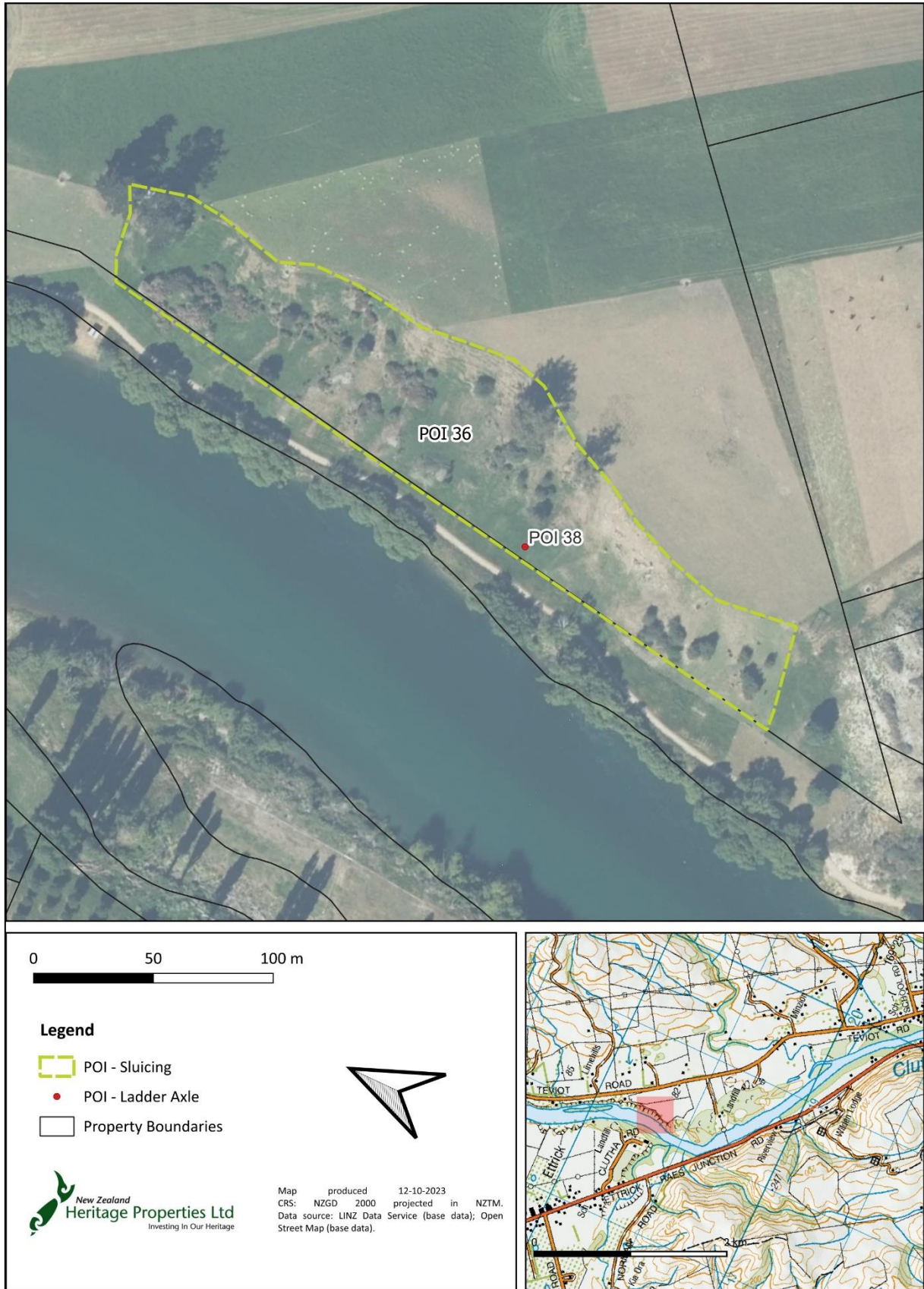


Figure 1. Site plan showing areas visited during the survey. (G43/233 extends west beyond the survey area towards the Clutha/Mata-Au).



Figure 3. Sluice faces and tailings at G43/233 (facing east).



Figure 4. Sluice faces and tailings at G43/233 (facing north).



Figure 5. Sluice faces and tailings at G43/233 (facing south)



Figure 6. Metal ladder axle in proximity to G43/233.



Site Record Form

NZAA SITE NUMBER: G43/285

SITE TYPE: Mining - gold

SITE NAME(s): Kitto and Sons mining area

DATE RECORDED:

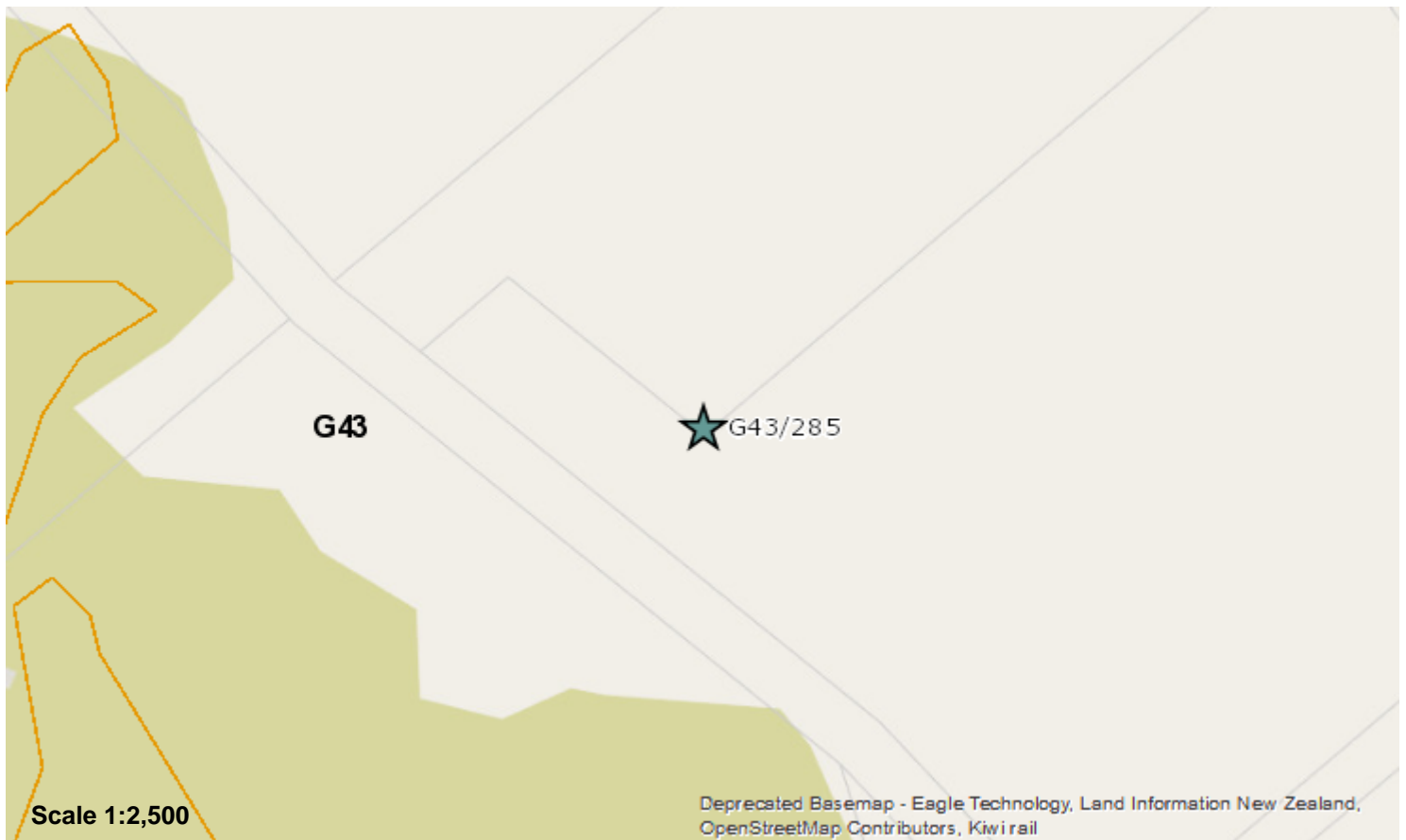
SITE COORDINATES (NZTM) Easting: 1318444

Northing: 4939033

Source: Handheld GPS

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER: G43/285



Finding aids to the location of the site

1484 Teviot Road, in the farmland and active mine.

Brief description

Water races, wooden posts, associated with goldmining, near river

Recorded features

Water race

Other sites associated with this site

G43/233

SITE RECORD HISTORY**NZAA SITE NUMBER:** G43/285**Site description**

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 26/09/2023 by Lawrence, Megan
Grid reference (E1318444 / N4939033)

The site was recorded on the 26th of September 2023 by New Zealand Heritage Properties archaeologists Megan Lawrence and Oliver Walne as part of a wider survey (Figure 1). The historical record showed this particular area was part of the Kitto and Sons mining area and contained several water management features such as water races and dams. Three water races were identified during the site survey. No evidence of any of the dams were identified, as they have been filled in or removed as a result of later farming and mining activity.

Sections of both the north and northeast water races associated with a large Kitto dam on an 1897 plan were identified and recorded as POI 45 and POI 49 respectively (Figure 2 and 3). POI 45 extends for 105m in a north-west to south-east direction. It ran along the base of a seemingly natural slope and was 1800mm wide and 100mm deep (Figure 5).

POI 49, the northeast race, was recorded running north-east to south-west running towards the large Kitto dam. The section recorded ran for 160m from the north-eastern boundary fence. It was 2m wide and up 200mm deep although the sides were very flattened by farming activities such as ploughing and stock trampling (Figure 6). On the other side of Teviot Road, to the northeast, the race continued and was far more obvious and defined, however this was outside of the survey area (Figure 8). Along the side of this race (POI 49) were two timber posts (POI 50 and 51) (Figure 7). It is unclear if or how these posts were associated with the race as only the bottom 250mm of each post remained. The posts did not appear to be aligned with the race as POI 50 was on the edge of the race while POI 51 was set back from the race.

Condition of the site

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 26/09/2023 by Lawrence, Megan

The races located were only partial lengths and hard to distinguish from natural divers and slopes. However, at least one of the races continues largely undisturbed outside of the project area. Other features are subsurface.

Statement of condition

Updated: 16/10/2023 - Poor - Visible features are incomplete, unclear and/or the majority have been damaged in some way

Current land use:

Updated: 16/10/2023 - Grazing, Cropping, Industrial/ commercial

Threats:

Updated: 16/10/2023 - Stock trampling, Farming practices, Ploughing/ cultivation, Quarrying

SITE RECORD INVENTORY

NZAA SITE NUMBER: G43/285

Supporting documentation held in ArchSite

Additional Information for Site G43/285 (Megan Lawrence/26-09-2023)

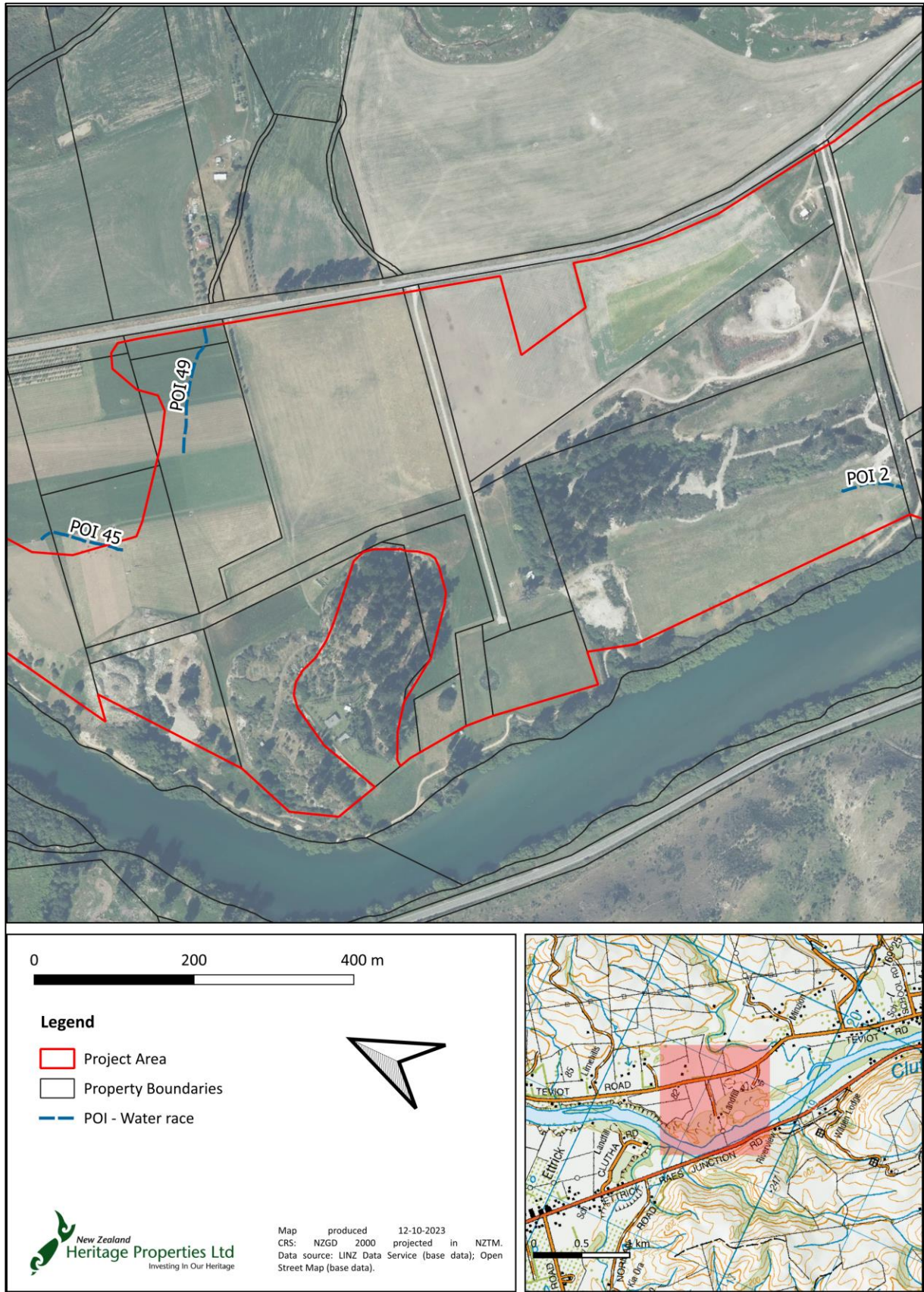


Figure 1. Location of Site G43/285



Figure 2. Detail of S03225, dating to 1897, showing water races identified in the site survey (blue arrows).



Figure 3. Detail of SO 3195, dating to 1895, showing the other water race (POI 2) identified in the site survey (blue arrow).

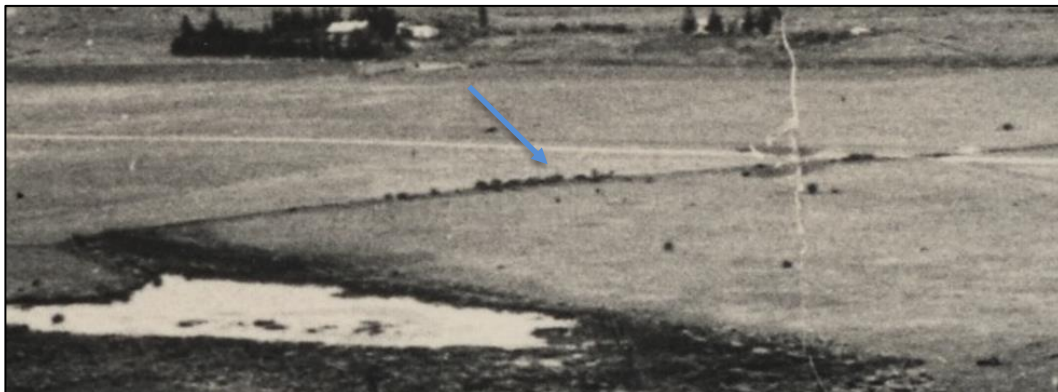


Figure 4. Photograph looking northeast at one of the water races identified in the site survey running northeast (blue arrow)(CLUTHA RIVER - Goldmining Dredging C1903 (Left) from near Ettrick to (Right) Miller's Flat [Part 2 of 4 Part Panorama], 1903)



Figure 5. Water race (POI 45) facing north-east.



Figure 6. Water race (POI 49) facing west.



Figure 7. Wooden posts (Left: POI 50. Right: POI 51) facing north-west.



Figure 8. Water race (POI 49) continuing outside of the project area (facing northeast).



Figure 9. Potential water race (POI 2) facing north-west.

References:

CLUTHA RIVER - Goldmining Dredging c1903 (left) from near Ettrick to (right) Miller's Flat [Part 2 of 4 part panorama]. (1903). Hocken Collections (c/nE2438/8).

Additional Information for Site G43/285 (Megan Lawrence/26-09-2023)

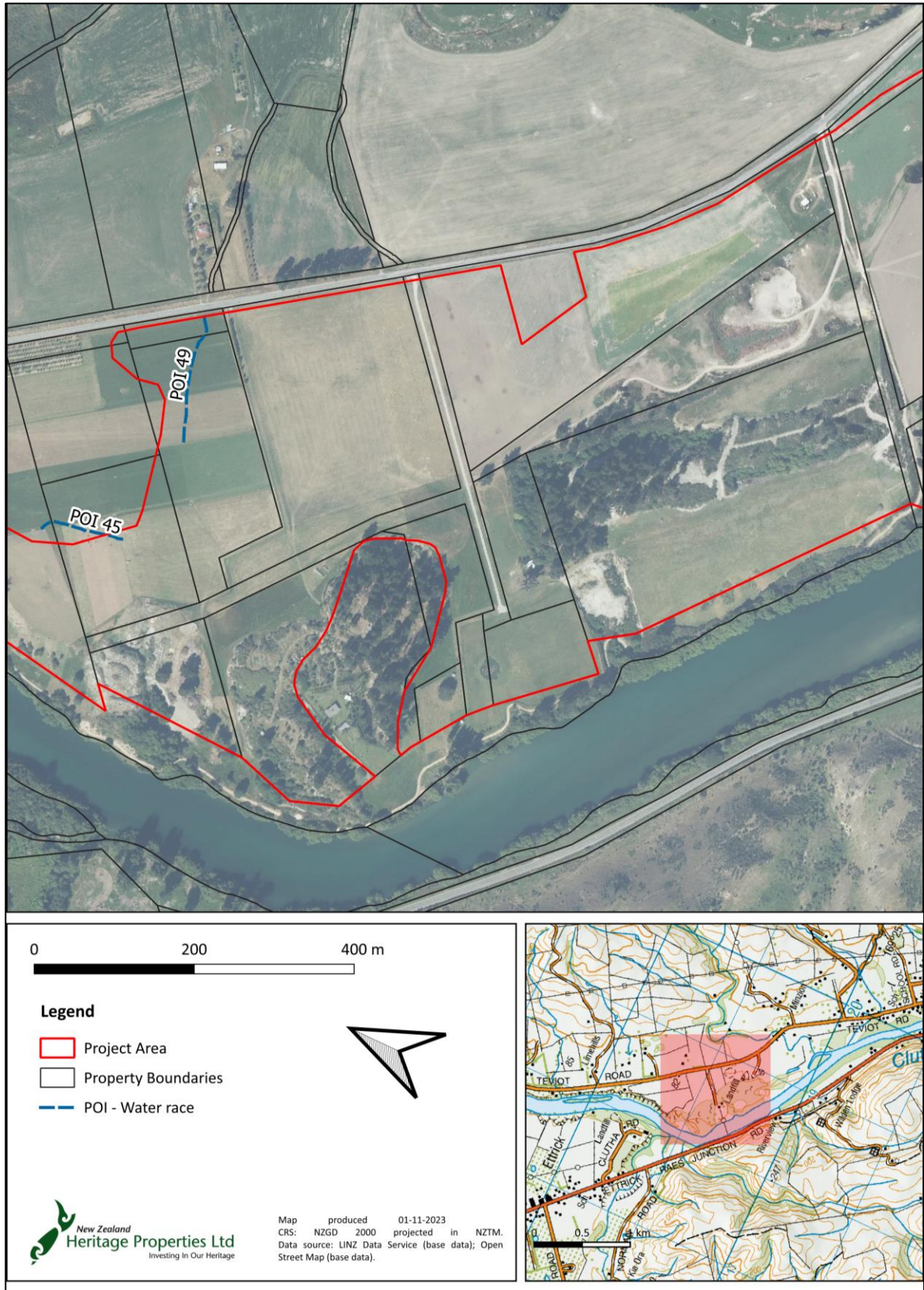


Figure 1. Location of Site G43/285



Figure 2. Detail of S03225, dating to 1897, showing water races identified in the site survey (blue arrows).

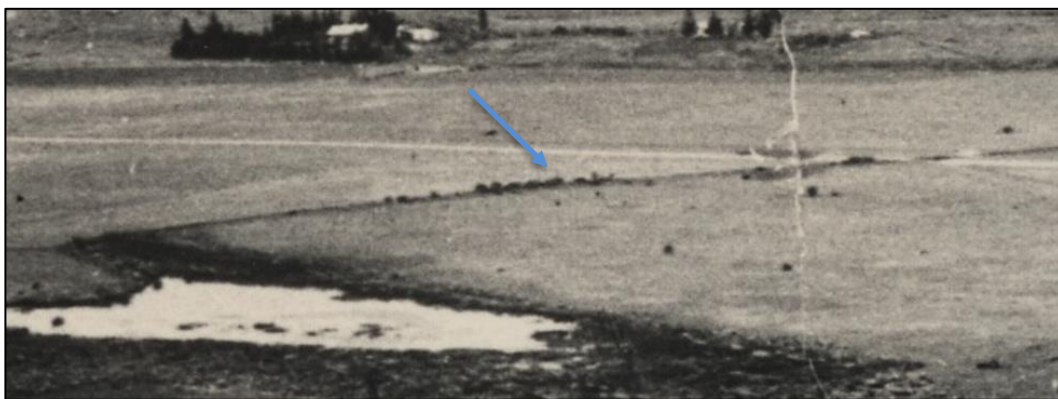


Figure 3. Photograph looking northeast at one of the water races identified in the site survey running northeast (blue arrow)(CLUTHA RIVER - Goldmining Dredging C1903 (Left) from near Ettrick to (Right) Miller's Flat [Part 2 of 4 Part Panorama], 1903)



Figure 4. Water race (POI 45) facing north-east.



Figure 5. Water race (POI 49) facing west.



Figure 6. Wooden posts (Left: POI 50. Right: POI 51) facing north-west.



Figure 7. Water race (POI 49) continuing outside of the project area (facing northeast).

References:

CLUTHA RIVER - Goldmining Dredging c1903 (left) from near Ettrick to (right) Miller's Flat [Part 2 of 4 part panorama]. (1903). Hocken Collections (c/nE2438/8).



Site Record Form

NZAA SITE NUMBER: G44/159

SITE TYPE: Historic - domestic

SITE NAME(s):

DATE RECORDED:

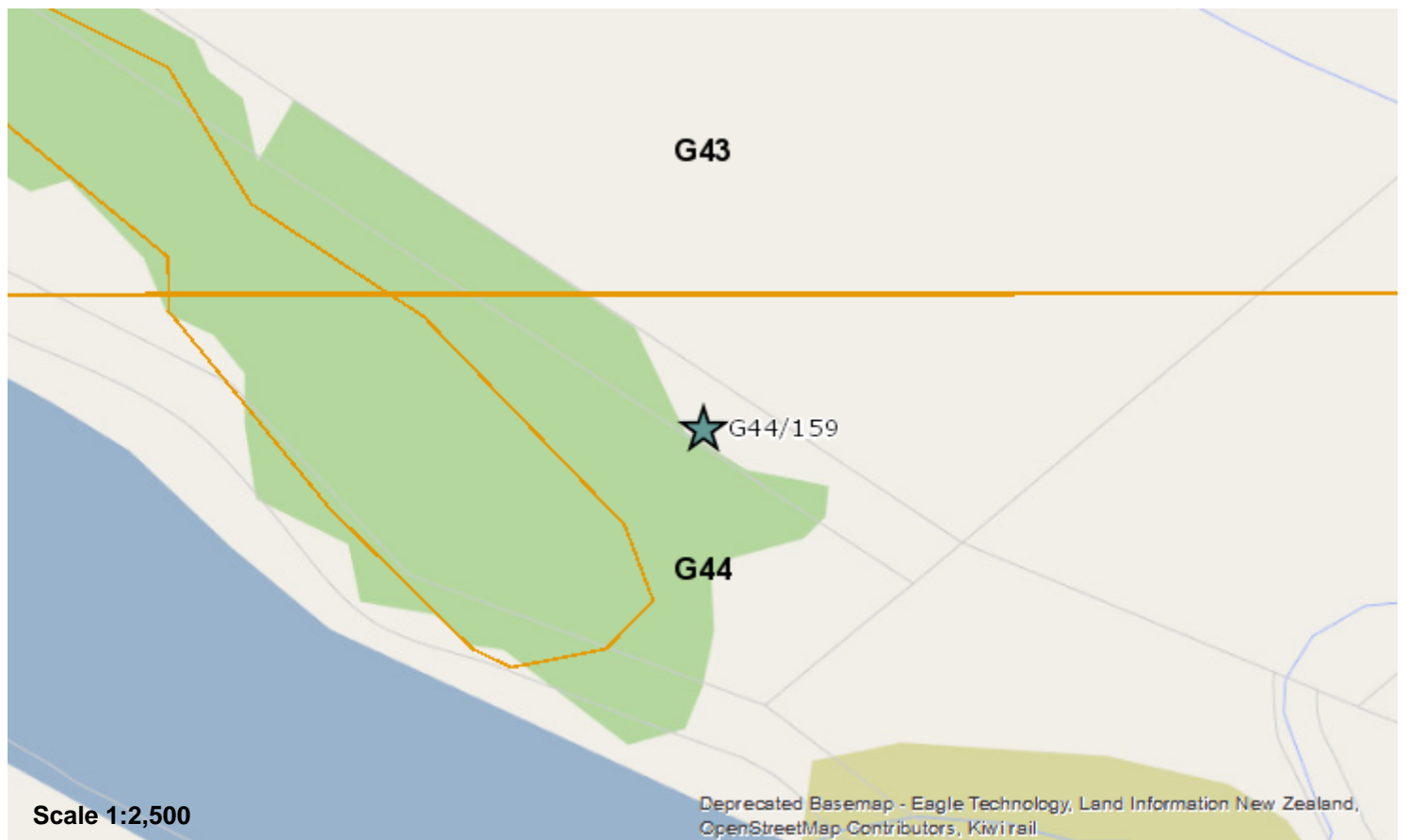
SITE COORDINATES (NZTM) Easting: 1319190

Northing: 4938182

Source: Handheld GPS

IMPERIAL SITE NUMBER:

METRIC SITE NUMBER: G44/159



Finding aids to the location of the site

1534 Teviot Road, in far paddock above tailings on riverbank.

Brief description

Scatter of historic artefacts (mostly glass) on ground surface, disturbed by ploughing, near location of building shown on 1897 historic plan

Recorded features

Artefact - historic

Other sites associated with this site

SITE RECORD HISTORY**NZAA SITE NUMBER:** G44/159**Site description**

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 25/09/2023 by Lawrence, Megan
Grid reference (E1319190 / N4938182)

This site, a surface scatter of artefacts, was recorded by New Zealand Heritage Properties staff Megan Lawrence and Oliver Walne during a survey of the wider area (Figure 1). Predominantly glass, the material included the tops and bases of dark olive round bottles, case gin bottles as well as fragments of aqua blue and green bottles (Figure 5 and Figure 6). Occasional ceramics were also noted including a flatware fragment with blue UGTP (Figure 7).

Artefacts were spread down a slight natural slope (an area of 41m x 6m) (Figure 3), the main concentration of artefacts was located on the flat at the crest of the slope (an area of 15m x 5m) (Figure 4). It is likely a rubbish pit on top of the slope has been disturbed by recent ploughing activities and archaeological material dragged down the slope. The artefactual material suggests the scatter was associated with pre-1900 activity. An 1897 historical plan shows a lone building in proximity of the artefact scatter (Figure 2). While the artefact concentration cannot be conclusively linked to the structure at this point, it likely reflects the domestic activities in this area.

Condition of the site

Updated 13/10/2023 (Field visit), submitted by oliverwalne , visited 25/09/2023 by Lawrence, Megan

The site has been heavily disturbed recent ploughing activities leading to the artefacts being spread over a larger area. It is unclear how much, if any, material remains in situ.

Statement of condition

Updated: 16/10/2023 - Poor - Visible features are incomplete, unclear and/or the majority have been damaged in some way

Current land use:

Updated: 16/10/2023 - Grazing, Cropping, Industrial/ commercial

Threats:

Updated: 16/10/2023 - Stock trampling, Farming practices, Ploughing/ cultivation, Quarrying

SITE RECORD INVENTORY

NZAA SITE NUMBER: G44/159

Supporting documentation held in ArchSite

Additional Information for Site G44/159 (Megan Lawrence/25-09-2023)

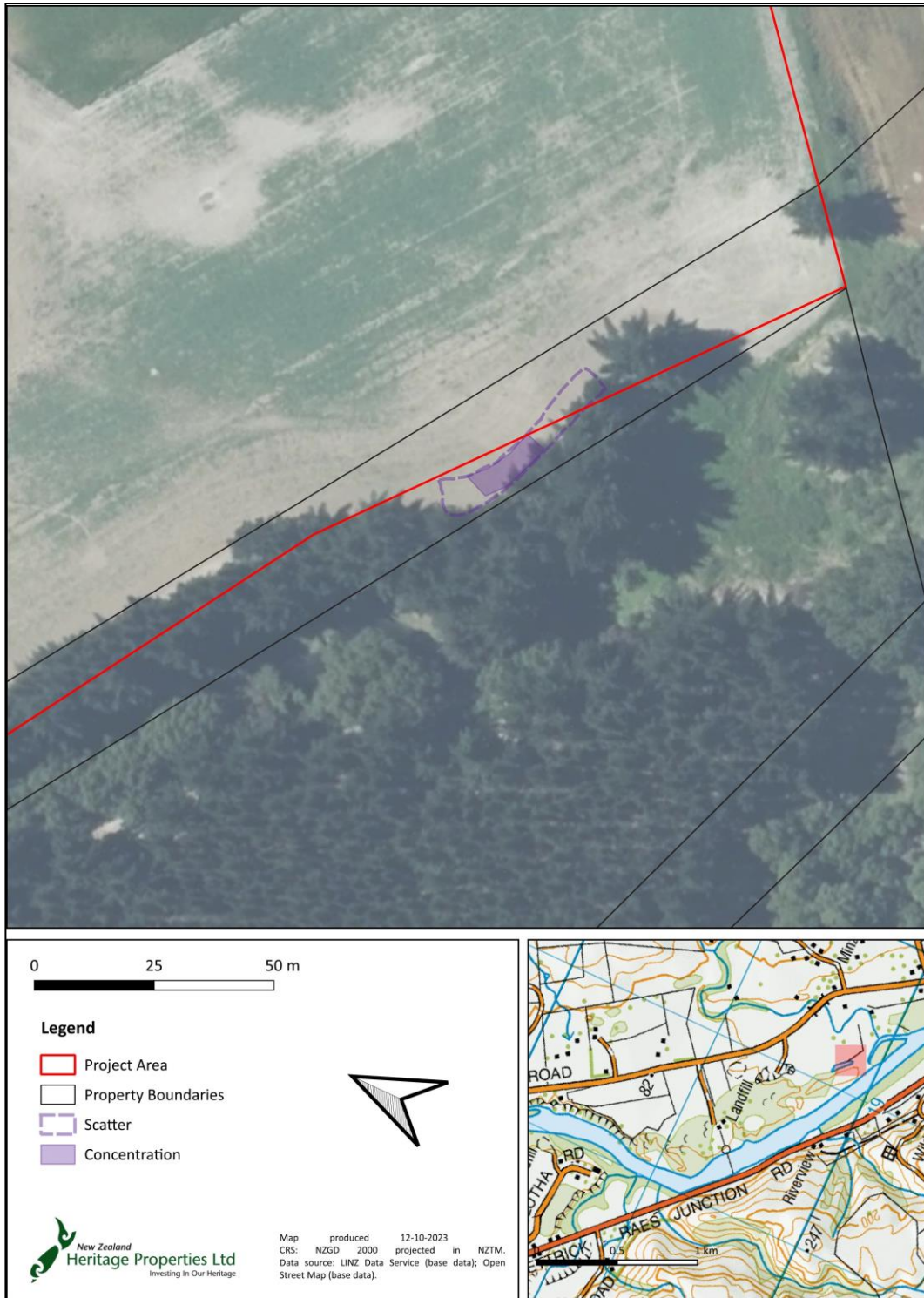


Figure 1. Location of Site G44/159



Figure 2. Detail of SO 3225 (1897) showing lone building (red) and approximate location of site (yellow).



Figure 3. Location of artefact scatter (facing northwest)



Figure 4. Central concentration of artefacts (facing southwest).



Figure 5. Examples of surface scatter.



Figure 6. Examples of surface scatter.



Figure 7. Examples of surface scatter.