

MACRAES PHASE 4 FAST TRACK

Archaeological Assessment
2026



Archaeological Assessment for Macraes Phase 4 – Fast Track

Archaeological Sites: I42/33, I42/41, I42/49, I42/50, I42/51, I42/64, I42/97, I42/98, I42/148, I42/149, I42/150, I42/151, I42/152, I42/153, I42/154, I42/155, I42/156, I42/157, I42/214, I42/215, I42/221, I42/253, I42/256, I42/257, I42/258, I43/86, I43/87, I43/88, I43/190, I43/191, I43/192, I43/193, I43/194, and I43/195

Commissioned by [REDACTED] and [REDACTED] on behalf of Oceana Gold (New Zealand) Ltd

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Cover: Foundations of the 1927 Golden Bar Battery (I43/88).

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Abbreviations

Abbreviation	Meaning
DCC	Dunedin City Council
DOC	Department of Conservation
GIS	Geographic Information System
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
LIDAR	Light Detection and Ranging
MP4	Macraes Phase 4
OGNZL	OceanaGold (New Zealand) Limited
RMA	Resource Management Act 1991
WDC	Waitaki District Council

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1 Introduction

This archaeological assessment has been prepared for OceanaGold (New Zealand) Limited (OGNZL) as part of its application for fast-track approval of the Macraes Phase 4 (MP4) project under the auspices of the Fast Track Approvals Act 2024 (FTAA).¹ The MP4 project aims to extend the life of the Macraes Operation until at least 2039 (Figure 1). Several MP4 project components have been identified as affecting ground not previously modified by recent mining activity (greenfields development), and these are the primary focus of this report:²

- Innes Mills Pit expansion and Macraes Road realignment.
- Coronation Pit and Trimbells Waste Rock Stack expansions.
- Golden Bar Pit and Waste Rock Stack expansions.
- Golden Bar Haul Road.
- Coal Creek Dam and Reservoir.
- Camp Creek Dam and Reservoir.
- Murphy's Creek Ecological Enhancement Area.

The locations of these components are shown in Figure 2.

The following assessment separately considers the project components outlined above, each section:

- Identifies archaeological sites that may be affected by the project component.
- Assesses the archaeological values of those items.
- Assesses the effects of the project component on the sites.
- Provides recommendations for the management, mitigation, and/or offsetting of effects from the project component.

The final section considers the cumulative effects of all project components and includes some general recommendations.

This assessment is tailored to address the requirements for Archaeological Authorities being applied for under the FTAA. To simplify the administration over the decades-long project, five separate Archaeological Authorities are proposed for the following project components:

- Innes Mills Pit expansion and Macraes Road realignment.
- Coronation Pit and Trumbell's Waste Rock Stack expansions.
- Golden Bar Pit and Waste Rock Stack expansions.
- Coal Creek Dam and Reservoir.
- Camp Creek Dam and Reservoir.

Archaeological authorities are not recommended for the other project components as they will not modify or destroy any pre-1900 sites.

A separate heritage assessment has been prepared to inform the resource consent application under the FTAA.³

¹ OceanaGold, *Macraes Phase Four Project Description: Fast Track Approvals Act 2024* (Unpublished Report, 2025).

² Past works have meant that no archaeological sites have survived in brownfields areas.

³ Jeremy Moyle et al., *Heritage Assessment for Macraes Phase 4 - Fast Track* (Unpublished report for OceanaGold, 2026).

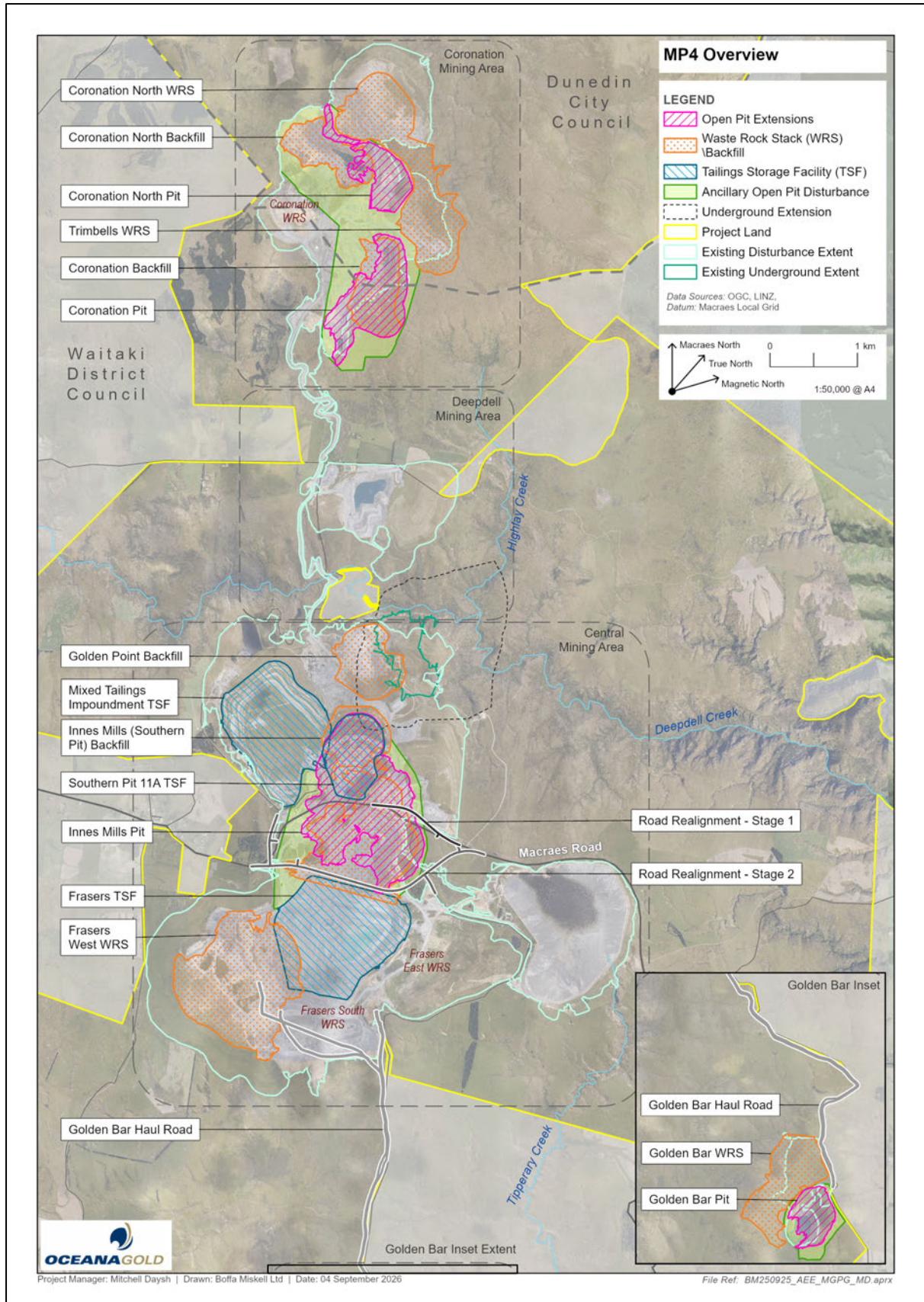


Figure 1. MP4 project overview.⁴

⁴ OceanaGold, *Macraes Phase Four Project Description: Fast Track Approvals Act 2024*.

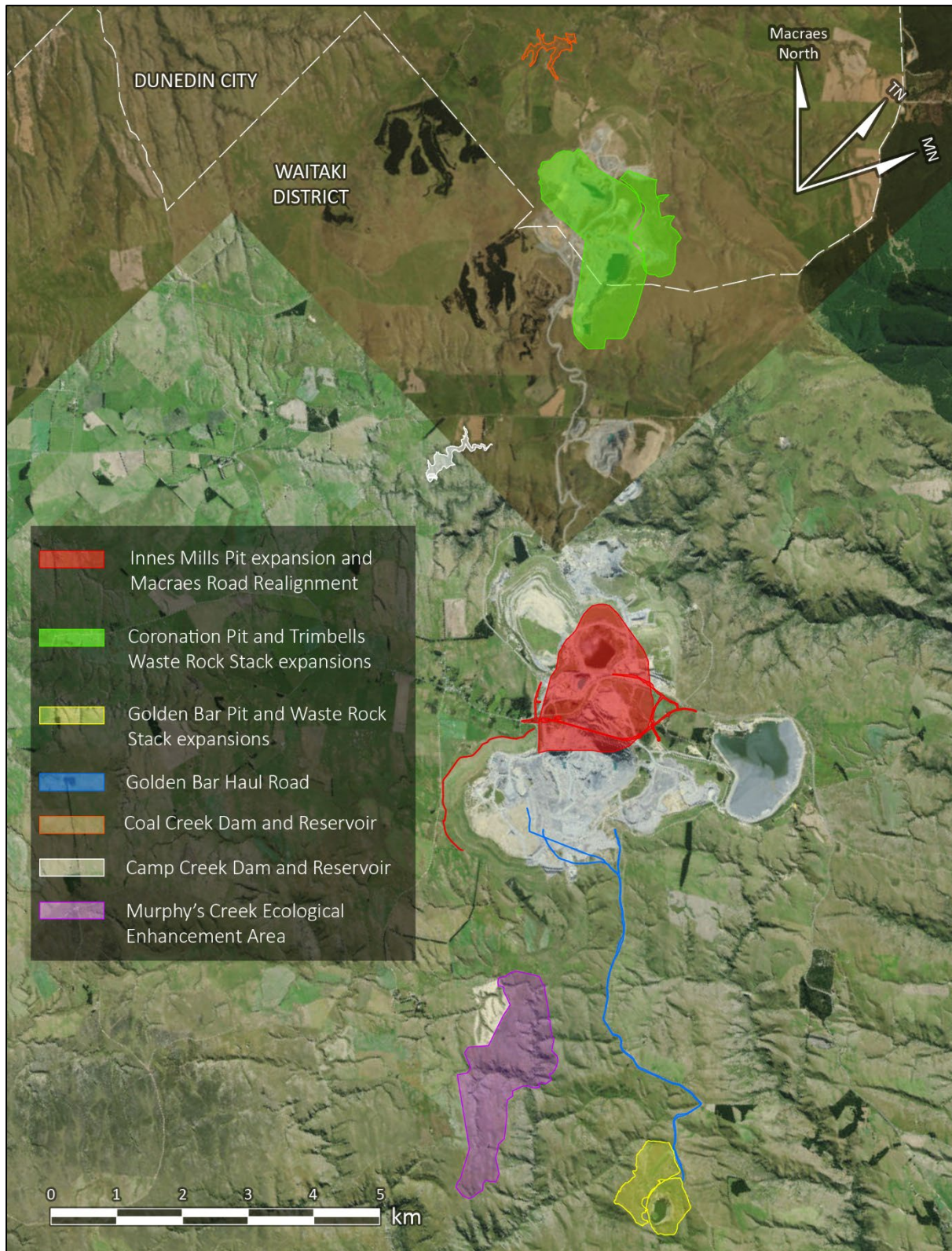


Figure 2. MP4 project components relevant to this report (2021, 2023 LINZ aerial photography).

2 Regulatory Framework

2.1 Heritage New Zealand Pouhere Taonga Act 2014

The Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) contains a consent process for any work affecting archaeological sites (Archaeological Authority) that is administered by Heritage New Zealand Pouhere Taonga (HZNPT). An archaeological site is defined 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).

Any person who intends to carry out work that may damage, modify or destroy an archaeological site, or to investigate a site using invasive archaeological techniques, must first obtain an Archaeological Authority from HNZPT. The process applies to sites on land of all tenure including public, private, and designated land. The HNZPTA 2014 contains penalties for unauthorised site damage or destruction.

The Archaeological Authority process applies to all sites that fit the HNZPTA 2014 definition, regardless of whether:

- the site is recorded in the NZ Archaeological Association Site Recording Scheme or registered by HNZPT;
- the site only becomes known about as a result of ground disturbance; and/ or
- the activity is permitted under a district or regional plan, or a resource or building consent has been granted.

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 Environment Court's decision within 15 working days of receiving notice of the decision.

HNZPT may impose conditions on the authority that must be adhered to by the authority holder. However, provision also exists for a review of the conditions. The authority remains current for a period of up to 35 years, as specified in the authority. If no period is specified in the authority, it remains current for a period of five years from the commencement date.

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

2.2 Fast Track Approvals Act 2024

The FTAA is intended to facilitate the delivery of infrastructure and development projects with significant regional or national benefits. It provides a single pathway for approving projects that might have otherwise been subject to a variety of separate legislation, including Acts that manage heritage:

- The Resource Management Act 1991
- The Conservation Act 1987
- The HNZPTA

Decisions on FTAA projects are made by an expert panel.

A substantive application under the FTAA must include a variety of information to allow an informed decision to be made on the various approvals sought. For heritage, this includes:

Archaeological Authority

An assessment of:

- The archaeological, Māori, and other relevant values of the archaeological site in the detail that is appropriate to the scale and significance of the proposed activity and the proposed modification or destruction of the archaeological site.
- The effect of the proposed activity on those values.
- Evidence of consultation with tangata whenua, or reasons why this has not happened.

Resource Consent

An assessment of the activity against any relevant provisions, primarily:

- A regional policy statement or proposed regional policy statement.
- A plan or proposed plan.

This assessment must consider:

- Any relevant objectives, policies, or rules in these documents.
- Any requirement, condition, or permission in any rules in any of these documents.
- Any other requirements in any of these documents.

Resource consent requirements are considered in a separate heritage assessment report.

3 Methodology

This archaeological assessment is informed by a desktop review and field survey. The subsequent assessment of archaeological values and the effects of the project on those values is generally based on HNZPT guidance.⁵

3.1 Desktop Review

The desktop review largely built on previous assessments carried out by Origin Heritage and other consultants around the Macraes area. Several historic sources were also consulted to try to establish and clarify the historical development and chronology of certain areas and identify archaeological sites. These sources included:

- Online and physical archives, including PapersPast for historic newspapers.
- HNZPT List/Rārangi Kōrero, Waitaki District Council (WDC) and Dunedin City Council (DCC) district plans, ArchSite⁶, and Kā Huru Manu to identify recorded archaeological sites.
- Historic survey plans (via Premise) and historic aerial photographs (via Retrolens).
- Modern aerial photographs and LiDAR data (via Google Maps, Google Earth, and LINZ Data Service, and OGNZL).
- Secondary sources, including publications and reports held by Origin Heritage, supplied by OGNZL, or available on the HNZPT Archaeology Digital Library.

A GIS (Geographic Information System) was constructed using ArcGIS Pro that incorporated data from the above sources, located known archaeological sites, and used to identify areas with additional potential archaeological sites to be inspected in the field. To support this latter function, the project area for each project component was divided into a grid with cells of 100m x 100m and the historical and modern aerial photographs systematically reviewed for potential archaeological features within each cell. From this, obvious archaeological features were identified (e.g., tailings, structures, and water races). Areas with archaeological potential were also identified (i.e., water courses, gullies, or discontinuities in the landscape) that might indicate past human modification, like slumping or depressions that might indicate past sluicing or prospecting. All grid cells were checked using photograph, map, and LiDAR layers to help identify any potential sites present in the terrain. Cells containing potential sites were noted for field inspection. Figures illustrate these inspection sites for each project component.

3.2 Survey

Field work was undertaken to inspect recorded archaeological sites and other possible sites identified in the desktop review. A targeted survey based on this preliminary work involved visiting any obvious archaeological features identified and carrying out a general walkover of wider areas with archaeological potential (i.e., walking up gullies, along water courses). ArcGIS Field Maps supported this work, and was used during fieldwork to locate the sites and points of interest identified during the desktop review. When archaeological features or other points of interest were identified in the field, they were photographed and their location recorded using a Garmin GPS. Where aerial photography was considered to be useful it was taken using DJI Mavic 3 drone.

3.3 Assessment of Archaeological Values

Six main criteria have been used for assessing the archaeological values of the pre-1900 sites identified in the assessment that have the potential to be affected by the proposed works. These are:

- Condition – the physical condition of the site and any associated features.

⁵ Heritage New Zealand Pouhere Taonga, *Archaeological Guidelines Series No. 2: Writing Archaeological Assessments* (Heritage New Zealand Pouhere Taonga, 2019).

⁶ ArchSite is the New Zealand Archaeological Association (NZAA) online database of recorded archaeological sites. It was formerly the NZAA Site Recording Scheme, a paper-based system that was brought online in 2009.

- Rarity/Uniqueness – the degree of rarity of the site within its immediate and/or wider contexts.
- Contextual – the contribution of the site to its broader contextual situation (e.g., cultural, local, and archaeological contexts).
- Information potential – the potential for additional information to be recovered by archaeological means and its nature.
- Amenity – the potential contribution of the site as a local amenity.
- Cultural associations – the cultural associations of the site.

3.4 Constraints and Limitations

The constraints and limitations on the assessment included:

- The significant degree of land modification due to farming and mining in the area made it challenging to identify any potential archaeological features.
- The volume of past surveys of archaeological sites by different consultants over the past 35 years has created a corpus of work that is varied in coverage and quality and challenging to navigate at times.
- The previously recorded sites on ArchSite, the HNZPT List, and the council district plans do not represent an exhaustive record of the historic heritage features in the area.
- Some ArchSite entries are challenging to locate on the ground because they:
 - Have inaccurate locations due to recording prior to GPS.
 - Encompassed a large feature (e.g., a water race) which was historically recorded as a single point potentially removed from the project area.
- Time constraints meant that the assessment only involved desk-based research and a visual inspection of the site. No targeted intrusive investigations, such as test pitting, were undertaken.

4 Historical Overview

Archaeological evidence demonstrates a pattern of widespread Polynesian settlement of Aotearoa New Zealand by the early 14th century,⁷ with more recent research indicating settlement as early as 1250 AD⁸. The first people of Te Waipounamu (the South Island) were thought to be Waitaha, who were followed by Ngāti Mamoe and then Ngāi Tahu from the North Island.⁹ The three iwi eventually merged through conflict, marriage, and alliances. The Kāi Tahu Whānui¹⁰ quickly spread across the region, developing different types of settlement sites dependent on the available local resources and environmental conditions.¹¹ These included settled village sites along the coast adjacent to rich and sustained food resources such as seals and moa; seasonal inland sites for collecting stone resources and hunting; and comparable seasonal coastal sites for “fishing and moa processing.”¹²

Gradually, much of the forest along the coastal region was reduced in extent due to changes in patterns of hunting and fishing, and the use of smaller, more mobile occupation sites by the 16th and 17th centuries. This was followed by further changes in economy, based on organised food gathering and processing that created settled village communities along the Otago coastline from the mid-18th century onwards.¹³

While the vast majority of well-established settlements in the South Island were on the eastern coast, where the climate was more temperate, Māori also thoroughly explored the interior and established routes and trails inland and across the Southern Alps to the West Coast.¹⁴ The Waitaki District was rich in resources, both food and raw material for the manufacture of tools. Several sources of silcrete, used for the production of blades associated with moa butchery, are found in the area. The plateau around Macraes seems to have been used steadily by Māori, but not intensively. This began with early expeditions for resource gathering, and continued into the period of European contact, with adjustments to the resources being targeted. Archaeological surveys around Macraes have not identified any confirmed in-situ sites Māori origin, but a quartzite blade was recovered near the Coronation Pit and a possible rock art location has been identified in Tipperary Gully.¹⁵ Further afield, there is archaeological evidence of moa hunter sites, silcrete quarries, ovens, rock shelters, and wooden bowls within the Strath Taieri.¹⁶

These findspots fit with the activities in the interior for seasonal resources, including eeling, catching birds, and cooking cabbage tree stems. Eels and birds, particularly weka, were collected and tikumu (for weaving) and

⁷ Chris Jacomb et al., ‘High-Precision Dating and Ancient DNA Profiling of Moa (Aves: Dinornithiformes) Eggshell Documents a Complex Feature at Wairau Bar and Refines the Chronology of New Zealand Settlement by Polynesians’, *Journal of Archaeological Science* 50 (October 2014): 24–30, <https://doi.org/10.1016/j.jas.2014.05.023>; R. Walter et al., ‘Mass Migration and the Polynesian Settlement of New Zealand’, *Journal of World Prehistory* 30 (2017): 351–76.

⁸ Magdalena M. E. Bunbury et al., ‘A New Chronology for the Māori Settlement of Aotearoa (NZ) and the Potential Role of Climate Change in Demographic Developments’, *Proceedings of the National Academy of Sciences* 119, no. 46 (2022): e2207609119, <https://doi.org/10.1073/pnas.2207609119>.

⁹ Tipene O’Regan, ‘Old Myths and New Politics: Some Contemporary Uses of Traditional History’, *New Zealand Journal of History* 26, no. 1 (1992): 5–27.

¹⁰ Waitaha, Kāti Mamoe and Kāi Tahu are referred to collectively as Kāi Tahu whānui.

¹¹ Janet M. Wilmshurst et al., ‘Dating the Late Prehistoric Dispersal of Polynesians to New Zealand Using the Commensal Pacific Rat.’, *Proceedings of the National Academy of Sciences of the United States of America* 105, no. 22 (2008): 7676–80, <https://doi.org/10.1073/pnas.0801507105>.

¹² Jill Hamel, *The Archaeology of Otago* (Department of Conservation, 2001).

¹³ Hamel, *The Archaeology of Otago*.

¹⁴ WA Taylor, *Lore and History of the South Island Māori* (Bascands Ltd, 1952), 141–48.

¹⁵ Brian Allingham, *OceanaGold: Macraes Phase III - Iwi Archaeological Assessment* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2011); Brian Allingham, *Coronation Area Archaeological Survey* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2013); Brian Allingham, *The Coronation North Project - OceanaGold: Archaeological Assessment Report on Remains of Maori Origin* (Unpublished report for OceanaGold (New Zealand) Ltd, 2016); Benjamin Teele, *Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham, 2016* (Unpublished report for OceanaGold (New Zealand) Ltd, 2016).

¹⁶ Jill Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District* (Unpublished report for Department of Conservation, 2000).

taramea were harvested. Traditional activities in the area appear to have focused along the Taieri and the adjacent wetlands, as opposed to the exposed plateau country. Silcrete was an important resource during the earliest exploration phase, and the area was likely visited regularly to collect this material, with one large site (I43/23) recorded near Nenthorn.¹⁷

By the 1850s, the land was being settled by European farmers with pastoral leases and sheep runs.¹⁸ Due to its proximity to Dunedin, the runs in Macraes Flat were taken up and stocked relatively early. By 1871, the largest pastoral holdings were made up of several runs. Three large runs were located near Macraes Flat – Run 109, 210 and 250.

In 1855, JM Saunders applied for Run 109, but the application appears to have lapsed and the run was taken over by Charles Hopkinson.¹⁹ Hopkinson's Station was recorded near the south-eastern border of the run, to the north-east of Dunback Hill.²⁰ Macraes Flat is suggested to have been named after a shepherd working for Hopkinson who lived in the area.²¹ Run 109 was later purchased by Francis D Bell and Alfred D Bell, and became part of Coal Creek Station and, later, the Shag Valley Station.²² When Bell's lease expired in late 1891, the run was divided into smaller grazing runs.²³



Figure 3. Macraes Township circa 1900.²⁴

¹⁷ Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*.

¹⁸ J. Hall-Jones, *Goldfields of Otago - An Illustrated History* (Craig Printing, 2005), 163.

¹⁹ Helen Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts* (Otago Centennial Historical Publications, 1949).

²⁰ SO16125.

²¹ Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts*.

²² *Otago Witness*, "Agricultural and Pastoral News," 21 December 1899.

²³ *Otago Witness*, "Sale of Crown Lands," 3 March 1892, 11.

²⁴ Hocken Snapshot, 19497.

The earliest records show the Highlay Run (Run 250) was initially controlled by Edward Saxton, with control passing to his brother (CS Saxton) after his death. The Deepdell Run (Run 210) was held by Charles Hopkinson.²⁵ Saxton was declared bankrupt before the middle of the 1860s and both runs were auctioned.²⁶ Douglas, Alderson & Co purchased both and amalgamated the runs in September 1864.²⁷ Large station buildings for the Deepdell Station were constructed (near the junction of Macraes and Horse Flat Road) by the early 1860s.²⁸ Towards the end of the 1800s, the Deepdell Run was divided and offered as a series of smaller grazing runs.²⁹

The discovery of gold in May 1862 in Deepdell Creek by James Crombie and his associates saw a transformation of the area. Following this discovery, word spread. As more miners arrived in the area, further gold was found in the surrounding creeks. With the subsequent large influx of miners to the area, the township of Macraes was formed three kilometres south of Deepdell Creek. Alongside European miners, the Chinese made up a significant proportion of the mining population, with the approximately 100 residing at Macraes, and presumably more in the surrounding area, by the 1870s.³⁰ Māori miners are known to have participated in the rushes elsewhere in Otago, and it is probable that local Takata Whenua were involved to some extent in the industry at Macraes.³¹ A topographical sketch of the Highlay District was produced by W. Arthur, the district surveyor, in August 1867.³² This map shows the main communication routes and geographical points, including Sister Peaks, Highlay Hill, Horse Flat, and Trimbells Gully.³³

The first hard rock mine was established in the area in 1866. Initially, this mine was called the “Eclipse,” before being renamed as the Duke of Edinburgh.³⁴ Hard rock mining often involved the use of a small stamping battery for crushing stone, and typical sites included a dam, shafts, and areas of prospecting pits and trenching. The mining population declined in the 1870s and, by 1872, the Duke of Edinburgh had ceased operations. There was a period of stagnation through the 1880s, until an increase in the 1890s, both in alluvial and hard rock mining. At the end of the 19th and beginning of the 20th century, a number of hard rock mines were established in the area, including the Golden Bell, Maritana, Deepdell, Golden Point, Mt Highlay, and Round Hill. These mines operated at a significantly larger scale than the earlier alluvial workings and required more machinery and coordinated manpower. As a result, these were often operated as companies, with shareholders subscribing to the operation of the mine.³⁵

As a result of agitation for land suitable to farm, part of the runs surrounding Macraes were designated as the Macraes 100 in 1874, which provided smaller blocks of land available to be purchased. An 1874 survey of the area designated the boundaries of these blocks, as well as the auriferous reserves designated for mining operations. Following the decline of mining operations in the area, the land was given over to farming for a significant portion of the 20th century. Relatively small-scale mining and prospecting occurred sporadically throughout the century before more substantial mining operations began in 1990.³⁶

²⁵ *Otago Witness*, 6 April 1861, 3.

²⁶ *Otago Daily Times*, 21 July 1864, 7.

²⁷ *North Otago Times*, 29 September 1864, 2.

²⁸ SO 16320.

²⁹ *Otago Witness*, 9 March 1888, 19.

³⁰ *North Otago Times*, “A Trip to the Interior,” 19 June 1877, 2.

³¹ Lloyd Carpenter, ‘Finding “Te Wherro” in Otakou’, *MAI Journal* 2, no. 2 (2013): 105–20.

³² SO 4535.

³³ Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts*.

³⁴ Peter Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey* (Unpublished report for Macraes Mining Company, 1998).

³⁵ Benjamin Teele, *Coronation North, Macraes: Archaeological Assessment* (Unpublished report for OceanaGold (New Zealand) Ltd, 2016).

³⁶ Teele, *Coronation North, Macraes: Archaeological Assessment*.

5 Previous Research

The Macraes Flat area has been subject to numerous archaeological surveys and reports largely associated with recent goldmining in the area. Those relevant to the MP4 project components are summarised below. They are generally organised by author/corporate entity, though some geographical divisions/subdivisions are also used for clarity.

5.1 Jill Hamel

5.1.1 1991 – Changes in Gold Mining at Macraes³⁷

In 1991 Macraes Mining Company Ltd engaged Jill Hamel to undertake a study of archaeological and historic values as part of an Environmental Impact Assessment for an expansion of their Round Hill area into four mining leases (Figure 4). Hamel recorded numerous features related to alluvial mining most commonly associated with activity during the 19th century, and quartz mining associated with the 20th century. However, she did note that local knowledge indicated that alluvial mining continued into the 1930s. In addition to features related to various mining operations from the 19th century onwards, Hamel recorded several historical houses and the remains of other structures around the township area, most of them dating to before 1900. The sites inspected by Hamel during this survey were recorded on the New Zealand Site Recording Scheme.

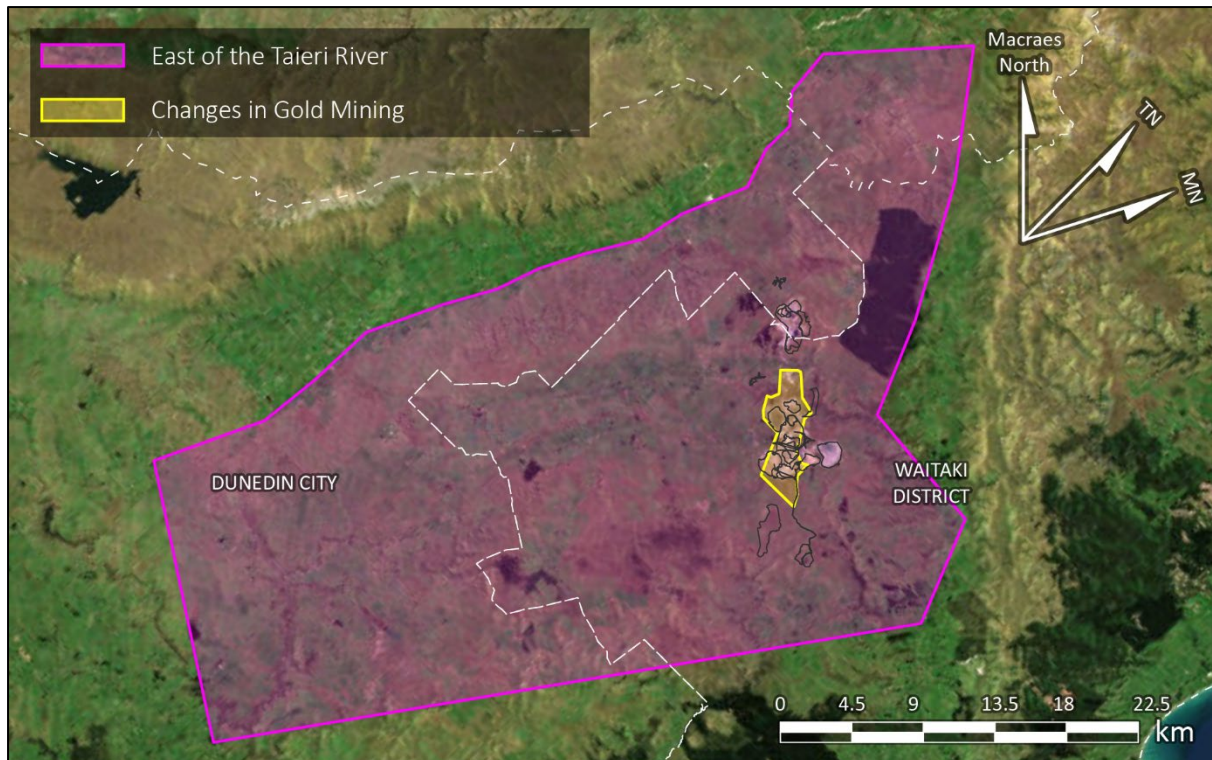


Figure 4. Areas covered by Hamel's reports (2024-2025 LINZ satellite imagery).

5.1.2 2000 – East of the Taieri River: The Archaeology of the Macraes Ecological District³⁸

This report was prepared by Jill Hamel for the Department of Conservation (DOC) as part of a Protected Natural Area Programme (Figure 4). It covers a large area and numerous different sites, including 19th century farmsteads, alluvial and hard rock gold mining sites, and historic infrastructure (road bridges and the Otago Central Railway). The descriptions of agricultural and infrastructure are supported by fieldwork apparently

³⁷ Jill Hamel, *Changes in Gold Mining at Macraes* (Unpublished report for Macraes Mining Company, 1991).

³⁸ Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*.

carried out specifically for this report, while descriptions of mining sites seem to draw entirely on past reports by Peter Petchey and Hamel herself (many of which are outlined above). All of the sites relevant to MP4 are discussed in more detail in these earlier reports.

5.2 Peter Petchey – Central Area

5.2.1 1994 – Alluvial Gold Workings Innes Dam, Macraes³⁹

In June 1994, Peter Petchey and Geoff Clark mapped alluvial gold mining features in a shallow valley upstream of Innes Dam, as a condition of an archaeological authority (1995/65) granted to the Macraes Mining Company for the expansion of their operations in the area (Figure 5). This site complex was previously recorded by Hamel⁴⁰ as I42/24. It consisted of evidence of gold mining along the valley floor, including earth dams, sluicing areas, prospecting pits and water races.

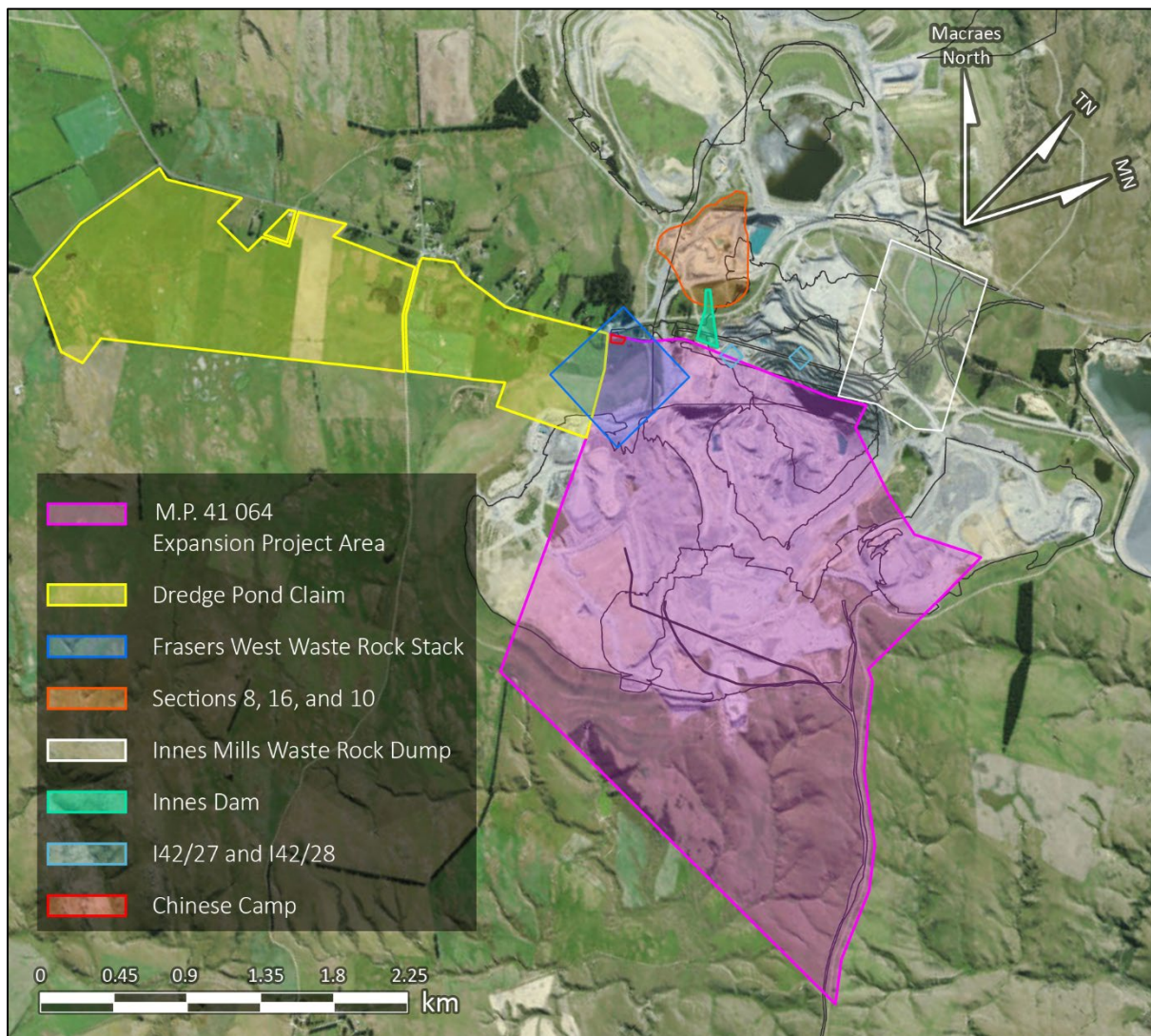


Figure 5. Areas covered by Petchey's central reports (2021 LINZ aerial photography).

³⁹ Peter Petchey, *Alluvial Gold Workings, 'Innes Dam', Macraes* (Unpublished report for Macraes Mining Company, 1994).

⁴⁰ Hamel, *Changes in Gold Mining at Macraes*.

5.2.2 1994 – Dredge Pond Licence PL 31-2633, Macraes Flat⁴¹

In September 1994, Peter Petchey undertook a four-day survey of Sections 67 to 82, Block I, Highlay SD, comprising the “Dredge Pond” licence, on behalf of Macraes Mining Company Ltd (Figure 5). Petchey identified five discrete areas of early alluvial workings during the survey, although one of these was outside the licence area within the cemetery reserve. This survey resulted in ten sites being recorded on the site recording scheme, including Gay Tan’s House (I42/49) and the Macraes Chinese Camp (I42/50) in the northeastern area, the remains of sod structures or house floor sites, and alluvial workings (I42/51, I42/54-58, and I42/64).

5.2.3 1995 – Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat⁴²

In December 1994 and January 1995 Petchey excavated two domestic sites (I42/27 and I42/28) under the auspices of Archaeological Authorities 1993/14 and 1994/95 to clear the way for the expansion of the Innes-Mills Pit by the Macraes Mining Company (Figure 5). Petchey concluded that “the three house sites constituting I42/27 were typical small rural houses, inhabited by men and their families engaged in farming,” and that likely dated to the last years of the 19th century. At I42/28 the remains of one house were identified as dating to the 1870s, with a set of stone ruins interpreted as a structure that was never occupied and abandoned prior to the completion of construction.

5.2.4 1995 – Innes-Mills Pit Waste Rock Dump Site⁴³

In 1995 Peter Petchey was engaged by Macraes Mining Company Ltd to carry out an archaeological survey of the proposed waste rock dump for the Innes-Mills pit (Figure 5). Petchey recorded archaeological and historical evidence relating to both mining and farming. Mining sites covered in this report related to quartz mining, and consisted of pits, adits, shafts and open cast workings. Farming sites included the buildings related to the Farmstead occupied by the Innes family. The mining and farm sites were not recorded on the New Zealand Site Recording Scheme as part of this work.

5.2.5 1996 – Sections 8, 16 & part 10 Block II Highlay S.D. Archaeological Survey⁴⁴

Peter Petchey undertook an archaeological survey in July 1996 for the proposed extension of the Innes-Mills pit (Figure 5). The survey area comprised an area between the old Macraes Back Road and the Macraes-Dunback Road. Three types of archaeological sites were recorded, including the remains of several Robinson’s farmstead structures, an historical trig structure (Trig C) and alluvial gold working features in a small creek to the west of the Farmstead.

5.2.6 1996 – Archaeological Sites: Part M.P. 41 064⁴⁵

In 1996 Peter Petchey resurveyed several previously recorded sites located within the Macraes Mining Company’s Mining Permit 41 064 (Figure 5). This included I42/27-28, I42/30-32, I42/34-37, I42/43, I42/49-52, and I42/75. The intention was to provide additional detail on the sites and allow their locations to be accurately determined on Macraes Mining’s own map grid.

5.2.7 1997 – Macraes Mining Company Limited Expansion Project: Report on Investigation of Archaeological Sites Within the Expansion Project Area, Upper Murphy’s Creek, Macraes⁴⁶

Following the 1996 survey of the M.P. 41 064 area, Peter Petchey undertook further surveying and some excavation in April-June 1997 (Figure 5). Excavation, and subsequent site destruction in the course of mining,

⁴¹ Peter Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat* (Unpublished report for Macraes Mining Company, 1994).

⁴² Peter Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat* (Unpublished report for Macraes Mining Company, 1995).

⁴³ Peter Petchey, *Innes-Mills Pit Waste Rock Dump Site* (Unpublished report for Macraes Mining Company, 1995).

⁴⁴ Peter Petchey, *Sections 8, 16 & Part 10 Block II Highlay S.D. Archaeological Survey* (Unpublished report for Macraes Mining Company, 1996).

⁴⁵ Peter Petchey, *Archaeological Sites: Part M.P. 41 064* (Unpublished report for Macraes Mining Company, 1996).

⁴⁶ Peter Petchey, *Macraes Mining Company Limited Expansion Project: Report on Investigation of Archaeological Sites Within the Expansion Project Area, Upper Murphy’s Creek, Macraes* (Unpublished report for Macraes Mining Company, 1997).

was carried out under the auspices of Authorities 1996/126, 1996/127, and 1997/9. Investigations involved the detailed mapping of the archaeological sites in the area and the excavation of two miner's huts, two farmstead sites, and the Golden Ridge Battery site.

5.2.8 1997 – Gifford Road Chinese Camp Site: Archaeological Site No. I42/50⁴⁷

This report was prepared by Peter Petchey following the placement of a road embankment partially over an area where Chinese dwellings were noted on historic survey plan SO 4559 (Figure 5). Petchey excavated several test pits and a test area (the latter using a mechanical excavator). These indicated that some of the site had already been disturbed by past road formation and farming activities, but other areas appeared to remain undisturbed. Although no firm evidence for any structures was revealed, among the several artefacts found, were a broken Blue Willow pattern bowl, three intact bottles and a Chinese coin.

5.2.9 2004 – Fraser's West Waste Rock Stack Proposed Enlargement: Archaeological Assessment⁴⁸

Peter Petchey prepared an assessment report in 2002 for a proposed extension of the Fraser's West Waste Rock Stack that recommended that an authority application was declined (Figure 5). This report incorporated and developed the information in the 2002 report to inform discussions between OGNZL and the New Zealand Historic Places Trust (now HNZPT). The report focused on I42/49-51, I42/56, I42/64, and I42/75, compiling the information on these sites from previous reports and considered their archaeological values. Petchey resurveyed the alluvial workings adjacent to Gifford Road (I42/64) as the site most threatened by the proposed Rock Stack extension. Petchey recommended that the Waste Rock stack should not be extended in the first instance, but if the extension was allowed, its extent should be limited, with the condition that OGNZL fulfil its past commitments to establishing a Heritage and Art Park.

5.3 Peter Petchey – Southern Area

5.3.1 1994 – The Golden Bar Mine⁴⁹

In October 1994, The Macraes Mining Company engaged Peter Petchey to conduct an archaeological survey of the Golden Bar Mine complex (Figure 6). Petchey recorded numerous features throughout the survey area, including mine workings, water races, battery sites, hut terraces, and the road network that linked the system together. As the Golden Bar mine was in operation from around 1889 to around 1942, both 19th and 20th Century features were recorded. The survey resulted in three sites being recorded on the New Zealand Site Recording Scheme (I43/86-88).

5.3.2 1994 – The Ounce Mine Macraes⁵⁰

In October 1994 the Macraes Mining Company engaged Peter Petchey to undertake an archaeological survey of the Ounce Mine, seven kilometres to the southeast of the Macraes Township (Figure 6). Petchey mapped the archaeological features, which constituted a small-scale quartz mining system spread out over a kilometre, which dated from the late nineteenth to early twentieth century. The features he recorded at the time of the survey included the main mine working complex, its associated travel network and the worker's hut sites, including one hut that was still standing. The mine complex was recorded as I43/85 as a result of the survey.

⁴⁷ Peter Petchey, *Gifford Road Chinese Camp Site: Archaeological Site No. I42/50* (Unpublished report for Macraes Mining Company, 1997).

⁴⁸ Peter Petchey, *Fraser's West Waste Rock Stack Proposed Enlargement: Archaeological Assessment* (Unpublished report for OceanaGold (New Zealand) Ltd, 2004).

⁴⁹ Peter Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1994).

⁵⁰ Peter Petchey, *The Ounce Mine, Macraes: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1994).

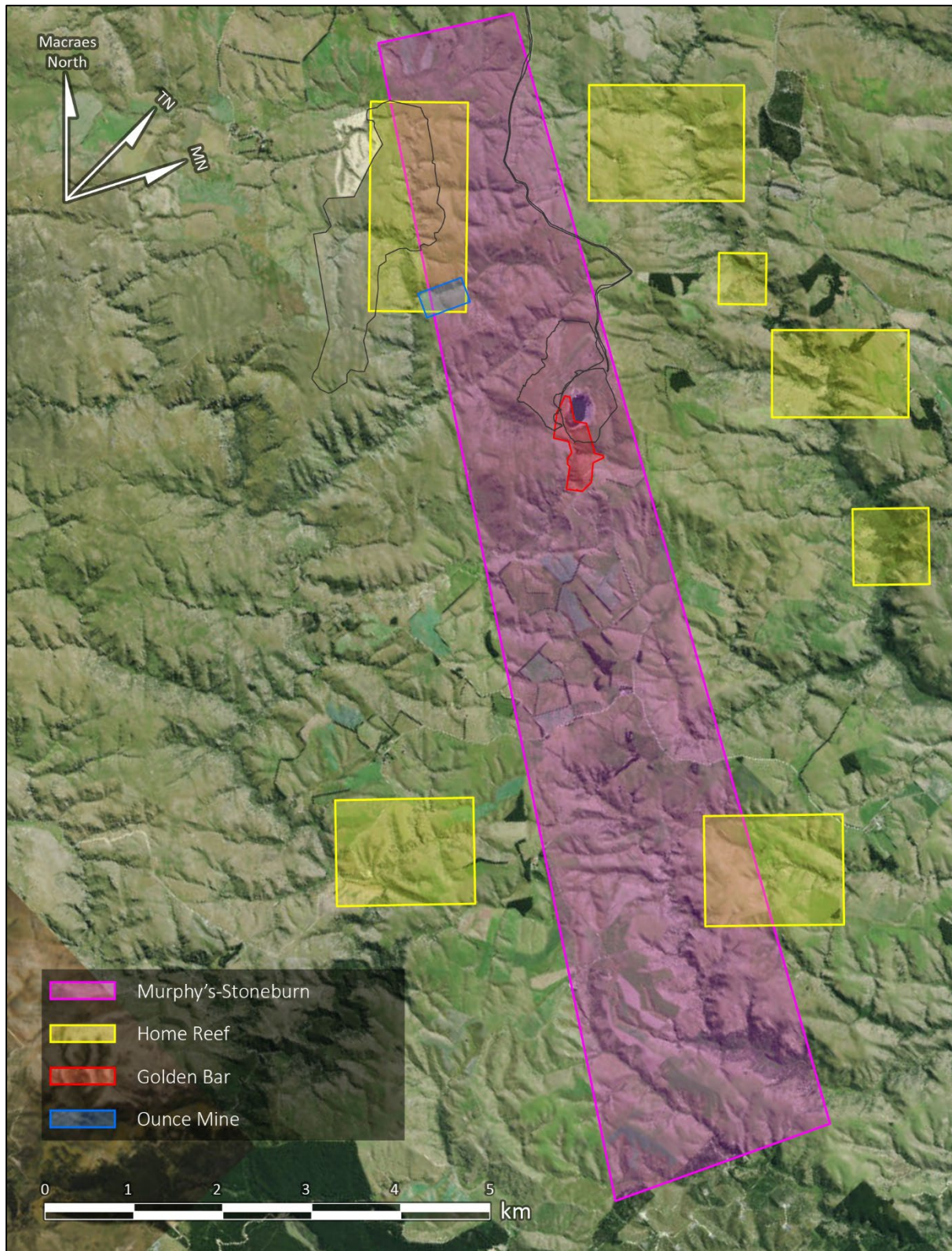


Figure 6. Areas covered by Petchey's southern reports (2021 LINZ aerial photography).

5.3.3 1995 – Murphy’s Flat to Stoneburn Preliminary Archaeological Survey⁵¹

In February 1995, Peter Petchey was engaged to undertake a preliminary archaeological survey of the Stoneburn area intended for prospecting by Macraes Mining Company (Figure 6). Petchey’s survey area comprised a long thin corridor around 2.5 km wide and 13 km long, consisting of variable topography. Archaeological sites were predominantly located by interviewing local landowners, and although a systematic survey was not attempted, aerial photographs were also used to identify additional sites. Petchey noted that much of the area had been ploughed or bulldozed for agricultural reasons, destroying substantial archaeological evidence. Intensive alluvial gold workings were present at Murphy’s Flat, with the surrounding hillsides and side gullies exhibiting extensive evidence of ground sluicing, water races, dams and reservoirs.

5.3.4 1996 – Home Reef Resource Consent Area Macraes Gold Project Archaeological Survey⁵²

In 1995 Peter Petchey undertook a survey of the Macraes Mining Company’s Home Reef Resource Consent Area to identify and record any archaeological sites (Figure 6). As a large portion of the area had already been the subject of three previous archaeological surveys, this survey did not cover sites described in the previous reports. In addition, some areas were not permitted to be accessed by the landowner at the time. The main surveyed areas assessed were the archaeological site complexes related to the Duke of Edinburgh workings, the McCormick’s Creek workings and the Murphy’s Creek workings. Petchey also recorded hard rock gold mining areas, an 1895 homestead, an 1890s battery site and various other historical features. The survey resulted in the recording of 13 archaeological sites (I42/59-63 and I43/79, I43/85, I43/89-90).

5.3.5 2005 – Golden Bar Mine, Macraes: Archaeological Investigations⁵³

This report details archaeological investigations carried out at the Golden Bar Mine complex (I43/86-88) in 2003 and 2004 by Peter Petchey (Figure 6). Investigations included the detailed recording and excavation of nine hut features closest to the mine (part of I43/86), and the 1927 gold battery site (I43/88). Petchey concluded that the excavated features were largely related to mining operations in the 1920s, however, at least one of the hut features (Hut 5) may have been associated with mining operations between the 1890s and the early 1900s. Limited artefactual material was found during excavations, and Petchey hypothesised that historical refuse had likely been dumped in nearby pits and hollows that were not investigated archaeologically.

5.4 Peter Petchey – Northern Area

5.4.1 1998 – EP 40290 Coronation – Macraes Mining Company: Preliminary Archaeological Survey⁵⁴

Peter Petchey undertook a survey of this exploration permit area for the Macraes Mining Company (now OGNZL) in late 1998, identifying two areas of archaeological features (Figure 7). In the northern part of the exploration area were the Coronation Workings, a set of features relating to hard rock mining that included adits, deep pits, and discrete excavations with associated spoil heaps. These remains had been significantly damaged by later systematic excavations by the landowner prior to OGNZL. To the south of the exploration area were a series of water races that fed alluvial working along the edge of Horse Flat.

⁵¹ Peter Petchey, *Murphy’s Flat to Stoneburn: Preliminary Archaeological Survey* (Unpublished report for Macraes Mining Company, 1995).

⁵² Peter Petchey, *Home Reef Resource Consent Area, Macraes Gold Project: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1995).

⁵³ Peter Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations* (Unpublished report for OceanaGold (New Zealand) Ltd, 2005).

⁵⁴ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

5.4.2 2003 – New Zealand Gold and Tungsten Mine and Battery and Nunn’s Mount Highlay Mine, Mareburn, Hyde⁵⁵

This report by Peter Petchey was prepared for GRD Macraes (now OGNZL) to identify the archaeological remains of these two former mines to inform modern prospecting at the site (Figure 7). Petchey laid out the history of each site and presented detailed mapping of the archaeological features present.

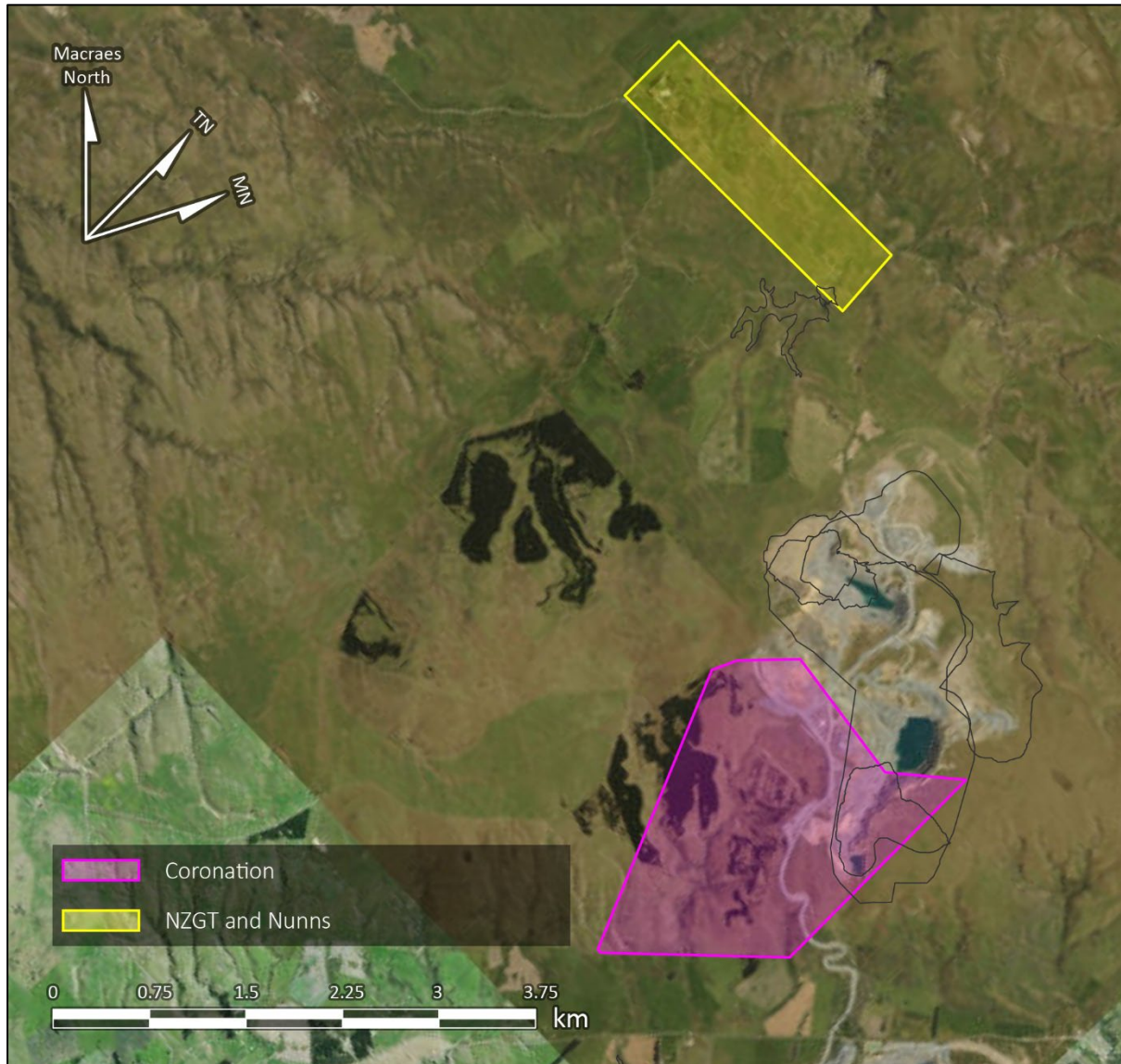


Figure 7. Areas covered by Petchey’s northern reports (2021, 2023 LINZ aerial photography).

⁵⁵ Peter Petchey, *New Zealand Gold and Tungsten Mine and Battery, Nunn’s Mount Highlay Mine, Mareburn, Hyde: Archaeological Survey for GRD Macraes* (Unpublished report for GRD Macraes, 2003).

5.5 Gay Tan's Cottage

5.5.1 2001 – Louis Gay Tan's Cottage, Macraes Flat, East Otago: Conservation Report⁵⁶

John Gray's conservation report for Gay Tan's Cottage (Figure 8) provides an assessment of the outline history and significance of the building, the heritage features of the building, and the condition of the building to inform guidelines and recommendations on the work required to repair, conserve, and maintain its fabric.

5.5.2 2012 – Gay Tan's Cottage (I42/49): Final Report on Archaeological Monitoring at Macraes Flat, Otago⁵⁷

This report by Erin Williams documents the archaeological monitoring results from drainage earthworks and building repairs at the historic cottage site carried out between 2010 and 2012 (Figure 8). The report documents the subsurface archaeological work carried out and describes and contextualises the material recovered during the investigations. The recovered materials, such as glass bottles, ceramics, metal, and faunal remains were representative of a Chinese-European household in the late nineteenth to early twentieth centuries in a gold mining settlement in Otago. The report also presents a detailed record of the repairs undertaken to the building.



Figure 8. Area covered by Gay Tan's Cottage reports (2021 LINZ aerial photography).

5.6 Opus International Consultants

5.6.1 2011 – Archaeological Survey – Macraes Phase III⁵⁸

Cathryn Barr of Opus International Consultants (now WSP) prepared this report to support the Macraes Phase III consent application (Figure 9). Like MP4, this project assessed a suite of proposed works including a new tailings storage facility, road realignments, pit and underground mine expansions, and the Camp Creek Dam. Surveys of the affected areas mostly involved the relocation of number of sites previously recorded by Petchey

⁵⁶ John Gray, *Louis Gay Tan's Cottage, Macraes Flat, East Otago: Conservation Report* (Unpublished report for Gold and Resource Developments (NZ) Ltd, 2001).

⁵⁷ Erin Williams, *Gay Tan's Cottage (I42/49): Final Report on Archaeological Monitoring at Macraes Flat, Otago* (Unpublished report for OceanaGold (New Zealand) Ltd, 2012).

⁵⁸ Cathryn Barr, *Archaeological Survey – Macraes Phase III* (Unpublished report for OceanaGold (New Zealand) Ltd, 2011).

and Hamel (I42/78, I42/79, I42/90, I42/91, I42/92, I42/33, I42/41), with the addition of the Robinson's Farmstead (I42/159), and other unrecorded sites identified by Nichol and Wright in 2009,⁵⁹ all of which sit outside of the MP4 project areas. Notably, Barr's work also included the initial survey of Camp Creek dam area, which identified ten previously unrecorded archaeological sites (I42/148, I42/149, I42/150, I42/151, I42/152, I42/153, I42/154, I42/155, I42/156, and I42/157). These sites were generally located on natural terraces immediately adjacent to the Creek bed and contain evidence of alluvial mining (water races, sluicing) as well as occupation sites (huts).

5.6.2 2011 – Desktop Assessment: Archaeological Values Deepdell Station⁶⁰

Greg Gedson, working for Opus International Consultants, prepared this desktop assessment as part of the due diligence for the Overseas Investment Office (Figure 9). The assessment identified 13 recorded archaeological sites on the property with the potential for more unrecorded sites also identified (I42/93, I42/95, I42/162, I42/163, I42/164, I42/165, I42/166, I42/167, I42/168, I42/169, I42/170, I42/171, I42/172). Most of these sites relate to gold mining in the vicinity of the Coronation Mine.

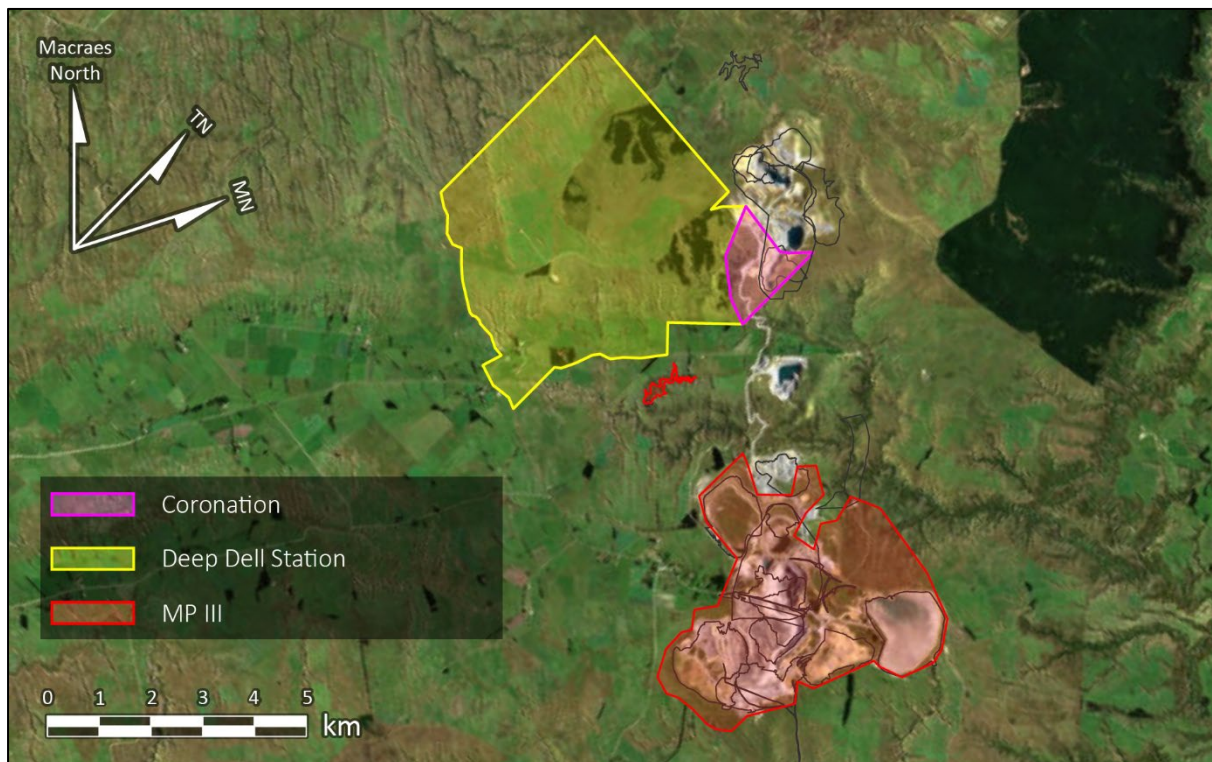


Figure 9. Areas covered by Opus reports (2024-2025 LINZ satellite imagery).

5.6.3 2012 – Archaeological Survey – Coronation Mine⁶¹

Sian Keith and Peter Caldwell, working for Opus International Consultants, undertook a survey of the historic Coronation Mine area following the purchase of Deepdell Station by OGNZL (Figure 9). This survey built upon Petchey's prior recording of the Coronation Mine (I42/93),⁶² recording 11 new sites relating to past mining in the area (I42/162, I42/163, I42/164, I42/165, I42/166, I42/167, I42/168, I42/169, I42/170, I42/171, and

⁵⁹ Reg Nichol and Les Wright, *An Archaeological Assessment of the Impact of the Construction of a Tailings Storage Facility at Macraes Gold Project* (Unpublished report for OceanaGold (New Zealand) Ltd, 2009).

⁶⁰ Greg Gedson, *Desk Top Assessment: Archaeological Values Deepdell Station* (Unpublished report for OceanaGold (New Zealand) Ltd, 2011).

⁶¹ Sian Keith, *Archaeological Survey – Coronation Mine* (Unpublished report for OceanaGold (New Zealand) Ltd, 2012).

⁶² Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

I42/172). These sites consisted of discrete features or sets of features, including dams, mining workings, adits, sluice faces, and a single hut site.

5.6.4 2013 – Archaeological Assessment: Proposed Coronation Mine⁶³

This assessment by Cathryn Barr and T. J. O’Connell, working for Opus International Consultants, followed Keith’s 2012 survey report, assessing the effects of the proposed Coronation Pit on the sites identified (Figure 9). It also documented several other sites recorded during the 2012 survey but not recorded on ArchSite at the time as they were outside the main survey area (I42/205, I42/206, I42/207, and I42/208).

5.7 Brian Allingham

5.7.1 2011 – OceanaGold: Macraes Phase III – Iwi Archaeological Assessment⁶⁴

In 2011 Brian Allingham was engaged to undertake an archaeological survey related to Macraes Phase III, covering the Top Tipperary Tailings Storage Facility (TTTSF), the Back Road Waste Rock Stack (BRWRS), and the Camp Creek Dam and Reservoir project areas (Figure 10). The survey was conducted by Allingham and Tim Vial of Kai Tahu Ki Otago Ltd. No Māori archaeological sites were observed in these areas, however Allingham did note two potential sites to the west of the TTTSF. One, a rockshelter site (I42/158), with potential Māori rock art, and a pit site (not recorded on ArchSite) 200 m downstream from the rockshelter site.

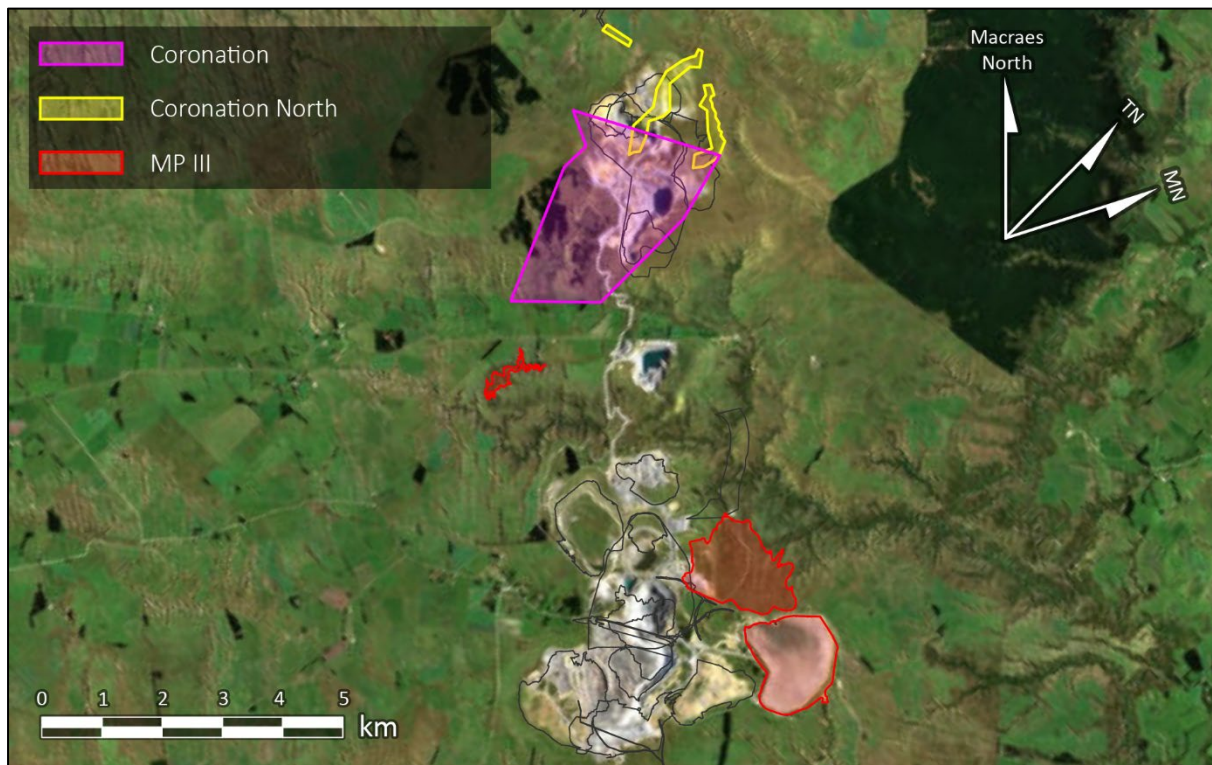


Figure 10. Areas covered by Allingham reports (2024-2025 LINZ satellite imagery).

5.7.2 2013 – Coronation Area Archaeological Survey⁶⁵

In addition to the 2012 Opus Coronation survey, Brian Allingham also undertook a survey of the Coronation area in 2011 and 2012 specifically looking for Māori archaeological sites (Figure 10). Allingham reported fragments

⁶³ Cathryn Barr and TJ O’Connell, *Archaeological Assessment: Proposed Coronation Mine* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2013).

⁶⁴ Allingham, *OceanaGold: Macraes Phase III - Iwi Archaeological Assessment*.

⁶⁵ Allingham, *Coronation Area Archaeological Survey*.

of a quartzite blade found on the ground surface in the western part of the survey area and noted two potential rock shelters around 250 m west of the artefact find. None of these locations were recorded on ArchSite.

5.7.3 2016 – The Coronation North Project 2016: Archaeological Assessment Report on Remains of Māori Origin⁶⁶

Brian Allingham surveyed the area to be affected by the Coronation North Pit and associated waste rock stack in 2016 (Figure 10). He identified multiple potential sites of Māori origin, including several rockshelters, a possible umu (oven) pit and a possible urupa (burial site).

5.8 Origin Heritage⁶⁷ – Northern Area

5.8.1 2014 – Archaeological Assessment of Effects: Proposed Coronation Mine, Macraes, Otago⁶⁸

Following requests by the HNZPT Otago/Southland Regional Archaeologist, this addendum report was prepared by Andrea Farminer and Andrew Winter, of Jackie Gillies and Associates, to provide additional survey information for I42/168 and I42/206, clarify the effects on sites, and develop the recommendations of the 2013 report (Figure 11).

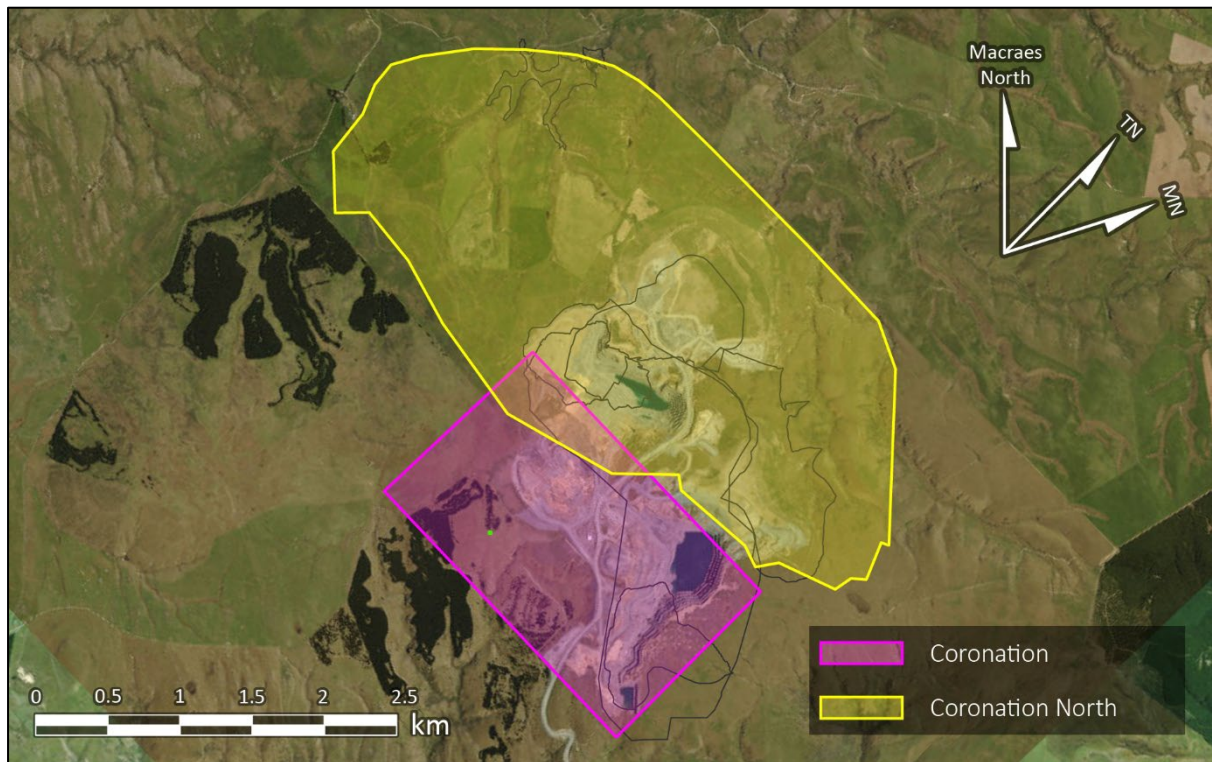


Figure 11. Areas covered by Origin's northern reports (2021, 2023 LINZ aerial photography).

5.8.2 2015 – Coronation Mine, Macraes, Otago: Archaeological Investigation Report⁶⁹

Archaeological authority 2014/1150 required the investigation of archaeological sites I42/93, I42/162, I42/163, I42/164, I42/167, I42/168, I42/169, I42/170, I42/171, and I42/207 in conjunction with the development of the Coronation Mine (Figure 11). This report by Andrea Farminer, Robin Miller, and Ben Teele documented the

⁶⁶ Allingham, *The Coronation North Project - OceanaGold: Archaeological Assessment Report on Remains of Maori Origin*.

⁶⁷ Origin Heritage started as Jackie Gillies and Associates until changing its name to Origin Consultants in 2016. The company is now trading as Origin Heritage.

⁶⁸ Andrea Farminer and Andrew Winter, *Archaeological Assessment of Effects: Proposed Coronation Mine, Macraes, Otago* (Unpublished report for OceanaGold (New Zealand) Ltd, 2014).

⁶⁹ Andrea Farminer et al., *Coronation Mine, Macraes, Otago: Archaeological Investigation Report* (Unpublished report for OceanaGold (New Zealand) Ltd, 2015).

investigation results for these sites, which included archaeological excavation and mapping. Three were confirmed to be historic mining sites, with the others identified either as composed of modern features or having no meaningful archaeological evidence present.

5.8.3 2016 – Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham 2016⁷⁰

Following Brian Allingham's 2016 survey, Ben Teele hand-excavated test pits at each of the potential Māori sites (Figure 11). Cultural material was only identified at one site, which was interpreted as the remains of occupation by a gold miner (recorded as I42/223). One site was not test pitted as it may have been a gravesite (I42/222). No archaeological evidence was identified at any of the other sites.

5.8.4 2016 – Coronation North, Macraes: Archaeological Assessment⁷¹

This assessment by Ben Teele surveyed the areas to be affected by the extension of the Coronation Pit, as well as the creation of the Coronation North Pit and an associated waste rock stack (Figure 11). The survey covered multiple mining sites previously recorded by Hamel (I42/73, I42/76, I42/84, I42/85, I42/86, I42/87, I42/97, I42/98) and identified several new sites (I42/222, I42/223, I42/224, I42/225).⁷² Notably, Teele's survey included Coal Creek, interpreting the various tram/race/revetment features present as being associated with the NZ Gold and Tungsten Mine sites (I42/97 and I42/98) and identifying a previously unrecorded area of alluvial workings (I42/221).

5.9 Origin Heritage – Central Area

5.9.1 2015 – Frasers and Innes Mills Pit Expansion, Macraes Flat⁷³

In 2015 Ben Teele undertook an archaeological assessment of the area to be affected by a proposed expansion of the Innes Mills Pit (and associated works like road alignment and noise bunding; Figure 12). Much of the study area had been modified by mining activity, and many previously recorded sites had been destroyed. Teele's survey focused on the greenfields area to the west of the existing pit and recorded two new sites, consisting of the Griffin House (I42/214) and the Innes Farm (I42/215).

5.9.2 2018 – Block II, Highlay SD, Macraes: Archaeological Survey⁷⁴

In 2018 Ben Teele surveyed three land parcels that would potentially be affected by a proposed realignment of the Macraes Road to the west of the Innes Mills Pit (Figure 12). This survey did not identify any archaeological evidence and Teele suggested that the area had also been subject to a degree of modification during previous realignments of the road.

5.9.3 2019 – Archaeological Assessment for Frasers West Pit Expansion, Macraes Flat⁷⁵

Ben Teele assessed an area of land in 2019 that was to be affected by the expansion of Frasers Pit (and associated infrastructure construction; Figure 12). In addition to the previously recorded sites present (I42/214 and I42/215) a reservoir was also recorded (I42/241) based on its appearance in an 1870s survey plan.⁷⁶

⁷⁰ Teele, *Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham, 2016*.

⁷¹ Teele, *Coronation North, Macraes: Archaeological Assessment*.

⁷² Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*, 200.

⁷³ Benjamin Teele, *Frasers and Innes Mills Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2015).

⁷⁴ Benjamin Teele, *Block II, Highlay SD, Macraes: Archaeological Survey* (Unpublished report for OceanaGold (New Zealand) Ltd, 2018).

⁷⁵ Benjamin Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished Report for OceanaGold (New Zealand) Ltd, 2019).

⁷⁶ Subsequent research has shown that the reservoir recorded by Teele was a 21st century feature and I42/241 has since been updated to reflect the actual location of the historic dam.

5.9.4 2019 – Development House, Macraes: Historic Summary⁷⁷

A reassessment of historic sources relating to the Griffin/Development House site (I42/214) by Ben Teele in 2019 identified that the building did not date to the 19th century (Figure 12). It instead appeared to have been constructed at some point in the 1920s or 1930s.

5.9.5 2025 – Archaeological Report for Development House, Macraes⁷⁸

This report documents the building recording of Development House to a Level III standard by Jamie Grant prior to its demolition to facilitate the construction of a noise bund (Figure 12). This work was undertaken at the initiative of OGNZL as the building dated to the 20th century and its demolition did not require an Archaeological Authority.

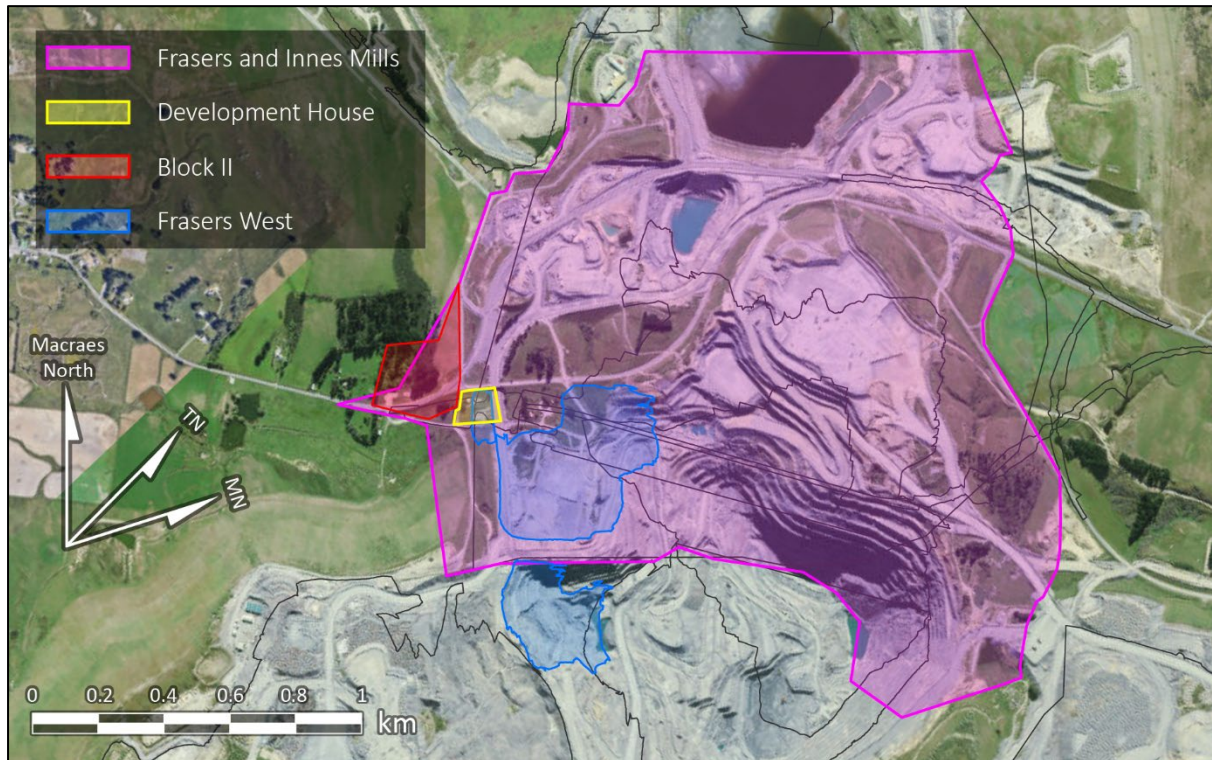


Figure 12. Areas covered by Origin's central reports (2021 LINZ aerial photography).

⁷⁷ Benjamin Teele, *Development House, Macraes: Historic Summary* (Unpublished report for OceanaGold (New Zealand) Ltd, 2019).

⁷⁸ Jamie Grant, *Archaeological Report for Development House, Macraes* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2025).

6 Innes Mills Pit and Macraes Road Realignment

6.1 Proposed Works and Project Area

6.1.1 Pit Expansion

The Innes Mills Pit sits at the core of OGNZL's Macraes Operation. The MP4 project proposes extensions to the north, east, and west (Figure 13). The proposed pit extensions are encompassed by a wider pit disturbance area (Figure 14) that will accommodate the various activities associated with open pit mining, including stockpiling ore and topsoil, pipeline benches, vehicle tracks and laydown areas. The area of disturbance may also accommodate changes to pit shells in response to local geotechnical constraints. For the purposes of understanding potential effects on buried archaeological evidence, it can be assumed that all archaeological sites within the pit disturbance area will be excavated to natural ground.⁷⁹

Waste rock from MP4 project work at Innes Mills will be deposited on ground already disturbed by mining activity. Material will be either:

- Backfilled into existing open pits.
- Placed on existing waste rock stacks.

Tailings generated from ore processing will be deposited in a tailings storage facility already located and in use in an existing open pit. The current Open Pit Workshop will be relocated to a new site within the pit disturbance area.

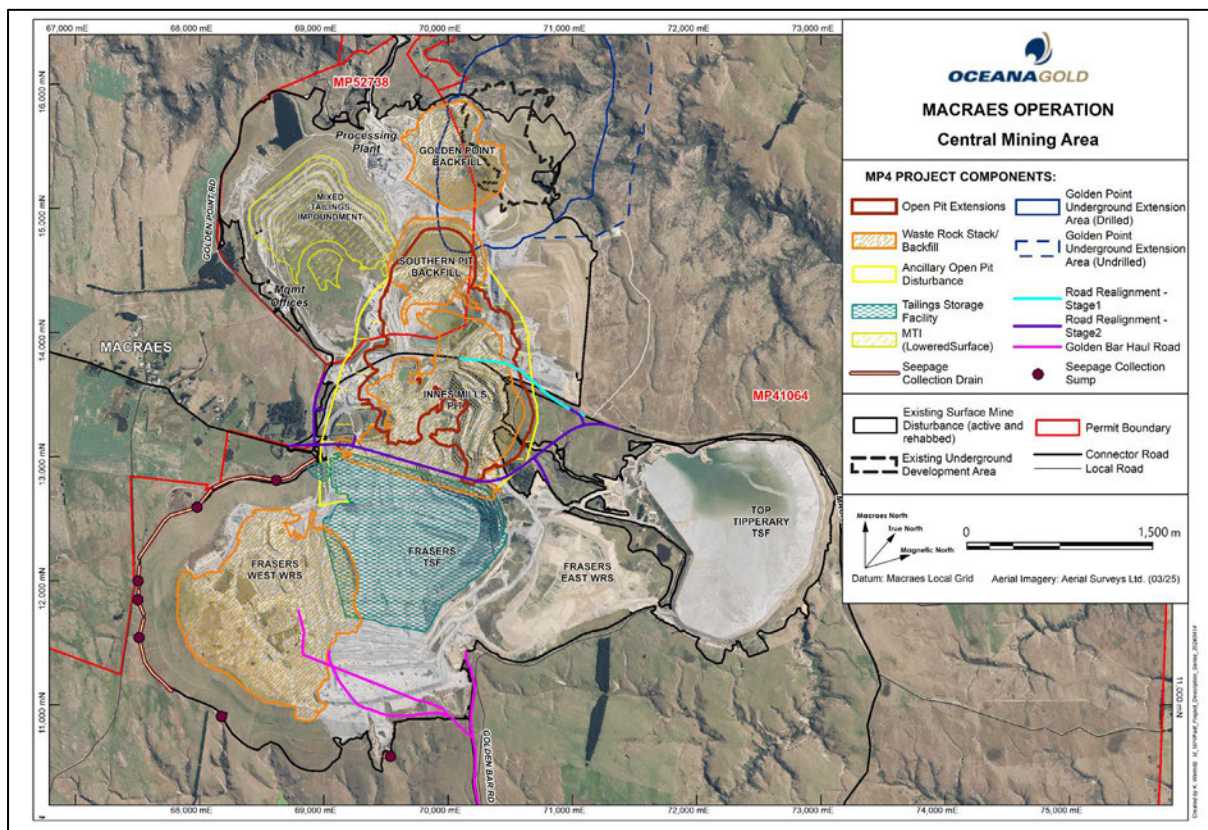


Figure 13. Innes Mills Pit expansion.⁸⁰

⁷⁹ In archaeology, natural is a term to denote a layer (stratum) in the stratigraphic record where there is no evidence of human impact on the environment.

⁸⁰ OceanaGold.

6.1.2 Macraes Road Realignment

To facilitate the proposed extension of Innes Mills Pit, Macraes Road will need to be realigned (Figure 14).

Macraes Road will be realigned in two stages. The first stage will involve shifting Macraes Road to the east of the existing bridge by approximately 160 m to the north. This will also see the construction of two silt ponds to manage potential sediment runoff. The second stage will include a total diversion of the road to the south over an embankment formed as part of the mining operations.



Figure 14. Pit disturbance area and road realignment footprints (2025 OGNZL aerial photography).

6.1.3 Seepage Collection Drain and Sumps

A seepage collection drain will be created around part of the Frasers West Waste Rock Stack to help manage subsurface water seepage. This will consist of an approximately 600mm wide trench excavated to natural ground around the much of the rock stack's perimeter (Figure 15-Figure 16). The drain will be located within the footprint of the waste rock stack where it is required to avoid archaeological sites. Several water collection points (sumps) will be established along a trench, however, the precise location of these has not yet been confirmed.

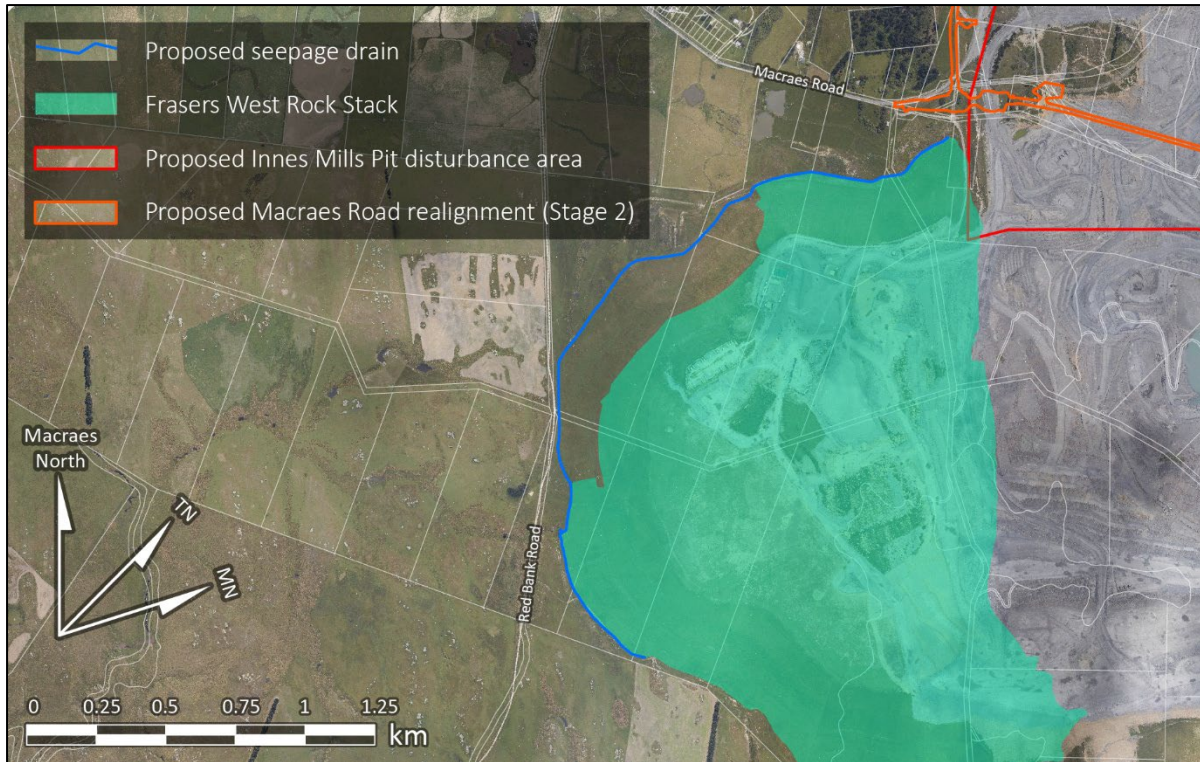


Figure 15. Seepage drain extent around the around Frasers West Waste Rock Stack (2025 OGNZL aerial photography).

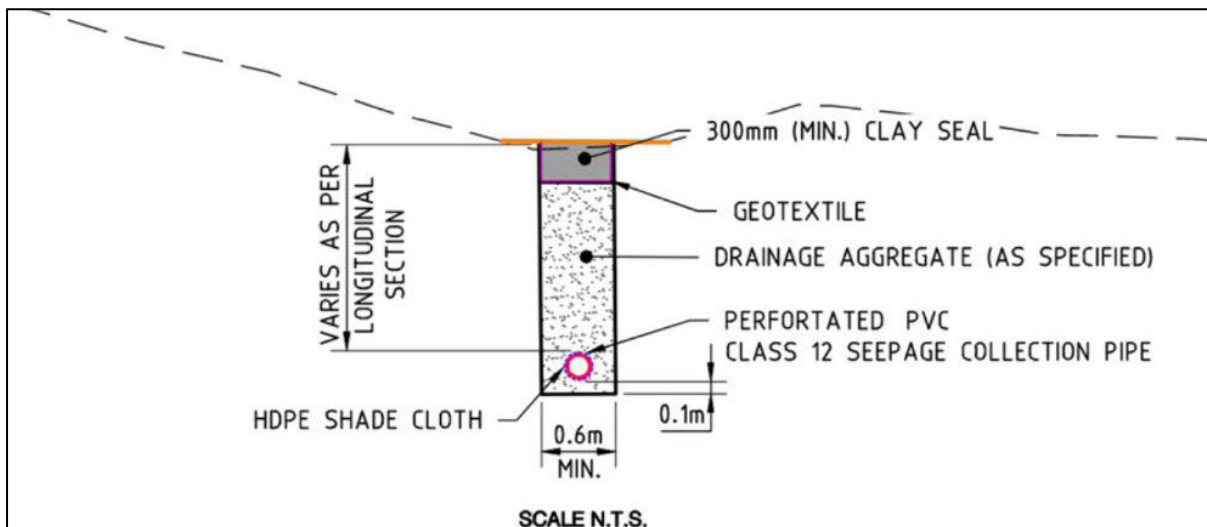


Figure 16. Nominal seepage drain design.

6.1.4 Noise Bund Construction

A noise bund will be constructed on Section 41, Block I, Highway SD to help manage the effects of blasting noise on a neighbouring property (Figure 17). This will require approximately 100mm deep excavation across the bund footprint for topsoil stripping.



Figure 17. Location of noise bund on Section 41.

6.2 Research Results

6.2.1 Historic Record

Much of the area affected by the Innes Mills Pit Expansion and Macraes Road Realignment formerly sat along the road into Macraes from Dunback (this route is different today to accommodate past mining by OGNZL). Historic survey plans⁸¹ and aerial photographs (Figure 18) indicate that the area was once occupied by a number of buildings associated with landholdings of between approximately 5 to 50 acres (Figure 19). These are most likely rural domestic sites. Gold mining features, including dams, water races, alluvial workings, and an auriferous reserve are also evident. This concentration of occupation to the east of Macraes proper was purportedly known as the upper township.⁸²

The Macraes Chinese Camp was an important element of the upper township. By 1871 Chinese reportedly made up more than half of the local mining population and continued to be prominent until at least the late 1880s.⁸³ The camp was described in 1877 as “...the Chinese township, consisting of some thirty or so sod huts occupied by some 100 souls of the celestial race, and here and there surrounded by small patches of cultivation.”⁸⁴ The camp’s location, extent, and evolution over time is unclear. A historic newspaper advertisement and survey plans indicate that a Chinese camp was located on what is today Section 47, Block I, Highlay District in the mid-1870s (Figure 20).⁸⁵ However, a later survey plan from 1898⁸⁶ shows “Chinamans Huts” to the immediate north-east of Gay Tan’s cottage, and this is the site today recorded as the Chinese Camp (Figure 19). Historian James Ng suggested it is possible there were two Chinese Camps, with each one accommodating people from different Chinese sub-regions.⁸⁷

Another notable remaining site in this area is the Innes Farm. Petchey’s 1995 *Innes-Mills Pit Waste Rock Dump Site* report details the history of this site. A stone house with an iron roof was present at the site prior to the homestead. Available images suggest this earlier building was modified over time, with rooms likely added to the north elevation. Petchey went on to note:

The house was known as “The Pines” during its occupancy by the Innes family, because of the pine plantation around it. It had earlier been owned by G. Cockerell, Alex Innes’ father-in-law. Alex Innes moved in with his family in about 1920, from a smaller house to the north-east. The new house was built in 1938/1939 by the Forrest Brothers for Alex Innes. It was constructed partially from timber milled from the pine plantation on the section, and partially from material salvaged from the old house and another small house to the north-east. Its roofing iron is from the old house, as are its rear door and side window. The stone from the old house was later removed by the County Council for road making.

The cow shed was built by D. G. Innes in the winter of 1945, using timber from the plantation. It was built on the site of an earlier cowshed...

The shearing shed/barn is of similar board and batten timber construction to the cowshed, although its history is more complex. The front section of the barn is of unknown age, although it is claimed to be of nineteenth century construction. The back portion was added by D. G. Innes in 1948, and used as a woolshed.

The assorted sheds on the property are in three main groups. To the west of the old house site is a small schist shed, now collapsing. This is probably the oldest surviving building in the farmstead, and was possibly lived in while the original stone house was being built. Directly behind the old house site are a row of corrugated iron sheds. These were used as (east to west), Robert Benzie’s room, an implement shed, the wash house and the

⁸¹ SO 421, 620, 624, 625, 4547, 4558, and 4559; Archives New Zealand, R10302772.

⁸² Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment*.

⁸³ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

⁸⁴ *North Otago Times*, “A Trip to the Interior,” 19 June 1877, 2.

⁸⁵ *Mount Ida Chronicle*, “Application for an Agricultural Lease. District of Mount Ida,” 11 February 1876, 2; SO 622 and SO 4539.

⁸⁶ SO 4559.

⁸⁷ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

bathroom. Further to the north-east there are the remains of a small collapsed shed dug into the side of a bank, which was the site of the small farm smithy. Several of these sheds were relocated from earlier houses, including Alex Innes' house to the east.

A small dam between the barn and the old house site has now been largely filled in. It was often used as a dump for household refuse.⁸⁸

6.2.2 Previous Archaeological Work

The following sites in and around the project area are recorded on ArchSite (Figure 21 and Table 1). Most sites in and immediately adjacent to the project area were surveyed by Jill Hamel or Peter Petchey during the 1990s⁸⁹ and have largely been destroyed by past mining activity.⁹⁰ Two house/hut sites were excavated by Petchey prior to mining,⁹¹ but HNZPT Archaeological Authority records indicate that no additional investigations were undertaken for the other destroyed sites.

An area of alluvial workings (I42/64) is a notable site that has been previously surveyed by Petchey (Figure 22). This site consists of an area of prospecting pits alongside water/tail races and some possible ground sluicing hollows. The south-western prospecting pits have since been destroyed by the construction of the adjacent Frasers West Waste Rock Stack. I42/64 also encompasses the remains of a sod structure recorded as a separate site (I42/51).

Subsequent surveys were made by Ben Teele who recorded three additional sites in 2015 and 2019. An archaeological building record of the 20th century Griffin/Development House (I42/214) was made in 2022 by Jamie Grant, prior to its demolition *circa* 2022-2023.⁹²

Immediately adjacent to the project areas, archaeological monitoring of excavations associated with the restoration of Gay Tan's Cottage (I42/49) was undertaken by Erin Williams between 2010 and 2012.⁹³ Petchey also did some test excavation of the Chinese Camp site (I42/50), concluding that "it appears a considerable amount of evidence of the Gifford Road Chinese Camp has survived," though the actual extent of the site is not clear.⁹⁴

⁸⁸ Petchey, *Innes-Mills Pit Waste Rock Dump Site*, 6–9.

⁸⁹ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*; Petchey, *Alluvial Gold Workings, 'Innes Dam', Macraes*; Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*; Petchey, *Innes-Mills Pit Waste Rock Dump Site*; Petchey, *Sections 8, 16 & Part 10 Block II Highlay S.D. Archaeological Survey*; Petchey, *Macraes Mining Company Limited Expansion Project: Report on Investigation of Archaeological Sites Within the Expansion Project Area, Upper Murphy's Creek, Macraes*.

⁹⁰ Note: Petchey's reports for this area record multiple sites that were not added to the NZAA site recording scheme at the time. Though these have all been destroyed apart from I42/215, which has been logged on ArchSite more recently.

⁹¹ Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

⁹² Grant, *Archaeological Report for Development House, Macraes*.

⁹³ Williams, *Gay Tan's Cottage (I42/49): Final Report on Archaeological Monitoring at Macraes Flat, Otago*.

⁹⁴ Petchey, *Gifford Road Chinese Camp Site: Archaeological Site No. I42/50*.

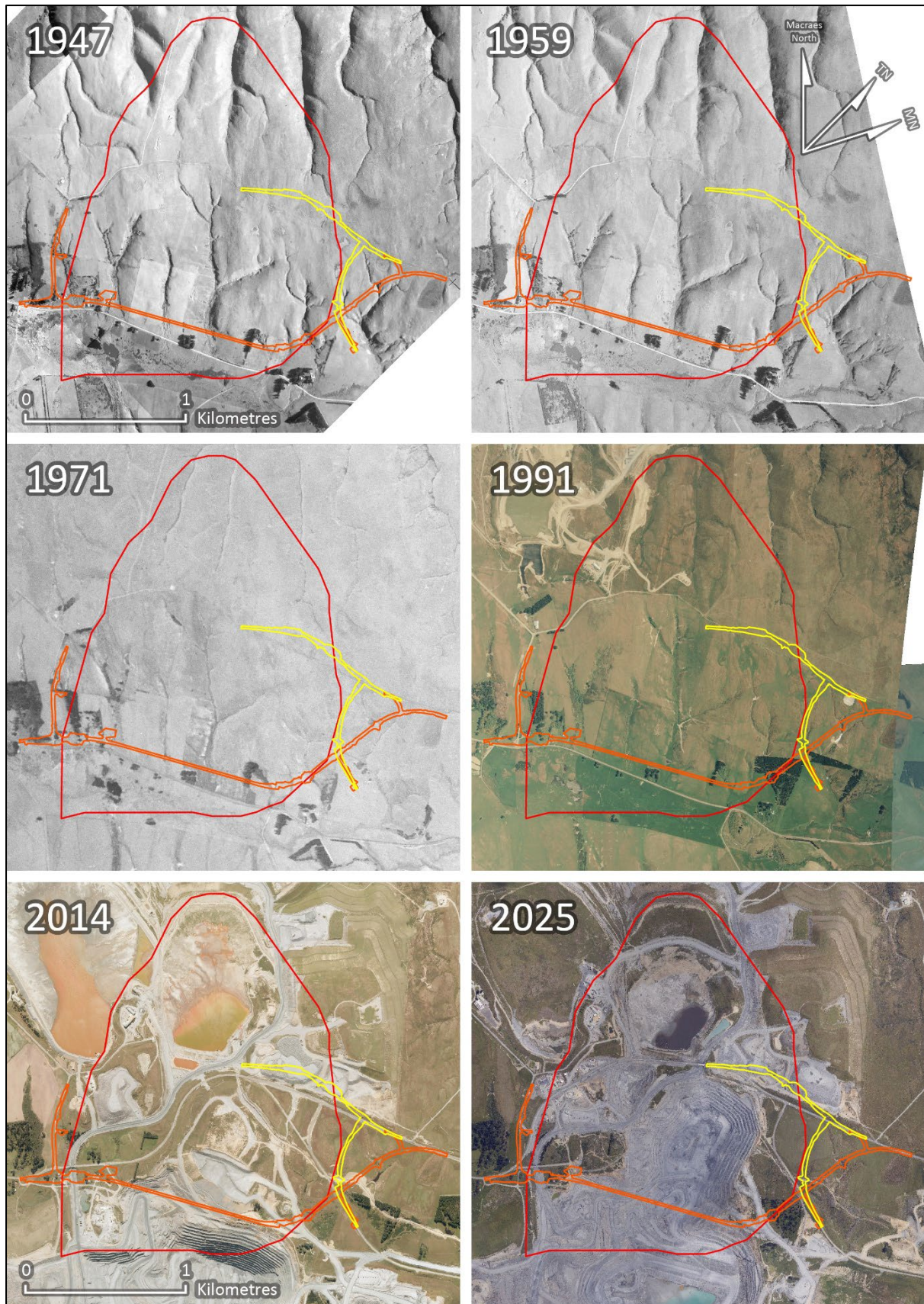


Figure 18. Aerial photographs showing the project area over time.⁹⁵

⁹⁵ Retolens and LINZ Data Service.

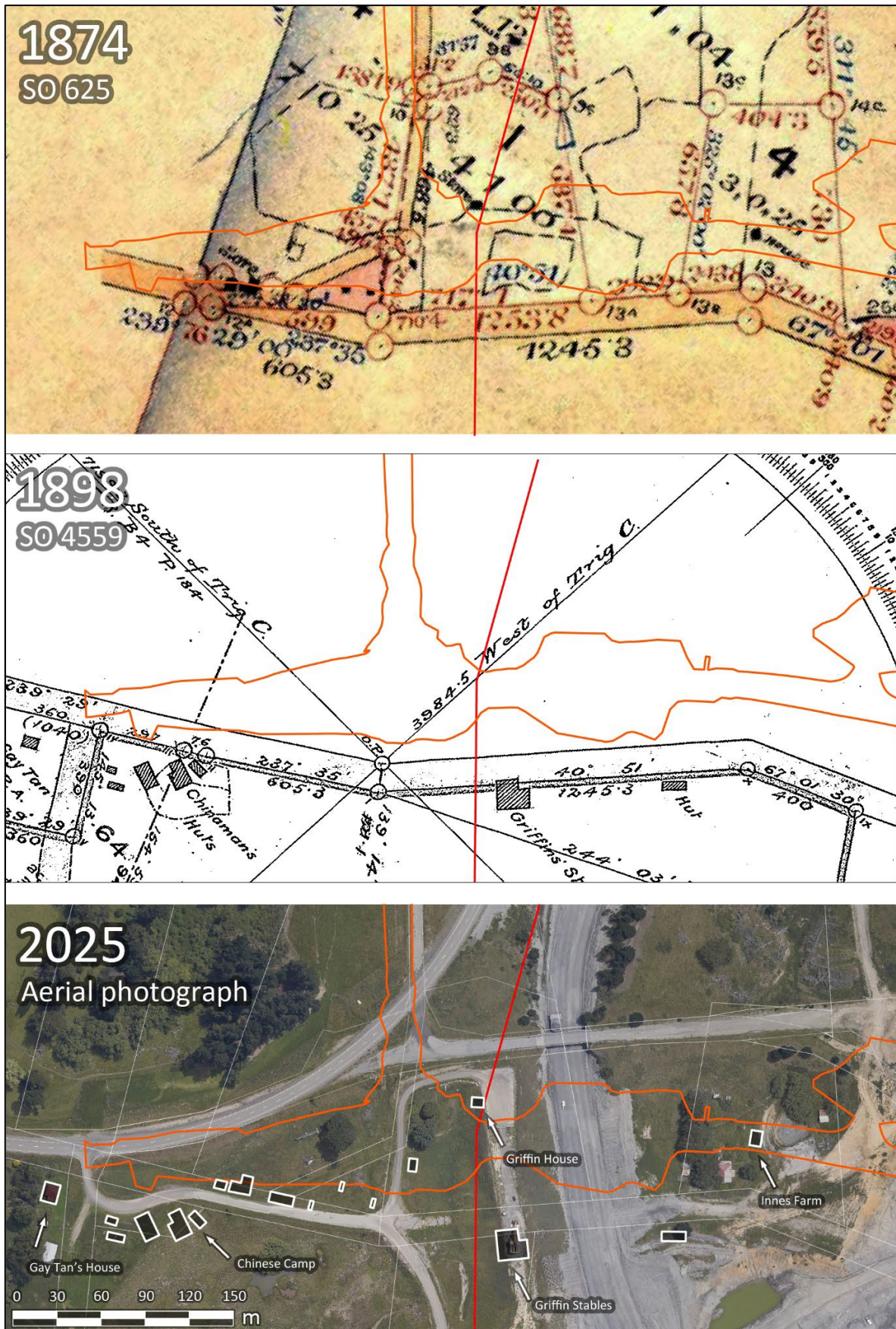


Figure 19. Building locations in the upper township as indicated by historic survey plans.⁹⁶ The project area boundaries are shown (see Figure 14 for full extents).

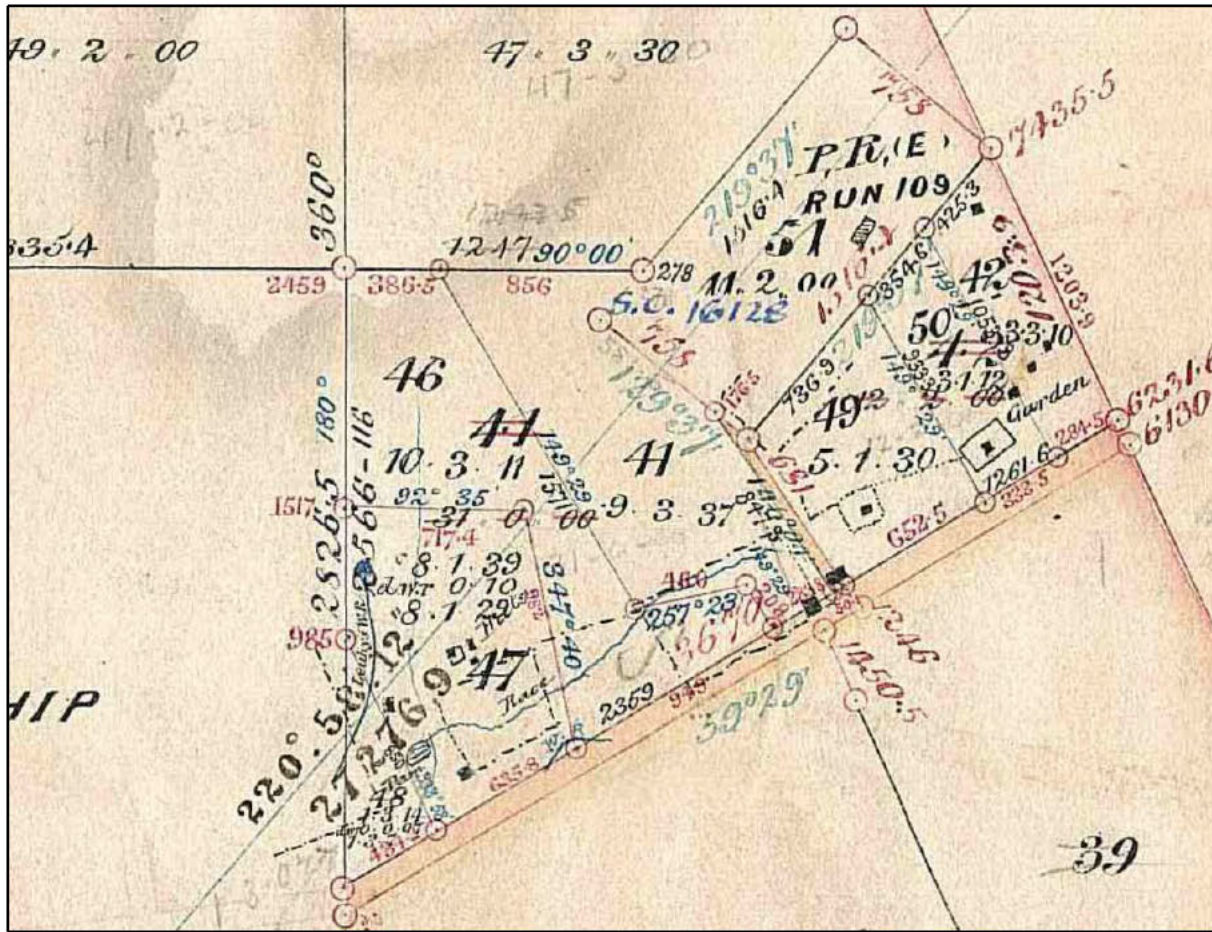


Figure 20. Detail of SO 622 from 1873 showing the 'huts' of a Chinese Camp on Section 47. The proposed noise bund is to be constructed on Section 41 (cf. Figure 17).

Table 1. Details of recorded archaeological sites within or relevant to the project areas.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/23 ⁹⁷	N/A	Mining – gold	QUARTZ WORKINGS	N/A	Destroyed
I42/24 ⁹⁸	N/A	Mining – gold	GOLDMINING SITE	1993/15; 1995/65	Destroyed
I42/25 ⁹⁹	N/A	Mining – gold	QUARTZ MINING	1996/11; 1998/78	Destroyed
I42/26 ¹⁰⁰	N/A	Mining – gold	QUARTZ MINING	N/A	Destroyed
I42/27 ¹⁰¹	N/A	Historic – domestic	HOUSE SITES	1993/14	Destroyed

⁹⁶ SO 625 and 4559.

⁹⁷ Hamel, *Changes in Gold Mining at Macraes*.

⁹⁸ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Alluvial Gold Workings, 'Innes Dam', Macraes*.

⁹⁹ Hamel, *Changes in Gold Mining at Macraes*.

¹⁰⁰ Hamel, *Changes in Gold Mining at Macraes*.

¹⁰¹ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/28 ¹⁰²	N/A	Historic – domestic	HOUSE	1994/95; 1997/52; 2002/162 ¹⁰³	Destroyed
I42/30 ¹⁰⁴	N/A	Mining – gold	ELEVATOR PONDS	N/A	Destroyed
I42/49 ¹⁰⁵	Gay Tan's House Grounds	Historic – domestic	Building, Building - cottage, Building - farm, Drain, House floor/ site	2005/277; 2010/432 ¹⁰⁶	Good
I42/50 ¹⁰⁷	N/A	Historic – domestic	CHINESE CAMP SITE	N/A	Below surface
I42/51 ¹⁰⁸	N/A	Historic – domestic	Hut floor/ site, Sod fence/ wall, Drain	2003/55; 2004/131	Fair
I42/64 ¹⁰⁹	N/A	Mining – gold	Mining workings, Sluicings/ sluicing face, Water race	2003/55; 2004/131	Fair
I42/215 ¹¹⁰	Innes Farm	Historic – domestic	Building.	N/A	Fair
I42/241 ¹¹¹	N/A	Mining – gold	Artificial pond, possibly mining reservoir	2020/120 ¹¹²	Destroyed
I42/214 ¹¹³	Griffin House/Development House	Historic – domestic	Site of 19th Cottage	N/A	Below surface

¹⁰² Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

¹⁰³ HNZPT notes on this Authority records: "No rubbish pits were discovered when the house was finally removed by mining in 2002." Authority 202/162, and its associated final report, deals primarily with work at the Golden Bar Mine (I43/86).

¹⁰⁴ Hamel, *Changes in Gold Mining at Macraes*.

¹⁰⁵ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*; Williams, *Gay Tan's Cottage (I42/49): Final Report on Archaeological Monitoring at Macraes Flat, Otago*.

¹⁰⁶ Reissue of 2005/277.

¹⁰⁷ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹⁰⁸ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹⁰⁹ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹¹⁰ Petchey, *Innes-Mills Pit Waste Rock Dump Site*; Teele, *Frasers and Innes Mills Pit Expansion, Macraes Flat: Archaeological Assessment*; Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment*.

¹¹¹ Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment*, 201.

¹¹² Authority not actioned as subsequent research identified I42/241 to be a modern site.

¹¹³ Petchey, *Archaeological Sites: Part M.P. 41 064*.



Figure 21. Locations of recorded archaeological sites in and around the project area (2025 OGNZL aerial photography).

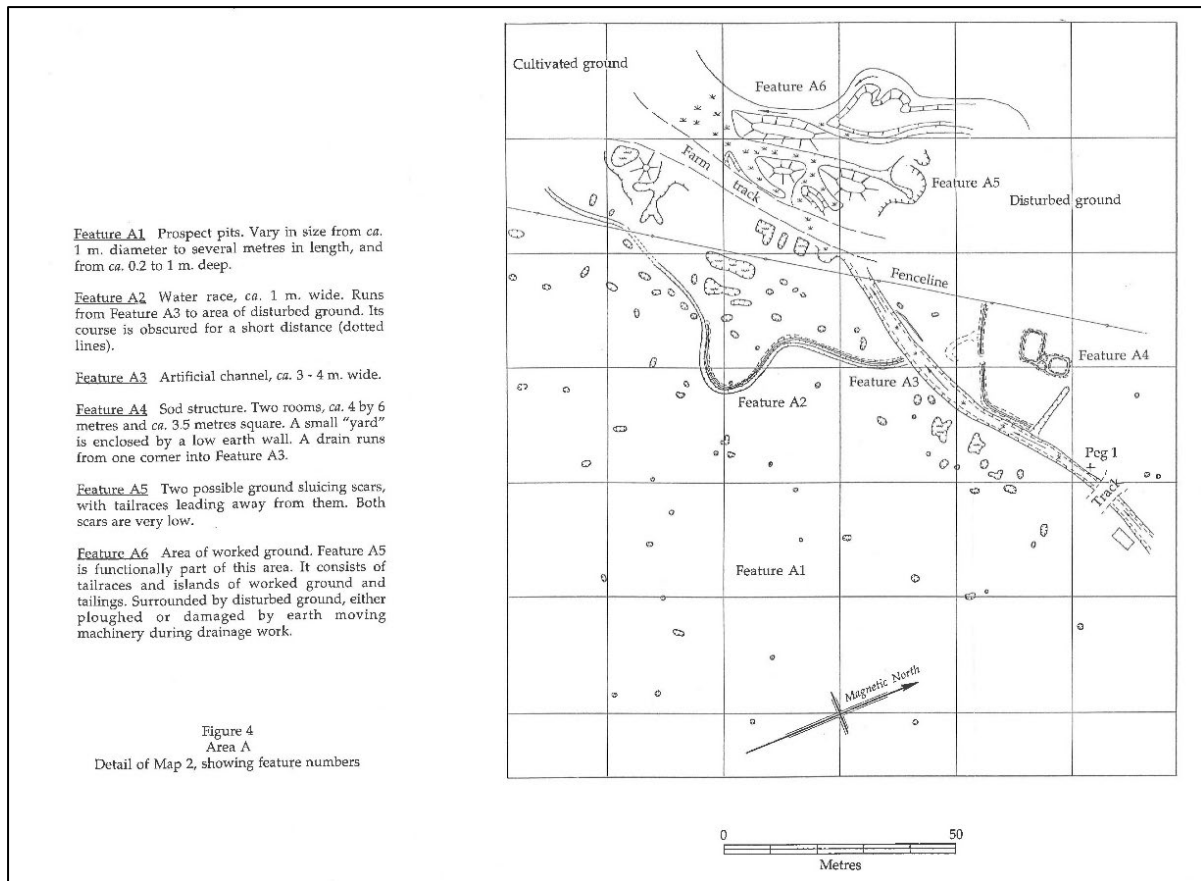


Figure 22. Petchey's survey of I42/51 and I42/64.¹¹⁴ See Figure 46 for its location within the upper township area.

6.3 Survey

A survey of the project area was undertaken by Jeremy Moyle and Chris Jennings on 24 November 2025. The general areas where archaeological features, or areas with archaeological potential, were identified in the desktop review and visited for survey are shown in Figure 23. Additionally, given the relative accessibility of the location, the length of the proposed roads beyond the east of the pit were also walked.

The French drain was added to the project after the initial survey, and a follow up visit to survey the length of the proposed trench between I42/64 and Redbank Road (Figure 15) was made by Jeremy Moyle and Russell Cook on 16 April 2026.

Aside from the sites and points of interest discussed below, it was determined that the potential for unrecorded archaeological sites in this project component is low based on the desktop review and survey.

¹¹⁴ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

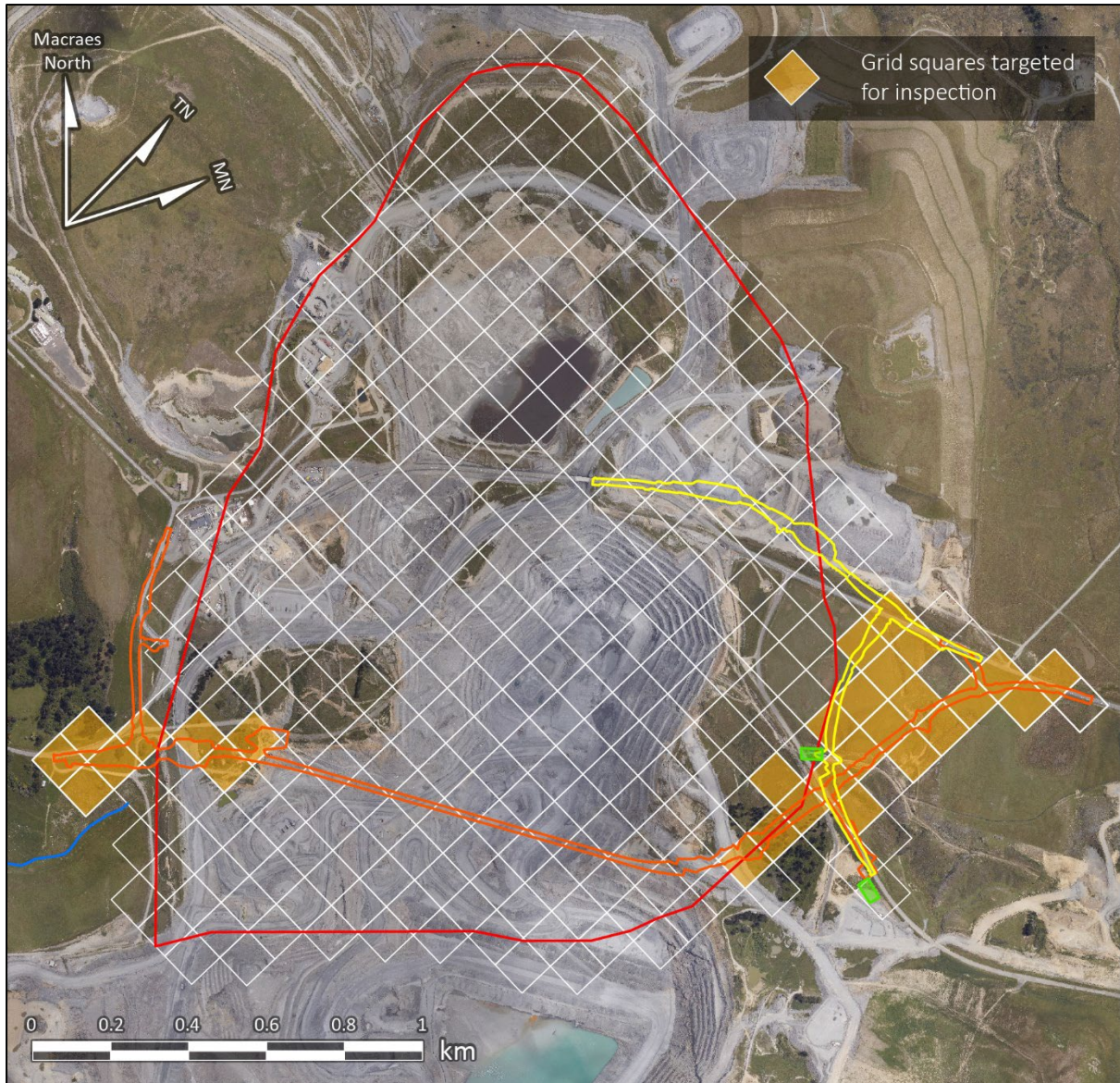


Figure 23. Areas – excluding the French drain, identified for survey based on desktop review. The length of the proposed roads to the east, beyond the pit, were also walked (2025 OGNZL aerial photography).

6.3.1 Innes Farm and Upper Township Area

The Innes Farm site (I42/215) includes several buildings (Figure 24). These are outlined in Table 2 and Figure 25-Figure 31. During the survey, a terraced area was present behind the existing house that was interpreted as the site of the former stone homestead. Several items were scattered across this terrace, including corrugate sheets, iron piping, and machinery components. Other features present included water tanks (I and J; the latter may be a well), historic fencing (K), and a seed drill (within Outbuilding F). The site had not been maintained and most features were overgrown to varying degrees. A modern dam had been constructed within the Innes Farm site as part of modern mining operations. This has likely destroyed the 'small dam' between the house and barn that was noted by Petchey as being a 'dump for household refuse.'



Figure 24. Innes Farm.

Table 2. Extant buildings at the Innes Farm.

Ref	Building	Details
A	House	Built 1938/1939 by Alex Innes.
B	Cowshed	Built 1945 by D. G. Innes.
C	Shearing shed/barn	'Front section' reputedly dates to the 19 th century; 'back portion' added in 1948 by D. G. Innes. Based on the site visit, the preliminary interpretation is that the front (south) ⅓ of the wall (and floor?) framing is original/older, with the remainder of the wall fanning and the whole of the cladding and roof structure added later.
D	Stone outbuilding	Reputedly the oldest building on the site; likely dates to the 19 th century. Its function is unclear. Much of it has collapsed and is overgrown. Walls are very thick (c. 500mm) and remnants of mud plaster and limewash are present in places.
E	Outbuilding E	Timber-frame structure clad with flat sheet metal. Its function is unclear, but beaded internal timber lining and decorative cornice, alongside later internal partitions, suggest it is a domestic structure that has been repurposed for a utilitarian outbuilding. Likely a 19 th century building, and probably one of those supposedly transported to the site from elsewhere.
F	Outbuilding F	Outbuilding complex created from timber framed structures clad with corrugated iron. Consists of 'Robert Benzie's room,' an implement shed, the wash house and the bathroom. The roof of the implement shed has collapsed. These may also be buildings that were transported to the site from elsewhere and likely date to the 19 th century.
G	Smithy	"...remains of a small collapsed shed dug into the side of a bank" ¹¹⁵ to the north-east of Outbuilding F. This could not be located during the survey. Not shown in Figure 24.
H	Pump house	Small, timber framed, corrugated iron clad shed housing pump machinery.

¹¹⁵ Petchey, *Innes-Mills Pit Waste Rock Dump Site*.



Figure 25. Innes house, looking west.



Figure 26. Cow shed, looking north-east.



Figure 27. Shearing shed/barn, looking north.



Figure 28. Stone outbuilding, looking south-west.



Figure 29. Outbuilding E and concrete water tank (I), looking south-west.



Figure 30. Outbuilding F, looking south.



Figure 31. Pump house, looking west.



Figure 32. Terraced area, looking north-west.



Figure 33. Overgrown water tank/well, looking south-east.



Figure 34. Historic fencing, looking south.



Figure 35. Seed drill within remains of Outbuilding F implement shed, looking south-east.



Figure 36. Modern dam, looking north.

The Griffin House (also known as Development House; I42/214) was formerly located to the south-east of the Innes Farm (Figure 37 and Figure 39).¹¹⁶ This was a 20th century building that was demolished *circa* 2022-2023 to make way for the construction of a noise bund.

Gay Tan's Cottage (I42/49), a 19th century mud-brick building, is present to the immediate west of the project area (Figure 38-Figure 39).

Historical survey maps also indicate that several structures – comprising the Macraes 'upper township' – were formerly present in the vicinity of the Griffin House (Figure 19). This includes the Macraes Chinese Camp site (I42/50; Figure 39). No archaeological features were identified at any of these sites during the survey, with the relevant areas covered with open pasture, but the potential for buried material remains. The exact extent of these sites is not clear beyond the former building footprints. The location of the Griffin's Stables building as shown on the 1898 SO 4559 plan (Figure 19) is beneath the bund separating this area from the current Innes Mills Pit. No previous archaeological investigation of this potential site was undertaken as it was not identified prior to the desktop review component of this assessment, and no archaeological evidence was reported during its construction.

The early alluvial mine workings (I42/64) and the associated sod structure (I42/51) to the south of the upper township area (Figure 46) were observed in fair condition. The surviving suite of mining features surveyed by Petchey – prospecting pits, water races, artificial channel, sod structure, and worked ground/sluicing scars – were all identified (Figure 40). However, the weight of the adjacent waste rock stack, and subsurface seepage from this structure, has raised the water table in the immediate area, flooding some prospecting pits and encouraging vegetation growth that obscures elements of the site (Figure 41).

No archaeological sites were identified along the remainder of the French drain alignment to Redbank Road.



Figure 37. Former Griffin House site, looking north-west.

¹¹⁶ Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment*.



Figure 38. Gay Tan's Cottage, looking south.



Figure 39. Upper township area, looking north. Site locations are annotated (c.f. Figure 19).

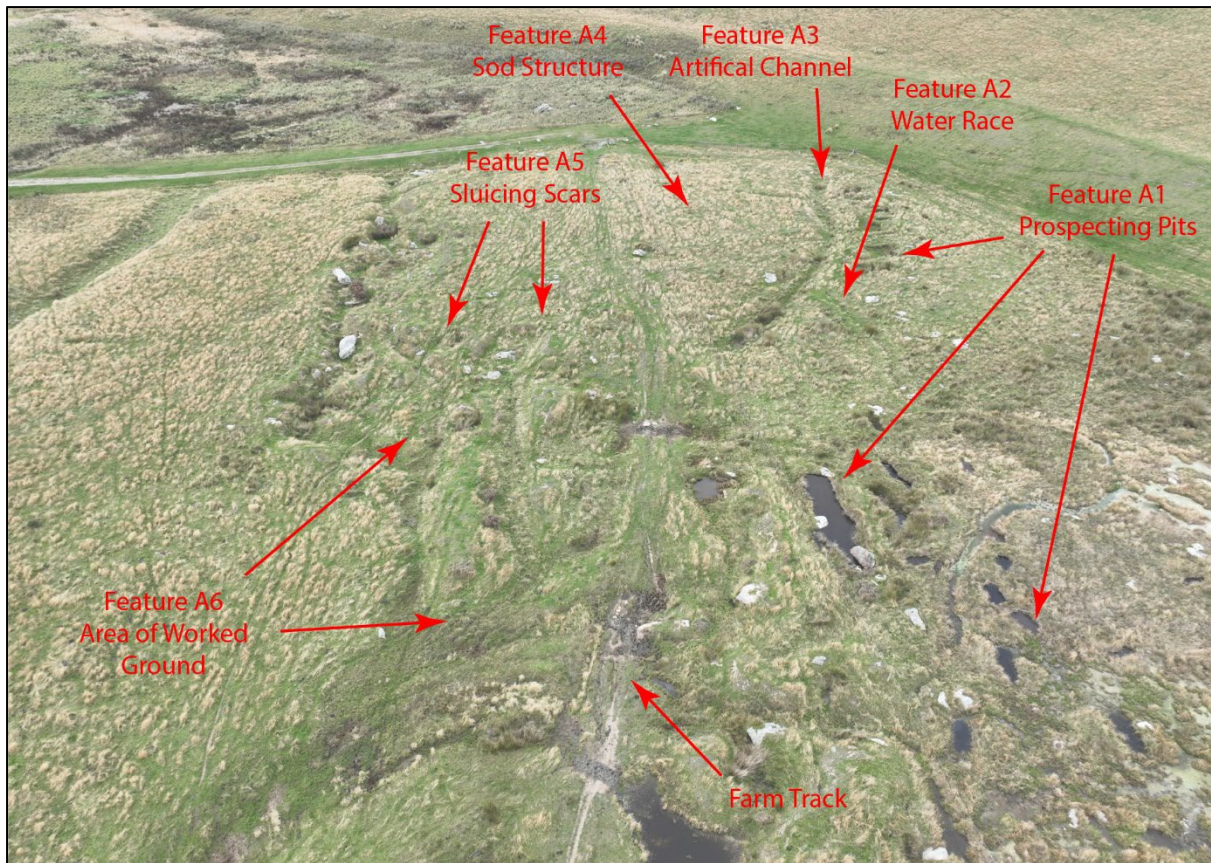


Figure 40. Alluvial workings (I42/64) and sod structure (I42/51), looking north-east (c.f., Figure 22).



Figure 41. Overgrown prospecting pit, looking north-west.

6.3.2 Eastern Road Realignments

The road realignment routes (Stages 1 and 2) to the east of the existing pit were surveyed on foot where they crossed ground that has not been modified by recent mine or infrastructure development. The entirety of each alignment was walked as a lack of GIS data prior to the field survey meant a preliminary desktop survey was not able to be undertaken for this part of the project component. For the most part, the road alignments cross open paddocks and cut across current road/track formations. The Stage 2 alignment also crosses two gullies and a small pine plantation. Points of interest identified during the survey are described in Table 3 and shown in Figure 42.

Table 3. Points of interest along the road realignment routes.

Ref	Details
IM1	Aligned stone feature, possibly structural remains (Figure 43).
IM2	Drainage feature associated with iron wire and post remains (Figure 44).
IM3	Stone feature associated with inhibited pasture growth, possibly structural remains (Figure 45).

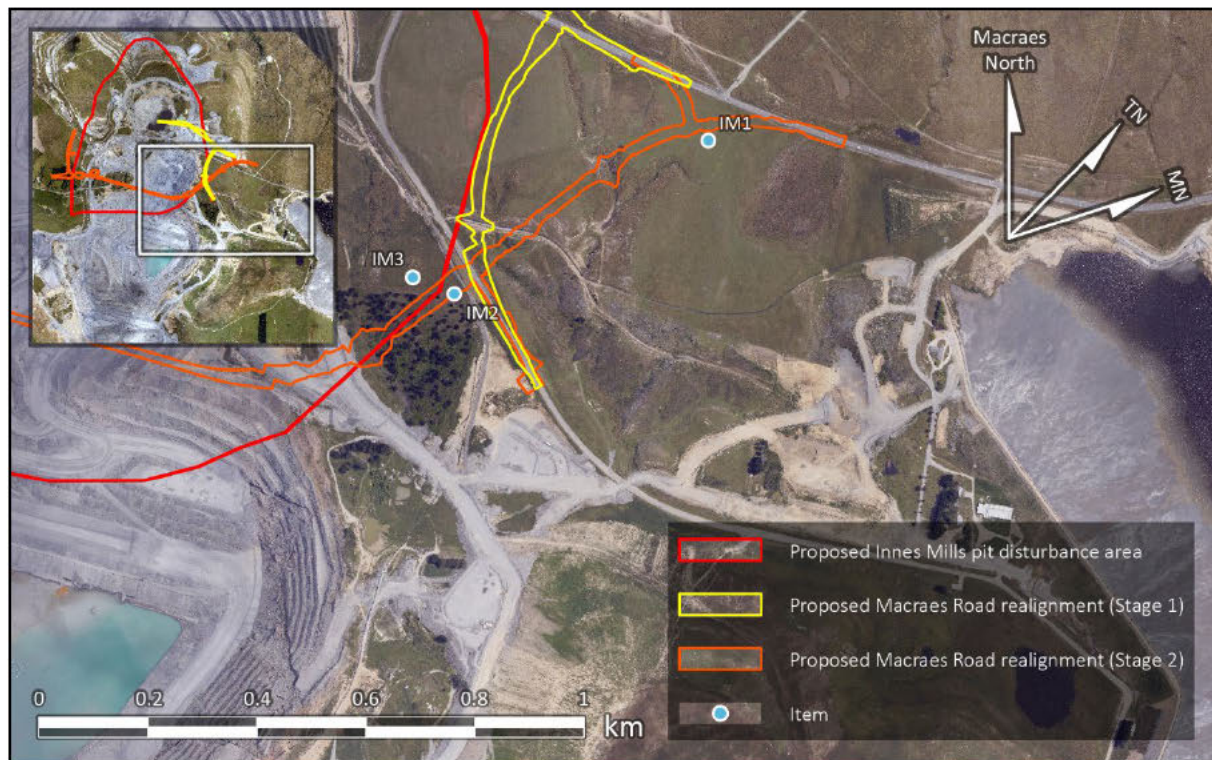


Figure 42. Points of interest along the road realignment routes (2025 OGNZL aerial photography).



Figure 43. Aligned stone feature (IM1), looking north-west.



Figure 44. Drainage feature (IM2), looking east. Post and wire remains are present in the long grass around the stadia rod.



Figure 45. Stone feature and inhibited pasture growth (IM3), looking east.

6.4 Archaeological Values

The archaeological values of the sites in the project area, and immediately adjacent sites that may be affected, are assessed in the tables below. Sites that will not be affected by works have not been assessed. Other points of interest or potential buried items are assessed as having no archaeological values.

Table 4. Assessment of archaeological values for Innes Farm (I42/215).

Site	Value	Assessment
I42/215 (Innes Farm)	Condition	Generally, the Innes Farm buildings and structures are in a fair condition. They are abandoned, derelict and overgrown, but retain much of their historic fabric. The exception is the stone outbuilding, much of which has collapsed. The condition of any buried archaeological material is unclear, but likely varies across the site. The modern dam has possibly destroyed the historic dump site noted by Petchey. Other buried material may be in a better condition due to the lack of additional recent developments. Assessment – Fair to Poor (buildings) and Below Ground
	Rarity/ Uniqueness	Late 19th-early 20th century farmsteads are common in New Zealand and the Waitaki District. Assessment – Low

Site	Value	Assessment
	Contextual value	Innes Farm has a moderate contextual value both as a reasonably intact collection of 19 th to early 20 th century farm buildings, and at a wider scale as a notable feature of the well-documented historic mining/pastoral landscape of Macraes Flat. Assessment – Moderate
	Information potential	Despite their prevalence throughout New Zealand, historic farming sites are relatively understudied. This reasonably intact collection of buildings offers an opportunity to address this gap in the record. Assessment – Moderate
	Amenity value	While the extant buildings have some amenity values as visible relics of a historic rural landscape, the site is not accessible or visible to the public. Assessment – Low
	Cultural associations	The Innes Farm is primarily associated with 19 th and 20 th century Pākehā occupation. Assessment – Pākehā

Table 5. Assessment of archaeological values for the Griffin House (I42/214).

Site	Value	Assessment
I42/214 (Griffin/Development House), and other possible subsurface rural domestic sites	Condition	Any archaeological material remaining at the site is buried. Assessment – Below Ground
	Rarity/ Uniqueness	Late 19 th -early 20 th century rural domestic sites are common in New Zealand and the Waitaki District. Assessment – Low
	Contextual value	Rural domestic sites have moderate contextual value as a feature of the well-documented historic mining/pastoral landscape of Macraes Flat. Assessment – Moderate
	Information potential	Given the contextual information associated with historic occupation in the wider Macraes area, any buried material has an increased information potential as an element of a well-documented historic mining/pastoral landscape. Assessment – Moderate
	Amenity value	Any archaeological material is buried and has no amenity value. Assessment – None
	Cultural associations	The site is primarily associated with 19 th and 20 th century Pākehā occupation. Assessment – Pākehā

Table 6. Assessment of archaeological values for the Chinese Camp site (I42/50).

Site	Value	Assessment
I42/50 (Chinese Camp Site)	Condition	Any archaeological material remaining at the site is buried. Assessment – Below Ground
	Rarity/ Uniqueness	There were a relatively limited number of Chinese settlements in New Zealand and Otago, and few have been located, documented, and/or excavated. This is potentially one of two Chinese settlements in the Macraes area. Assessment – High
	Contextual value	The Chinese Camp Site is a critical element of the historic Macraes landscape. Assessment – High
	Information potential	Given the contextual information associated with historic occupation in the wider Macraes area, any buried material has an increased information potential as an element of a well-documented historic mining/pastoral landscape. Assessment – High
	Amenity value	Any archaeological material is buried and has no amenity value. Assessment – None
	Cultural associations	The site is primarily associated with 19 th and 20 th century Chinese occupation. Assessment – Chinese

Table 7. Assessment of archaeological values for Gay Tan's Cottage (I42/49).

Site	Value	Assessment
I42/49 (Gay Tan's Cottage)	Condition	The cottage has been conserved and is actively maintained. The condition of any buried archaeological material is unclear, but likely in good condition given the relative lack of modern development. Assessment – Excellent and Below Ground
	Rarity/ Uniqueness	There is a relatively limited number of overtly Chinese dwellings in New Zealand and Otago, and few have been located, documented, and/or excavated. It is the only example in Macraes. Assessment – High
	Contextual value	Gay Tan's cottage is a critical element of the historic Macraes landscape and intimately related to the adjacent Chinese Camp site. Assessment – High
	Information potential	Given the contextual information associated with historic occupation in the wider Macraes area, the building and any buried material has an increased information potential as an element of a well-documented historic mining/pastoral landscape. Assessment – High

Site	Value	Assessment
	Amenity value	The cottage is highly accessible and visible, and is in excellent condition. Assessment – High
	Cultural associations	The site is primarily associated with 19 th and 20 th century Chinese occupation. Assessment – Chinese

6.5 Other Heritage Values

Gay Tan's Cottage (I42/49) is recorded as a heritage item in the Waitaki District Plan (H 166).¹¹⁷

The cottage is also a Category 2 Historic Place on the HNZPT List (No. 7550). The listing extent also encompasses the outbuildings, plantings, and potential buried archaeological features associated with the building. This extent appears to be approximate and not informed by a cadastral survey.¹¹⁸ The archaeological site extent (I42/49) updated to align with the listing extent as part of the MP4 assessment (Figure 46).

A number of land parcels containing archaeological sites near the upper township area are protected by heritage covenants. These include the parcels encompassing Gay Tans Cottage (I42/49), the Chinese Camp site (I42/50), as well as the nearby alluvial workings (I42/64) and sod hut site (I42/51).¹¹⁹ The extent of the protected alluvial workings (I42/64) is defined in the covenant documentation (Figure 46).

Other heritage values are considered in a separate heritage assessment prepared for Resource Consent purposes.

6.6 Effects of the Proposed Works

Any archaeological material within the footprints of the project areas will be destroyed by the proposed work. This will include the entirety of the Innes Farm site (I42/215) and the drainage feature/wire and post remain (IM2).

There is potential for the destruction of buried material relating to Griffin House (I42/214) and the Macraes Chinese Camp (I42/50) sites, as well as other unrecorded rural domestic archaeological sites relating to the upper township (Figure 19).

The seepage collection drain for the Frasers West Waste Rock Stack (Figure 46) will be established within the rock stack footprint where it is necessary to avoid the early alluvial workings (I42/64) and associated sod structure (I42/51). No archaeological evidence will be affected by this work, though the excavation will occur within land parcels protected by a heritage covenant. Sumps associated with the drain will be sited to avoid archaeological evidence. The construction of the drain has the potential to benefit the alluvial workings site by creating drier conditions and allowing better access for sheep grazing to control vegetation.

The noise bund is not assessed as having any potential effects on archaeological material. A water race is historically recorded in the vicinity of the bund location in the 1870s, but this has been previously destroyed by ploughing (Figure 17 and Figure 20).

¹¹⁷ A proposed Waitaki District Plan also exists, but the relevant heritage provisions have been withdrawn as of 15 January 2026 as part of a freeze on new planning instruments.

¹¹⁸ HNZPT Registration Proposal and Technical Change Request for Gay Tan's Cottage.

¹¹⁹ 7666279.5, 7666279.3, and 7666279.2.

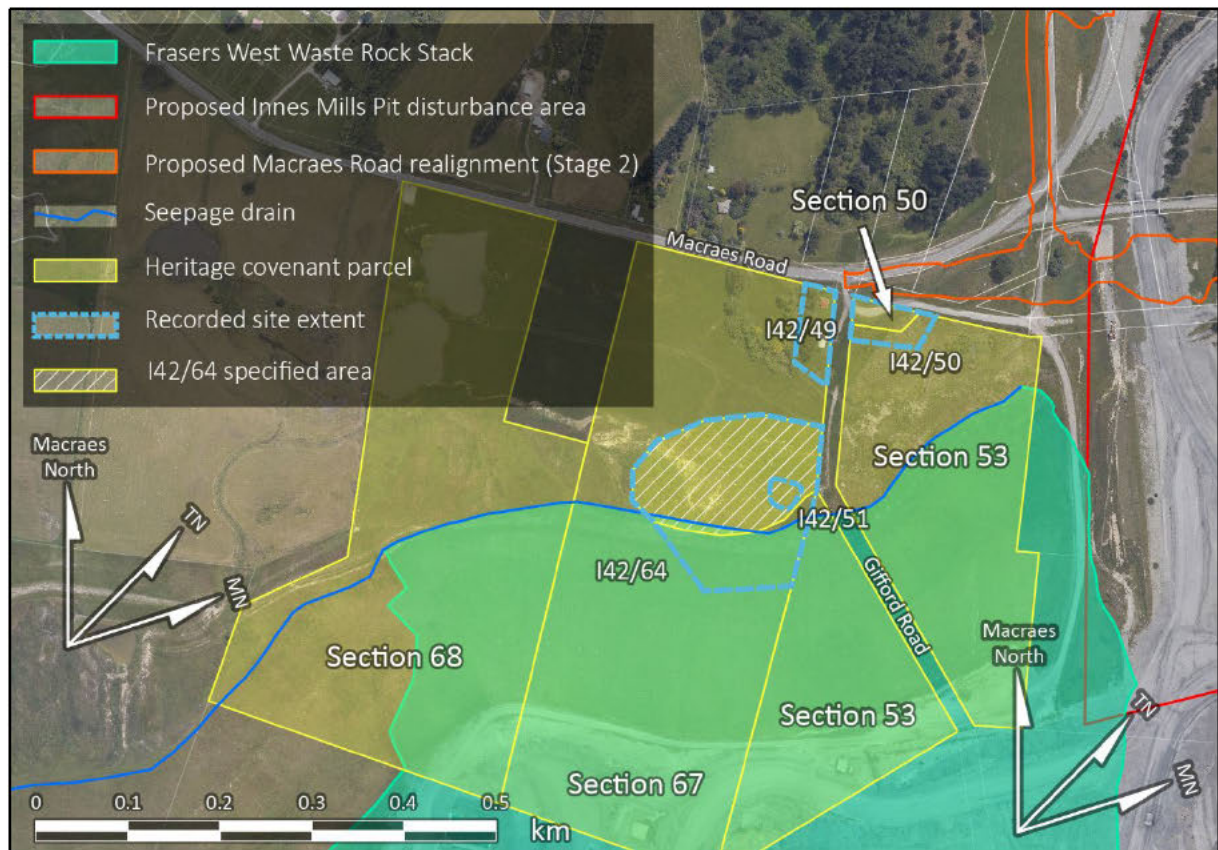


Figure 46. Upper township archaeological sites and heritage covenants (2025 OGNZL aerial photography).¹²⁰

The two stone features (IM1 and IM3) identified adjacent to the proposed Stage 1 Road realignment will not be affected.¹²¹

Vibrations associated with the Stage 2 road construction and closer mining activity have the potential to damage the earth structure and brittle plaster finishes of Gay Tan's Cottage (I42/49).

Effects on values for the project component, considering the recommendations proposed below, are summarised in Table 8.

Table 8. Summary of Innes Mills Pit and Macraes Road Realignment effects.

Site Number	Site Name/Description	Site Type	Effect	Notes
I42/49	Gay Tan's House	Historic – domestic	None	Potential vibration effects will be managed to avoid any effects.
I42/50	Chinese Camp	Historic – domestic	Potentially modified	Site has high archaeological values. Stage 2 road construction will avoid the Chinese camp buildings as noted on the historic survey plan (SO 4559), but earthworks will be undertaken in close proximity potentially leading to the destruction of

¹²⁰ See Section 6.5 below for more information on the heritage covenants.

¹²¹ As buried features they are not susceptible to the effects of vibration.

Site Number	Site Name/ Description	Site Type	Effect	Notes
				some as yet undiscovered archaeological evidence associated with the site. The proposed archaeological investigations may partially realise the high information potential. The other values will remain the same following the proposed works.
I42/51	Sod Structure	Historic – domestic	None	
I42/64	Early Alluvial Workings	Mining – gold	None	Seepage drain location has been altered to avoid site.
I42/215	Innes Farm	Historic – domestic	Destroyed	Site has moderate to low archaeological values. Recording of post-1900 features recommended as a dimension of the site's archaeological context. The proposed archaeological investigations will realise the moderate information potential. The other values will be lost.
I42/214 (and potential un-recorded sites)	Griffin House/ Development House and other possible rural domestic sites in the upper township	Historic – domestic	Destroyed	Site has moderate to low archaeological values. The proposed archaeological investigations will realise the low information potential. The other values will be lost.

6.7 Alternative Options

The relocation of the Stage 2 road realignment to intersect with the former Macraes road formation (*circa* 1999¹²²) would avoid the potential destruction of buried sites in the upper township area and minimise potential vibration damage to Gay Tan's Cottage. However, this was not feasible for several reasons:

- The approach to the existing bridge from the east traverses through geotechnically unsuitable ground.
- When considering the corridor width required for road formation and associated services, the alignment to the former Macraes road route is not compatible with the necessary embankment location between a proposed tailings storage facility and the Innes Mills pit (Figure 13).
- A bridge on the former Macraes road route was assessed in 2025 as being structurally compromised.

¹²² See SO 24927.

Changes to the pit disturbance area to protect the Innes Farm site would require a substantial alteration of the proposed works and was not considered feasible or proportionate given the mixed archaeological values of the site.

The seepage drain's potential effect on the early alluvial workings was identified as part of this assessment. Designs were subsequently altered to locate the drain within the Frasers West Waste Rock Stack footprint and avoid the archaeological site.

6.8 Recommendations

- While no archaeological evidence will be affected by the seepage drain/sump construction, excavation will take place in land parcels protected by heritage covenants. No modification of these instruments is provided for in the FTAA, and approval from HNZPT will be sought for this work outside of the fast-track process in the event that the FTAA Approvals are granted.
- To manage potential effects from vibration:
 - Gay Tan's Cottage (I42/49) should be assessed by a suitably qualified structural or blasting/vibration engineer, with experience in understanding the structural performance of historic buildings, to establish vibration limits sufficient to prevent threshold damage to the building. This advice should be provided in consultation with a suitably qualified stone mason or other tradesperson with expertise in earth structures.
 - Vibration monitoring instrumentation is already in place at Gay Tans Cottage and will continue to operate when earthworks and mining are occurring adjacent to the Cottage area or within Innes Mills Pit, to ensure vibration limits are not exceeded by MP4 project work.
- An Archaeological Authority is required for the proposed works. The authority should provide for the destruction of the Innes Farm (I42/215) and Griffin House (I42/214), the potential modification of the Chinese Camp (I42/50), and the destruction of other possible subsurface sites that may be present within the project area. The authority should have a duration of 15 years, to align with MP4 timelines.
- An archaeological management plan prepared to support this authority should specify:
 - Archaeological recording of the stone outbuilding (Building D) at the Innes Farm site to a Level II standard according to AGS 1.¹²³
 - Archaeological recording of the other probable 19th century buildings (Buildings C, E, and F) to a Level III standard according to AGS 1.¹²⁴
 - Archaeological recording of the 20th century buildings (A, B, and H), as a dimension of the earlier site's archaeological context, to a Level III standard according to AGS 1.¹²⁵
 - The geophysical investigation of the Upper Township, followed by targeted test pitting, to provide some sense of the remains present in the area prior to the main archaeological investigations.
 - Areas where archaeological investigations must be undertaken prior to project earthworks proceeding at:
 - The Upper Township.
 - Innes Farm.
 - The drainage feature/wire and post remains (IM2).
 - Proposed seepage sump locations must be assessed by an archaeologist for their potential to affect archaeological sites, including a site visit to the proposed location(s). If there is the potential

¹²³ Heritage New Zealand Pouhere Taonga, *Archaeological Guidelines Series No. 1: Investigation and Recording of Buildings and Standing Structures* (Heritage New Zealand Pouhere Taonga, 2018).

¹²⁴ Heritage New Zealand Pouhere Taonga, *Archaeological Guidelines Series No. 1: Investigation and Recording of Buildings and Standing Structures*.

¹²⁵ Heritage New Zealand Pouhere Taonga, *Archaeological Guidelines Series No. 1: Investigation and Recording of Buildings and Standing Structures*.

that a sump will affect an archaeological site, designs should be altered to avoid this. This should be specified in the archaeological management plan.

- An area around the known Chinese Camp building locations, as well as the early alluvial workings (I42/64) and sod structure (I42/51), to be demarcated and protected on the ground using physical barriers (plastic mesh safety fencing, or similar) to avoid any accidental disturbance during Stage 2 road realignment works and seepage drain/sump construction.
- An on call-protocol for managing the discovery of any archaeological material beyond the investigation areas/sites.
- The vibration limits established for Gay Tan's Cottage and the monitoring regime and parties responsible to ensure that limits are complied with.

Proposed archaeological authority conditions and an archaeological management plan incorporating these recommendations for the Innes Mills Pit and Macraes Road Realignment Stack is included as Appendix A1 and A2.

7 Coronation Pit and Trimbells Waste Rock Stack

7.1 Proposed Works and Project Area

7.1.1 Pit Expansion

The Coronation and Coronation North Pits are two open pits seven kilometres to the north-west of the Macraes township that were mined separately between 2013 and 2019 (Figure 47). The pits share waste rock disposal locations within a wider area of disturbance, referred to as the Coronation Mining Area. The proposed pit extensions comprise a disturbance area that will accommodate the various activities associated with open pit mining, including stockpiling ore and topsoil, pipeline benches, vehicle tracks and laydown areas (Figure 48). The area of disturbance may also accommodate changes to pit shells in response to local geotechnical constraints. For the purposes of understanding potential effects on buried archaeological material, it can be assumed that all areas within the pit disturbance area will be excavated to natural ground.

All waste rock from the open pit extensions will be disposed of as backfill to the respective pits or to the existing Coronation, Coronation North, and Trimbells Waste Rock Stacks (Figure 47-Figure 48). To accommodate the additional capacity required, the collective footprint of the three waste rock stacks will be extended. Silt ponds will be constructed to manage sediment runoff from Trimbells Waste Rock Stack. A diversion drain will be constructed to replace a stream lost as part of the Trimbells Waste Rock Stack construction.

7.2 Research Results

7.2.1 Historic Record

Early European activity around the wider area of the Coronation Mining Area initially related to a rush of alluvial mining at the Highlay Diggings, which brought a “great number of people” to the area.¹²⁶ The main workings during this initial period were located in the Trimbell’s Gully,¹²⁷ and the Mareburn Gully to the east of the Coronation Mining Area (Figure 49).

Mining began in southern part of the Coronation Mining Area around the late 1880s, with three separate companies shown to have Licensed Holdings in August of 1889 (Figure 50).¹²⁸ Petchey noted that these companies were likely to have been unsuccessful, as no future mention was made of them in the subsequent annual Mines Reports.¹²⁹ Much of the area, comprising these three Licensed Holdings, was later targeted in 1911 and known as the Coronation Reef, as part of a claim held by Robert Arthur Matthewson. The ownership and discovery of the reef was attributed to Thomas and Orr, however little activity beyond prospecting the reef was ever recorded, and Matthewson surrendered the claim towards the end of 1912.¹³⁰ Available aerial photographs (Figure 51) indicate that the area remained largely unmodified until the end of the 20th Century. Exploratory excavations are visible in the 1999 aerial photograph in the area of the Coronation Reef, with more intensive investigations initiating in 2013, as shown in the 2014 aerial photograph. By 2021 both the Coronation and Coronation North pits are shown to have been subject to extensive operations, with exploratory drill pads visible in the southern extent of the Coronation Mining Area.

In addition to mining operations, large parts of the area had been designated as pastoral runs in the 1850s. The Deepdell Run was the most prominent in the area, and the homestead was situated to the north-west of the Macraes township on Horse Flat Road. As a result of agitation for land suitable to farm, part of this run was designated the Macraes 100 in 1874, which provided smaller blocks of land available to be purchased. The

¹²⁶ *Otago Witness*, “The Highlay Diggings,” 24 May 1862, 5.

¹²⁷ *Otago Daily Times*, “The Gold Fields Manual for New Arrivals,” 23 September 1862, 6.

¹²⁸ Detailed on SO Plans: SO 4544 (Mountain Den GM Co.), SO 4545 (Eureka GM Co.), SO 4548 (Naseby QM Co.).

¹²⁹ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

¹³⁰ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

Deepdell Run was divided into considerably smaller parcels in 1888 as part of the government's policy of breaking up large pastoral runs.¹³¹

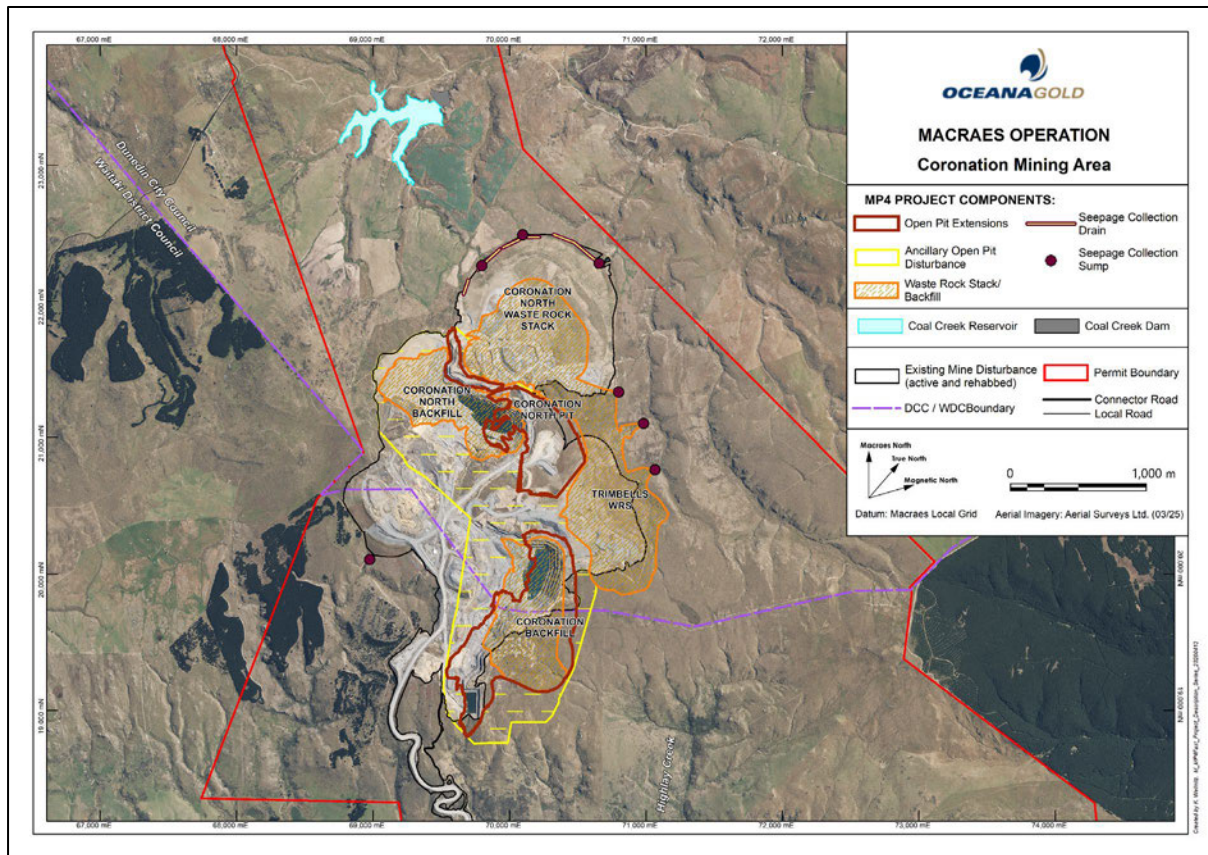


Figure 47. Proposed Coronation and Coronation North Pit expansion.¹³²

¹³¹ SO 625.

¹³² OceanaGold.

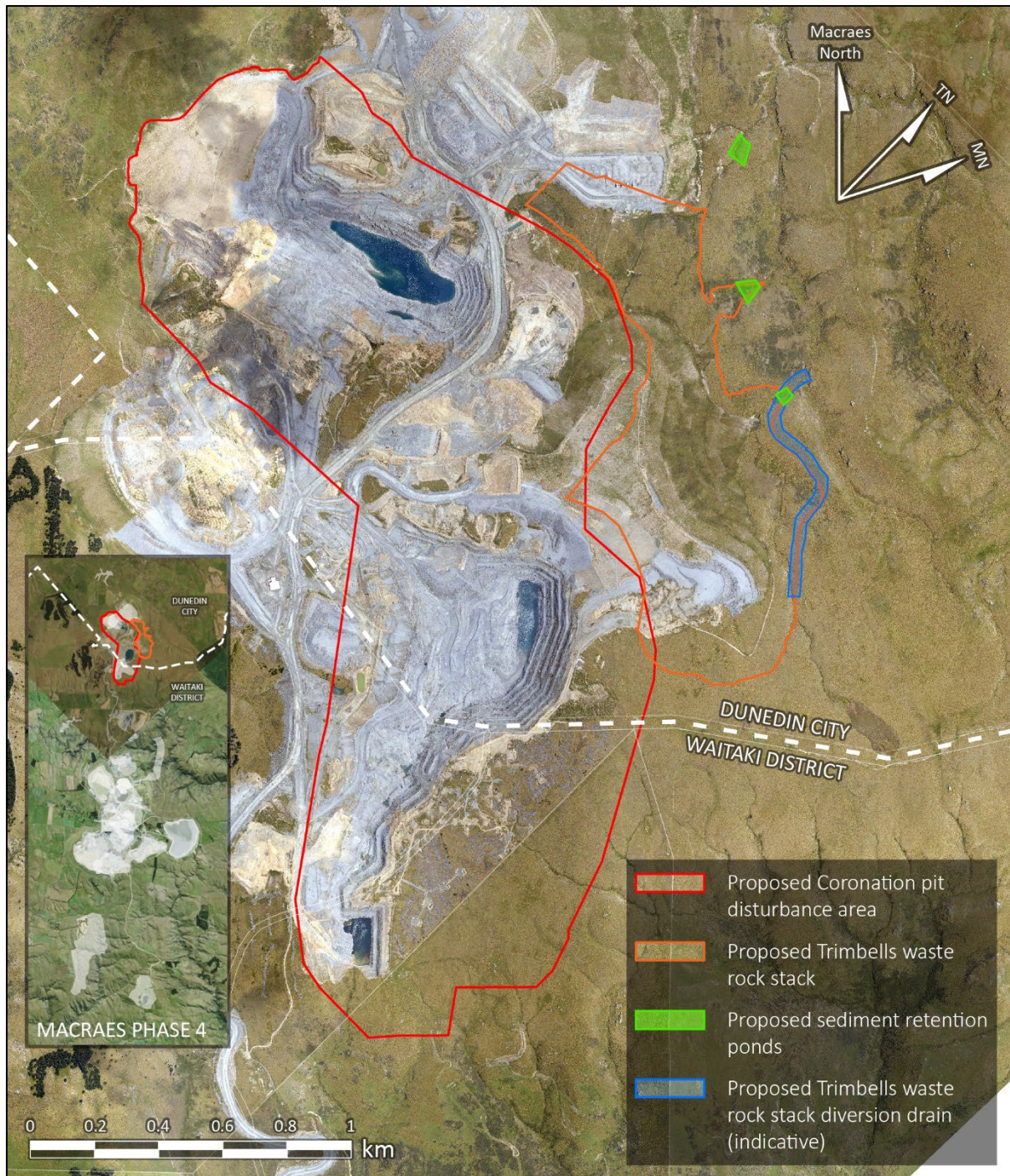


Figure 48. Pit expansion and Waste Rock Stack expansion areas affecting undisturbed ground (2025 OGNZL aerial photography).

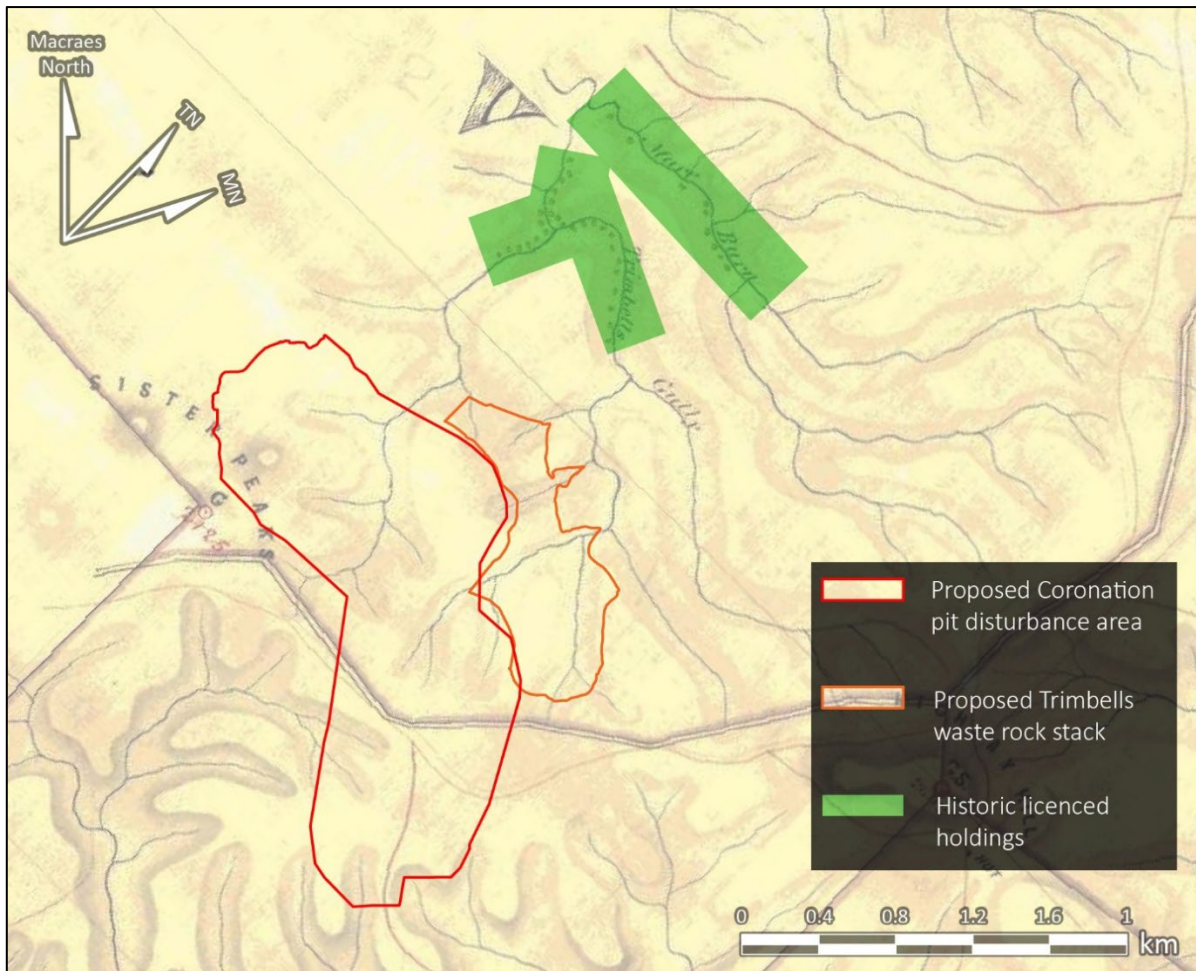


Figure 49. Undated Highlay District topographical map (SO 620) showing project area in relation to workings in Trimbells Gully and Mare Burn (map cropped to area).

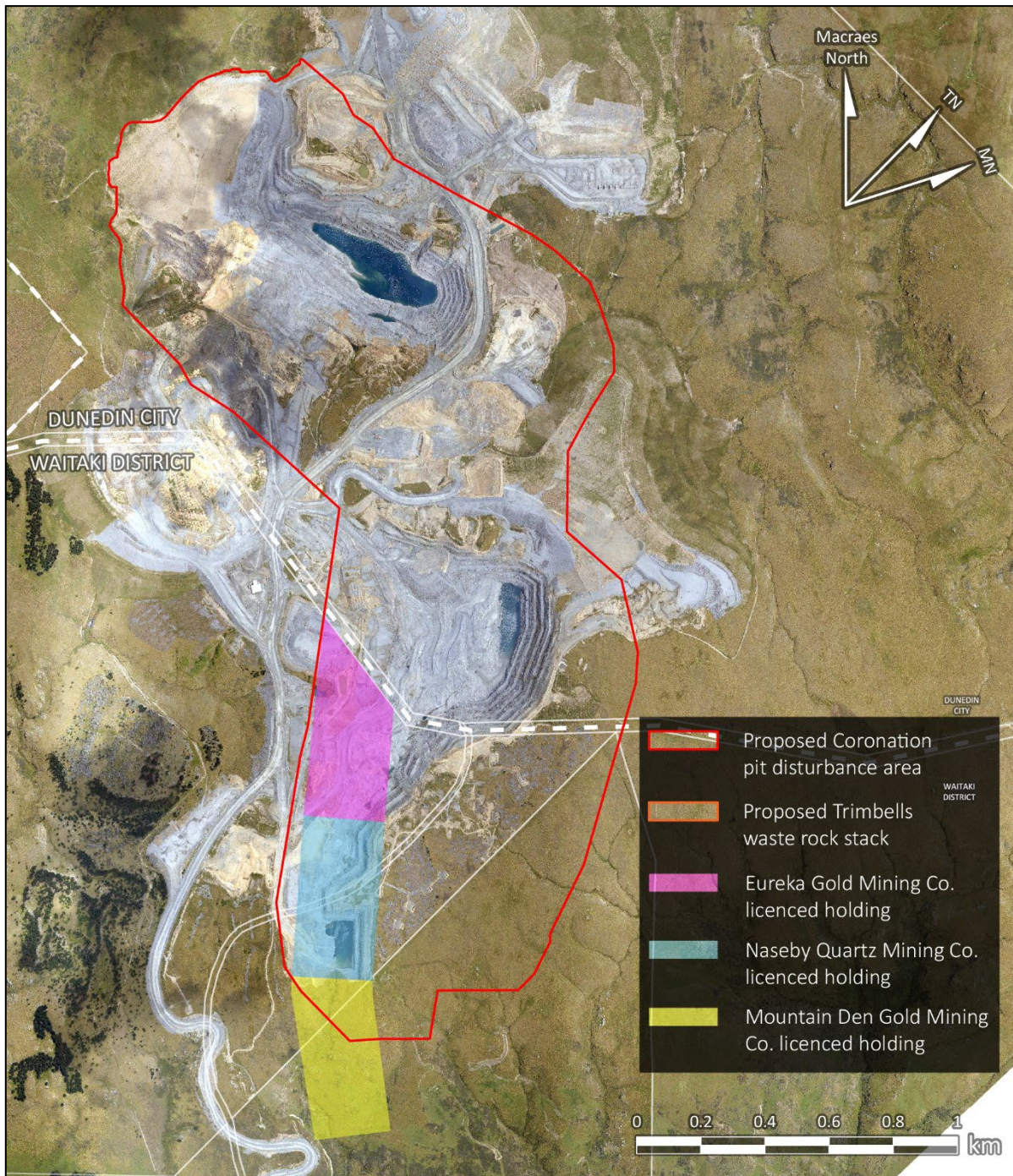


Figure 50. SO 629 Map of Blocks VII and VIII Highlay District (cropped) showing location of project area and 1889 licensed holdings (2025 OGNZL aerial photography).

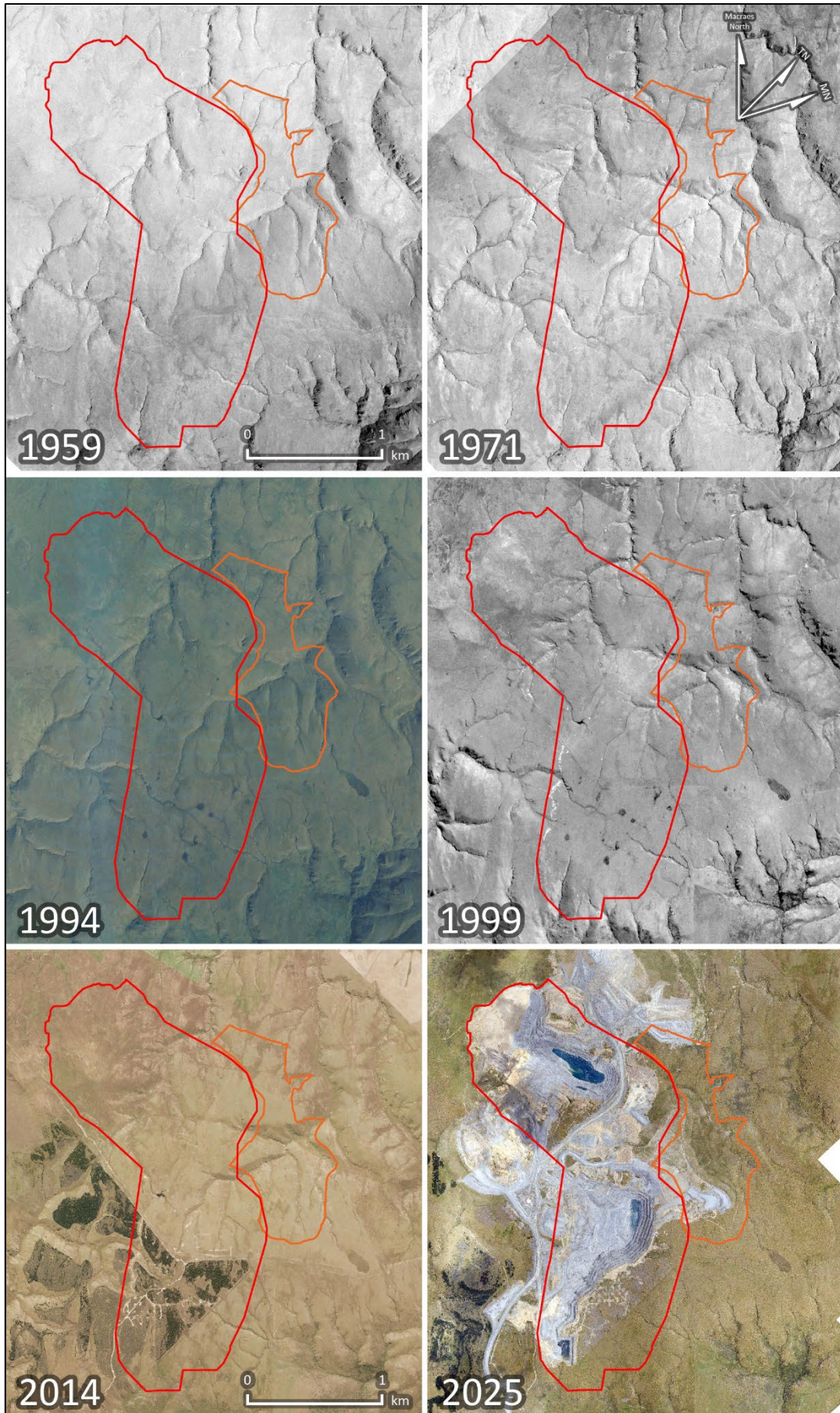


Figure 51. Historic aerial photographs showing the project area over time.¹³³

7.2.2 Previous Archaeological Work

ArchSite records four sites within the project area (Figure 52 and Table 9). Three of these were recorded by Sian Keith and Peter Caldwell in 2011,¹³⁴ with the remaining site (I42/93) recorded by Petchey in 1998.¹³⁵ These sites were revisited by TJ O'Connell in 2013, who updated their information as part of an archaeological assessment related to the establishment of the Coronation Pit.¹³⁶ These sites were most likely associated with the Eureka and Naseby Licenses (Figure 50), however they have now been destroyed by earthworks associated with modern mining of the Coronation Pit. Much of the proposed pit expansions and Trimbells Waste Rock Stack falls within an area that was surveyed by Allingham in 2013 and again 2016. Allingham's surveys had a specific focus on Māori archaeological sites, but no evidence of Māori activity was found within the current project area.¹³⁷ The Coronation North area was also surveyed by Ben Teele in 2016, however none of the sites recorded by him during this fieldwork are located within the present project area.¹³⁸

7.3 Survey

A survey of the project area was undertaken by Chris Jennings and Jeremy Moyle on 26 January 2026. GIS analysis of available aerial photographs and LiDAR imagery was undertaken prior to the survey. These layers showed that much of the project area was already extensively disturbed by operations in the Coronation Mine Area. Despite the known history of mining in the area during late 1880s, and the archaeological evidence recorded by past surveys,¹³⁹ no additional features were identified during GIS analysis. Accordingly, the archaeological survey was limited to the southern and eastern areas of the project area where the ground remained undisturbed by modern mining activity. The landscape in these areas consisted of steep terrain cut by multiple gullies, which were the type of landform most likely to exhibit archaeological evidence related to mining. These gullies were targeted for survey, with the area surveyed shown in Figure 53. Although these were considered to be landforms with the highest archaeological potential, the gullies within the project area were predominantly the steeper, upper areas (Figure 54-Figure 56). Archaeological evidence of mining activity in the wider area is usually located at lower elevations and closer to major water courses (e.g., Trimbells Gully and Mare Burn). Additionally, large outcrops in the survey area were checked for rockshelters, although no examples likely to support occupation were observed in the field. With the exception of the fence described below, no archaeological evidence was observed during the survey, and the steep nature of the landform indicates a low likelihood for subsurface archaeological sites to be present within the project area.

The north-south fence line along the eastern edge of Part Section 2 Block VII Highlay Survey District is the only notable feature. The location of the fence line (Figure 57) was already known from prior site visits and was documented *en route* to the other survey areas. The fence consisted of six No. 8 wires supported by iron standards (Figure 58). The tops of the standards are notched to accommodate barbed wire (though none of the original barbed wire is present). This fence line follows the boundary between two historic land parcels. Waratahs have also been recently installed next to every fourth standard to accommodate two additional, modern barbed wires and increase the fence height. The construction of the fence (excluding the modern barbed

¹³³ Retrolens, LINZ Data Service.

¹³⁴ Keith, *Archaeological Survey – Coronation Mine*.

¹³⁵ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

¹³⁶ Barr and O'Connell, *Archaeological Assessment: Proposed Coronation Mine*.

¹³⁷ Allingham, *Coronation Area Archaeological Survey*; Allingham, *The Coronation North Project - OceanaGold: Archaeological Assessment Report on Remains of Maori Origin*.

¹³⁸ Teele, *Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham, 2016*.

¹³⁹ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*; Keith, *Archaeological Survey – Coronation Mine*.

wire) matches the specifications of the Fencing Act 1881.¹⁴⁰ Accordingly, the fence was likely constructed circa the 1888 division of the Deepdell Run. This has been recorded on ArchSite as I42/253.

Aside from the fenceline, it was determined that the potential for unrecorded archaeological sites in this project component is low based on the desktop review and survey.



Figure 52. Locations of recorded archaeological sites in and around the project area (2025 OGNZL aerial photography).

¹⁴⁰ Jeremy Moyle, *Historic Wire Fences - Proposed Refencing Policy* (Unpublished report for Department of Conservation, 2022).

Table 9. Details of recorded archaeological sites within or relevant to the project areas.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/93 ¹⁴¹	Coronation Mine	Mining - gold	Pit, Trench, Adit, Mine	2014/1150	Destroyed
I42/162 ¹⁴²	N/A	Mining - gold	Adit, Dam, Mining workings	2014/1150	Destroyed
I42/163 ¹⁴³	N/A	Mining - gold	Adit, Dam, Prospecting pit/ trench, Reservoir, Sluicings/ sluicing face, Trench	2014/1150	Destroyed
I42/167 ¹⁴⁴	N/A	Mining - gold	Dam, Reservoir	2014/1150	Destroyed

¹⁴¹ Petchey, EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey.

¹⁴² Keith, Archaeological Survey – Coronation Mine; Farminer et al., Coronation Mine, Macraes, Otago: Archaeological Investigation Report.

¹⁴³ Keith, Archaeological Survey – Coronation Mine; Farminer et al., Coronation Mine, Macraes, Otago: Archaeological Investigation Report.

¹⁴⁴ Keith, Archaeological Survey – Coronation Mine; Farminer et al., Coronation Mine, Macraes, Otago: Archaeological Investigation Report.

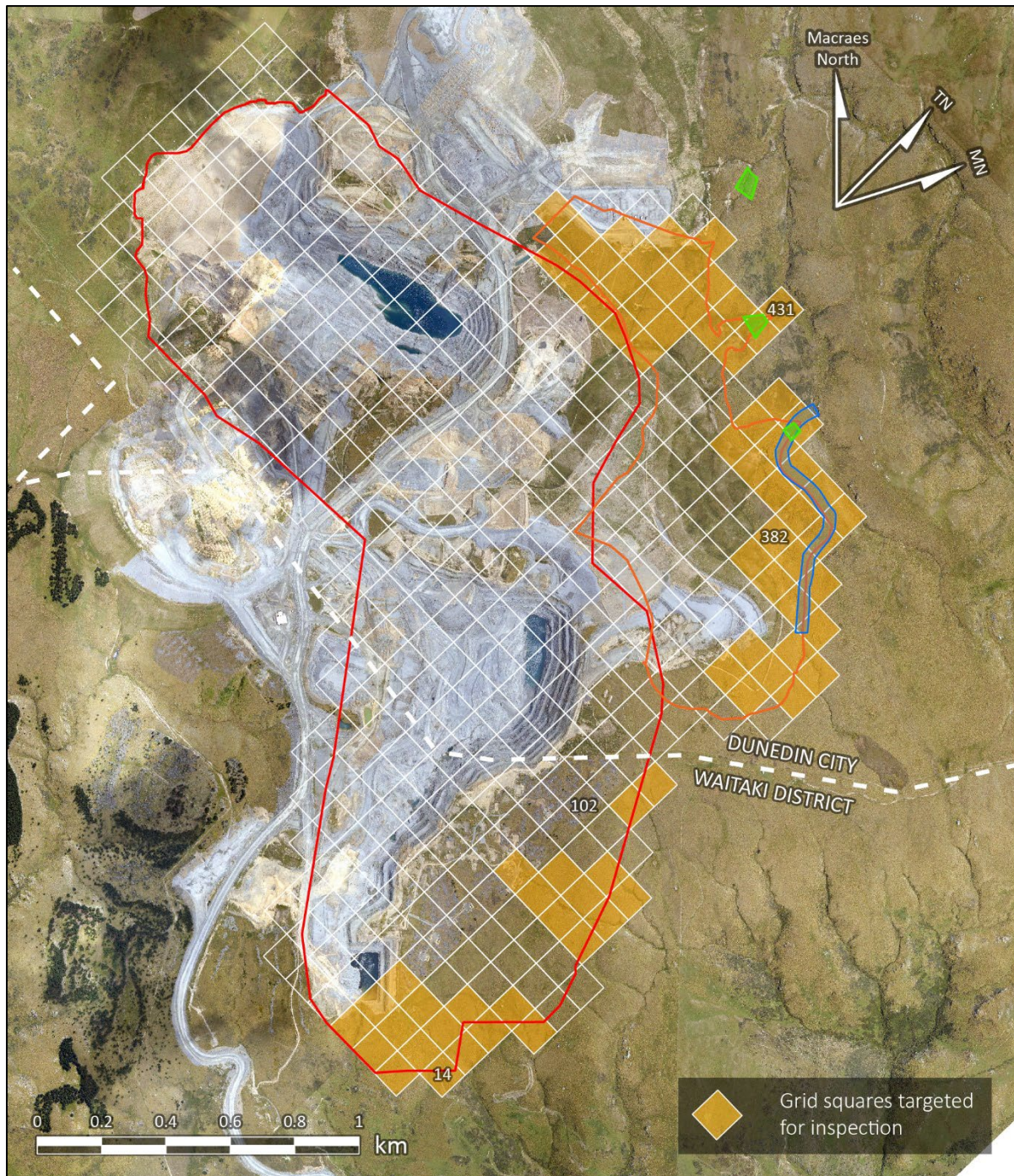


Figure 53. Areas identified for survey based on desktop review. The grids related to photographs below are labelled (2025 OGNZL aerial photography).



Figure 54. Drone photograph demonstrating the physical environment in Grid 14, looking east.



Figure 55. Physical environment in Grid 382, looking north.

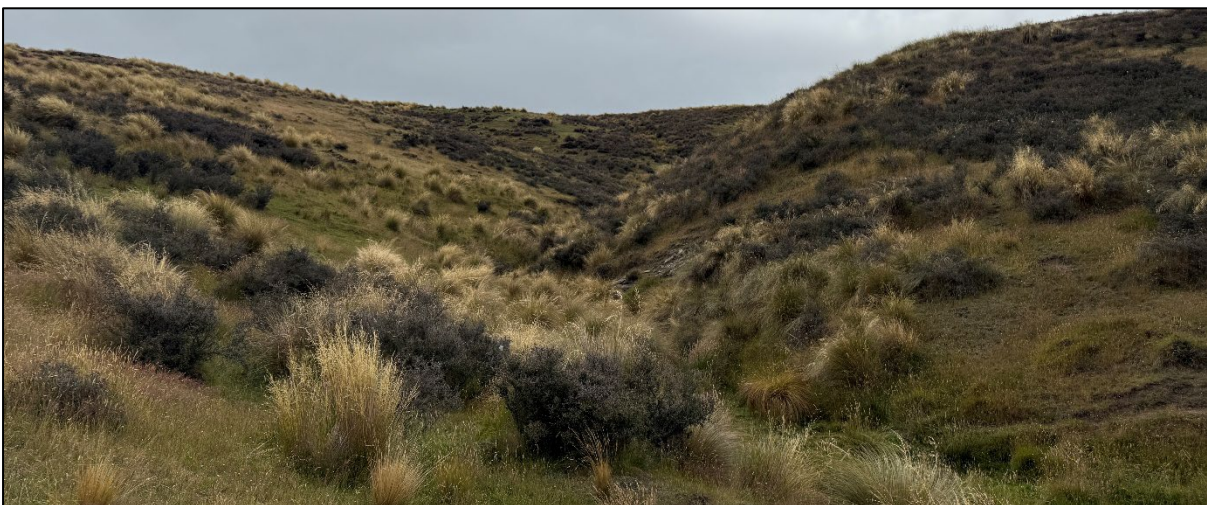


Figure 56. Physical environment in Grid 431, looking south.

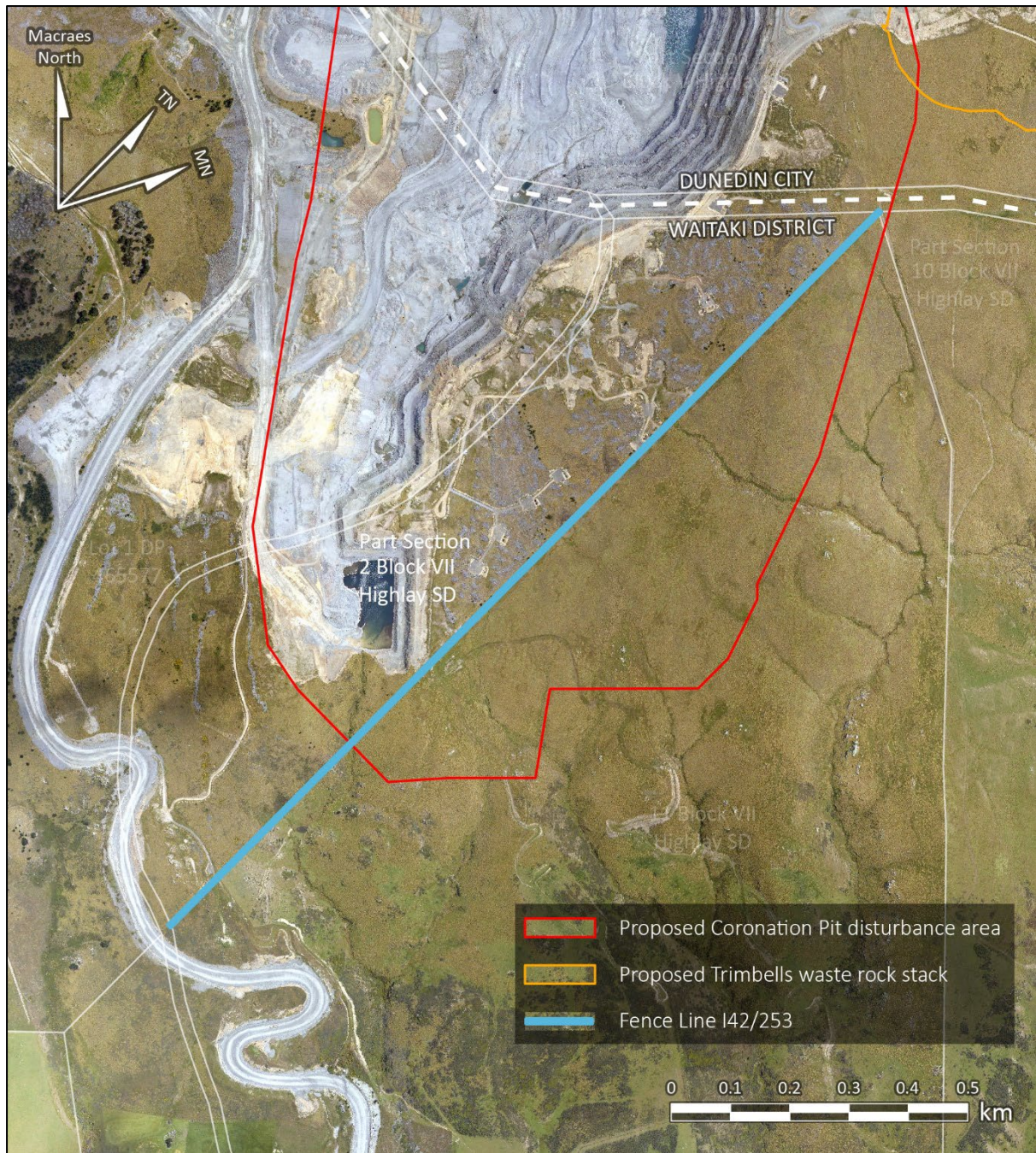


Figure 57. Southern area of Coronation Mining Area pit expansion showing location of Fence Line I42/253 (2025 OGNZL aerial photography).



Figure 58. Historic fence line running north-south through the project area, Grid 102, looking south.

7.4 Archaeological Values

The archaeological values of the sites in the project area are assessed in the tables below.

Table 10. Assessment of archaeological values for the fenceline.

Site	Value	Assessment
I42/253 (Fenceline)	Condition	The historic lower portion of the fence is intact and still functions as an effective boundary. Assessment – Good
	Rarity/ Uniqueness	Historic wire fences are reasonably common in rural Otago and the Waitaki District. Assessment – Low
	Contextual value	The fence follows the 1888 boundary line and is part of the historic agricultural landscape of Macraes Flat. Assessment – Moderate
	Information potential	The fence is an example of an early technology but can generally be considered to have only a limited information potential. Assessment – Low
	Amenity value	The fence has some amenity value as a picturesque element of the rural landscape. Assessment – Low

Site	Value	Assessment
	Cultural associations	The fence is associated with European agricultural occupation of the landscape. Assessment – Pākehā

7.5 Other Heritage Values

Part of the project area sits within an Archaeological Alert Layer mapped as part of the DCC 2GP.¹⁴⁵

Other heritage values are considered in a separate heritage assessment prepared for Resource Consent purposes.

7.6 Effects of the Proposed Works

The entirety of the fenceline (I42/253) will be removed by the expansion of the Coronation Pit and associated works.

No other effects on archaeological sites have been identified.

Effects on values for the project component, considering the recommendations proposed below, are summarised in Table 11.

Table 11. Summary of Coronation Pit and Trimbells Waste Rock Stack effects.

Site Number	Site Name/Description	Site Type	Effect	Notes
I42/253	Historic Fenceline	Agricultural/pastoral	Destroyed	Site has moderate to low archaeological values. The recommended archaeological investigations will realise the low information potential. The other values will be lost.

7.7 Alternative Options

The proposed expansion of the waste rock stacks has already been redesigned through the MP4 process to reduce its footprint to mitigate potential archaeological and ecological effects.

Changes to the pit disturbance area to protect the fenceline (I42/253) would require a substantial alteration of the proposed works and was not considered feasible or proportionate given the generally low archaeological values of the site. Additionally, while retaining the portion of the fence line outside the pit disturbance area was considered, this idea was ultimately abandoned. Any remaining portion would be isolated and largely inaccessible within the mining landscape, a small fragment of fence there would open up the possibility of accidental modification by contractors unfamiliar with the site's archaeological values, and it was assessed that the archaeological recording of the fence was suitable mitigation for its loss.

As no other archaeological evidence was observed during works, further alternative options for the project are not considered.

¹⁴⁵ The Archaeological Alert Layer is a GIS overlay layer that makes up the 2GP maps. It indicates areas where there is an elevated potential for archaeological sites to be present.

7.8 Recommendations

- An Archaeological Authority is required for the proposed works. The authority should:
 - Relate specifically to the Coronation Pit and Trimbells Waste Rock Stack project component.
 - Provide for the removal of the fence line (142/253).
 - Have a duration of 15 years, to align with MP4 timelines.
- An archaeological management plan prepared to support this authority should specify:
 - Archaeological recording of the fence line to a Level III standard according to AGS 1.¹⁴⁶
 - An on call-protocol for managing the discovery of any archaeological material beyond the monitoring areas.

Proposed archaeological authority conditions and an archaeological management plan incorporating these recommendations for the Coronation Pit and Trimbells Waste Rock Stack is included as Appendix B1 and B2.

¹⁴⁶ Heritage New Zealand Pouhere Taonga, *Archaeological Guidelines Series No. 1: Investigation and Recording of Buildings and Standing Structures*.

8 Golden Bar Pit and Waste Rock Stack

8.1 Proposed Works and Project Area

8.1.1 Pit Extension and Waste Rock Stack

Located approximately 9 km south-east of Macraes township, Golden Bar Pit was previously mined between 2004 and 2006. The MP4 project proposes expansions to the east and north-east (Figure 59). The proposed pit extensions are encompassed by a wider pit disturbance area (Figure 60) that will accommodate the various activities associated with open pit mining, including stockpiling ore and topsoil, pipeline benches, vehicle tracks and laydown areas. The area of disturbance may also accommodate changes to pit shells in response to local geotechnical constraints. Unlike the other pit expansions, it is not assumed that all areas within the pit disturbance area will be excavated to natural ground. At Golden Bar actions have been taken to minimise effects on archaeological evidence within the pit disturbance area (see below).

The extant Golden Bar Waste Rock Stack will be expanded to the north-west to accommodate the additional waste rock produced during Golden Bar Pit expansion (Figure 59-Figure 60). All areas within the waste rock stack footprint will be excavated to natural ground.

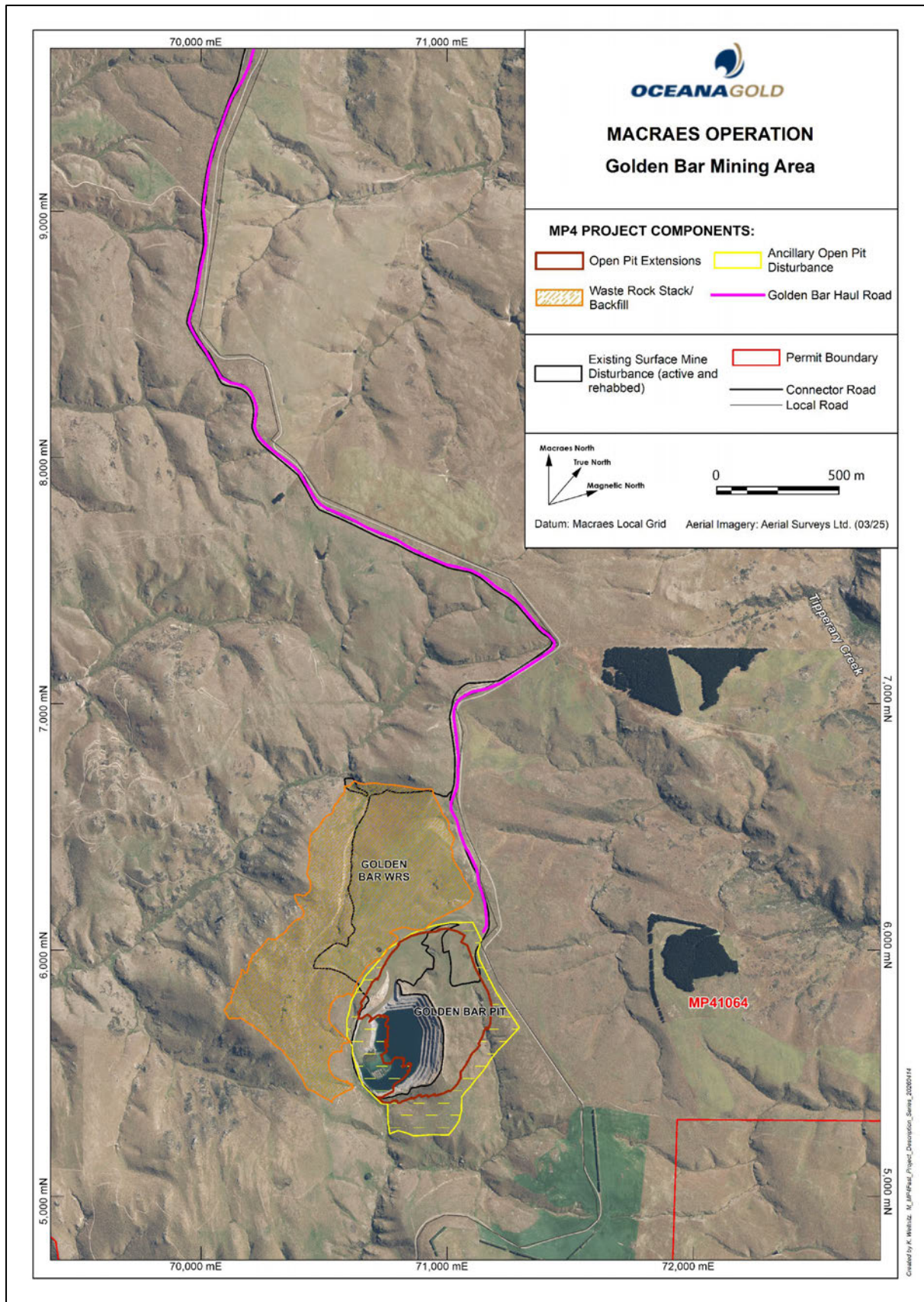


Figure 59. Golden Bar pit extension.¹⁴⁷

¹⁴⁷ OceanaGold.



Figure 60. Pit disturbance area, pit shell, and waste rock stack footprints (2025 OGNZL aerial photography).

8.2 Research Results

8.2.1 Historical Record

Historically, a large portion of the area affected by the proposed pit disturbance area, pit shell, and waste rock stack, was operated as the Golden Bar Mine, and this has carried through into current operations. A detailed account of historic mining at the site is included in Petchey's 1994 *The Golden Bar Mine, Macraes*, and the following history is based on this report.¹⁴⁸ Historical survey plans and reports indicate that the Golden Bar was subject to mining from 1868 until *circa* 1934 or 1942.¹⁴⁹ Applications for various mining licenses were submitted to the Macraes and Naseby Warden's Courts between 1896 and 1934, and several licence areas are recorded in

¹⁴⁸ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

¹⁴⁹ Petchey (1994) notes that the reference to underground workings at Golden Bar Mine in 1942 are from an unreferenced report in "The History of Quartz Mining at Macraes Flat, East Otago, New Zealand.", Jeffery, A (1988) and are of questionable accuracy.

survey plans (Figure 61). However, the specifics of this mining, and the extent to which they were carried out, are unclear.

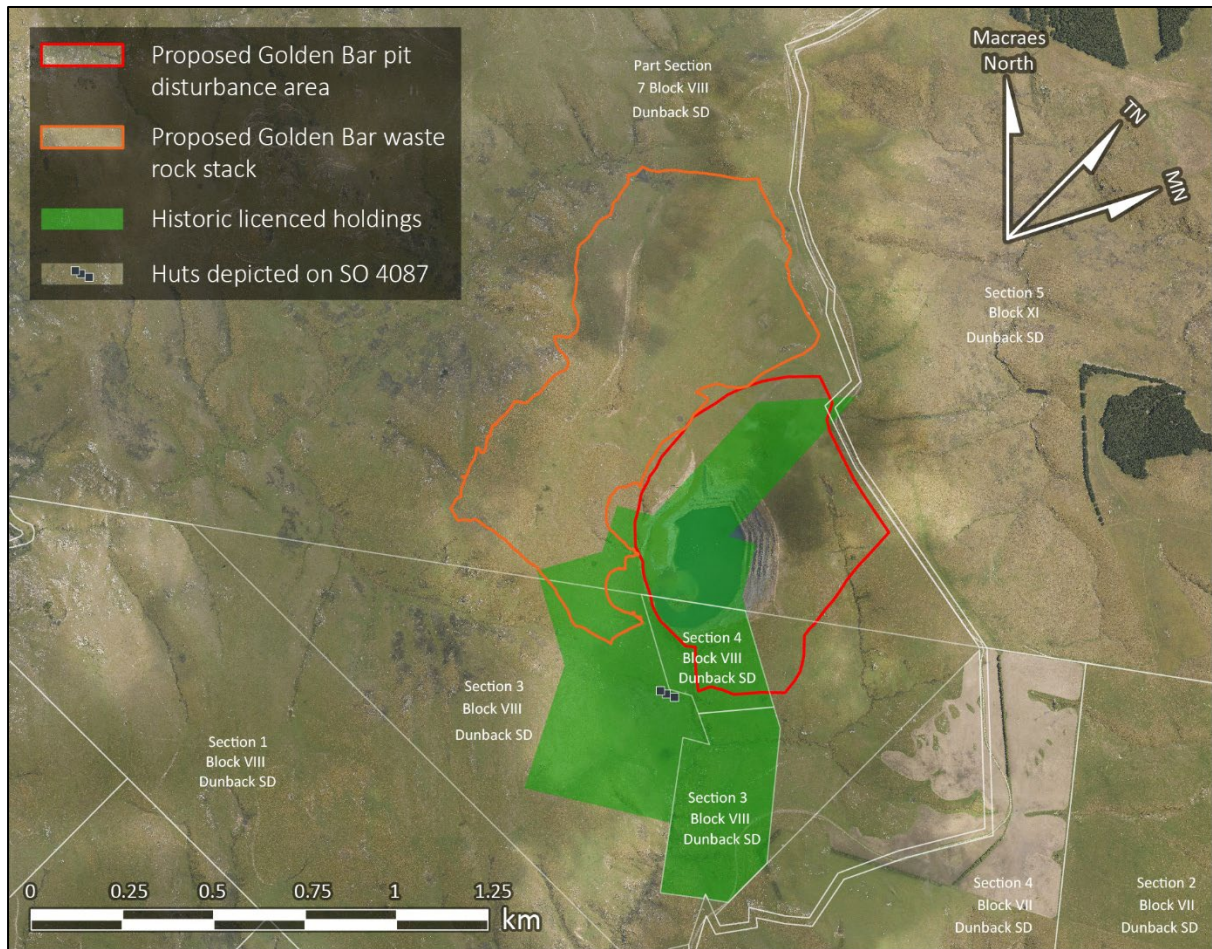


Figure 61. Extent of past licenced holdings¹⁵⁰ and huts on SO 4087 (2025 OGNZL aerial photography).

In the 19th century, articles record that prospecting was undertaken at the Golden Bar reef between 1868¹⁵¹ and 1869¹⁵² by the Golden Bar Company on unspecified sections. Prospecting of the reef was again undertaken *circa* 1874 by the same company.¹⁵³ A 1889 survey plan lists Pacific Quartz Mining Company as owners of Sections 4 and 5, and Beryl Q.M.C on Section 3.¹⁵⁴ In 1895 William Henry Feahey, Dunedin, applied to conduct mining at Golden Bar under the name 'The Golden Bar Mining Company'.¹⁵⁵ In 1897 the name 'Golden Bar Quartz Mining Company' first appears on a survey plan showing three huts along a creek on Sections 8 and 2 (Figure 61).¹⁵⁶

In the 20th century there were three main operation periods of the Golden Bar Mine. Firstly, the Golden Bar Gold-Mining Company operated between *circa* 1901 to 1907. A gold battery was installed *circa* 1901 (143/87) and part of an access road from Golden Bar Road was constructed. A second period of operation by a second Golden Bar Gold-Mining Company occurred *circa* 1912 to 1913. This period was marked by further road construction and open cast mining. Finally, *circa* 1924 to 1928 The Mount Moor Gold-mining Company and the

¹⁵⁰ SO 422, 4083, 4087, and 4092.

¹⁵¹ *Otago Daily Times*, "Macraes," 24 July 1868, 6.

¹⁵² *Otago Witness*, "Mining Intelligence," 27 February 1869, 6.

¹⁵³ *Otago Daily Times*, "Quartz Mining in Otago," 11 February 1875, 3; *Mount Ida Chronicle*, "Report on the Goldfields of Otago," 28 May 1875, 3.

¹⁵⁴ SO 4083.

¹⁵⁵ *Mount Ida Chronicle*, "Page 3 Advertisements Column 2," 10 January 1895, 3.

¹⁵⁶ SO 4087.

Golden Bar Mining Company operated at Golden Bar. In 1924 a license was granted for the construction of a dam and water race on Section 8,¹⁵⁷ and in 1927 a gold battery (I43/88) was installed south-east of the current Golden Bar Pit. Historical and archaeological evidence indicates that the battery was originally the Deep Dell Battery, relocated from Horse Flat to Golden Bar Mine. It was established at Golden Bar Mine with almost an identical set up, excluding the cyanide treatment plant.¹⁵⁸

Historic aerial photographs show how the environs of the project area evolved over the latter years of the 20th century and into the 2000s (Figure 62).

8.2.2 Previous Archaeological Work

ArchSite records three sites in the vicinity of the project area (Figure 63 and Table 12). All three were surveyed and mapped by Peter Petchey in 1994.¹⁵⁹ Site I43/86, Golden Bar Mine, encompasses various mine workings, the 1901 battery, and the 1927 battery. Both batteries are also recorded individually as I43/87 (1901 battery) and I43/88 (1927 battery). Some site features of I43/86 recorded within the footprint of the current Golden Bar Pit have been destroyed, but many others remain largely unaffected. Site extents have been updated as part of this assessment.

Archaeological investigations were carried out by Peter Petchey in September 2003 and March 2004. An archaeological report detailing the investigations was produced by Petchey in 2005.¹⁶⁰ Investigations included the detailed recording and excavation of nine hut features closest to the mine (part of I43/86), and the 1927 gold battery site (I43/88; Figure 64). It was concluded that the excavated features were largely related to mining operations in the 1920s. However, at least one of the hut features (Hut 5) may have been associated with mining operations between the 1890s and the early 1900s. Limited artefactual material was found during excavations, and Petchey hypothesised that rubbish had likely been dumped in nearby unexcavated pits and hollows.¹⁶¹

Subsequent to this work, most of the features constituting Petchey's 'Main mine workings' at the site (Figure 64) were destroyed during the excavation of the Golden Bar Pit as part of modern mining operations in the area.

Table 12. Details of recorded archaeological sites within or relevant to the project areas.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I43/86 ¹⁶²	Golden Bar Mine	Mining – gold	GOLD MINE	2003/89; 2002/162	Fair
I43/87 ¹⁶³	Golden Bar Battery	Mining – gold	GOLD BATTERY	2003/89; 2002/162	Good
I43/88 ¹⁶⁴	Golden Bar Battery	Mining – gold	GOLD BATTERY	2003/89; 2002/162	Good

¹⁵⁷ Register of Applications Naseby Warden's Court: Application No. 23/24 (2/8/1924); Application No. 25/24 (2/8/1924); Application No. 26/24 (2/8/1924). All granted to C.G. Moore.

¹⁵⁸ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

¹⁵⁹ Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey*.

¹⁶⁰ Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations*.

¹⁶¹ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

¹⁶² Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey*; Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations*.

¹⁶³ Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey*; Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations*.

¹⁶⁴ Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey*; Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations*.

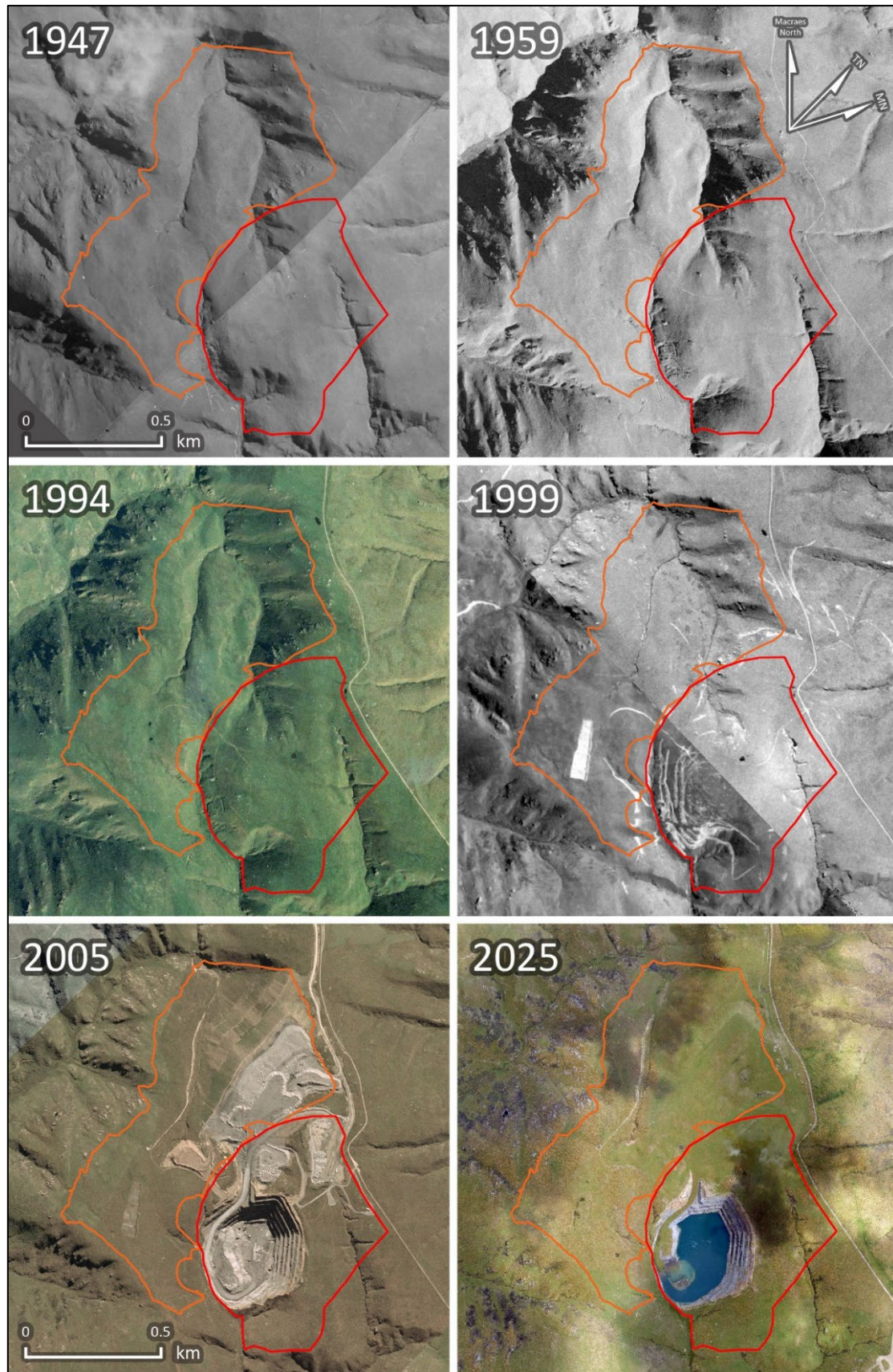


Figure 62. Historical aerial photographs showing the project area over time.¹⁶⁵

¹⁶⁵Retrolens.

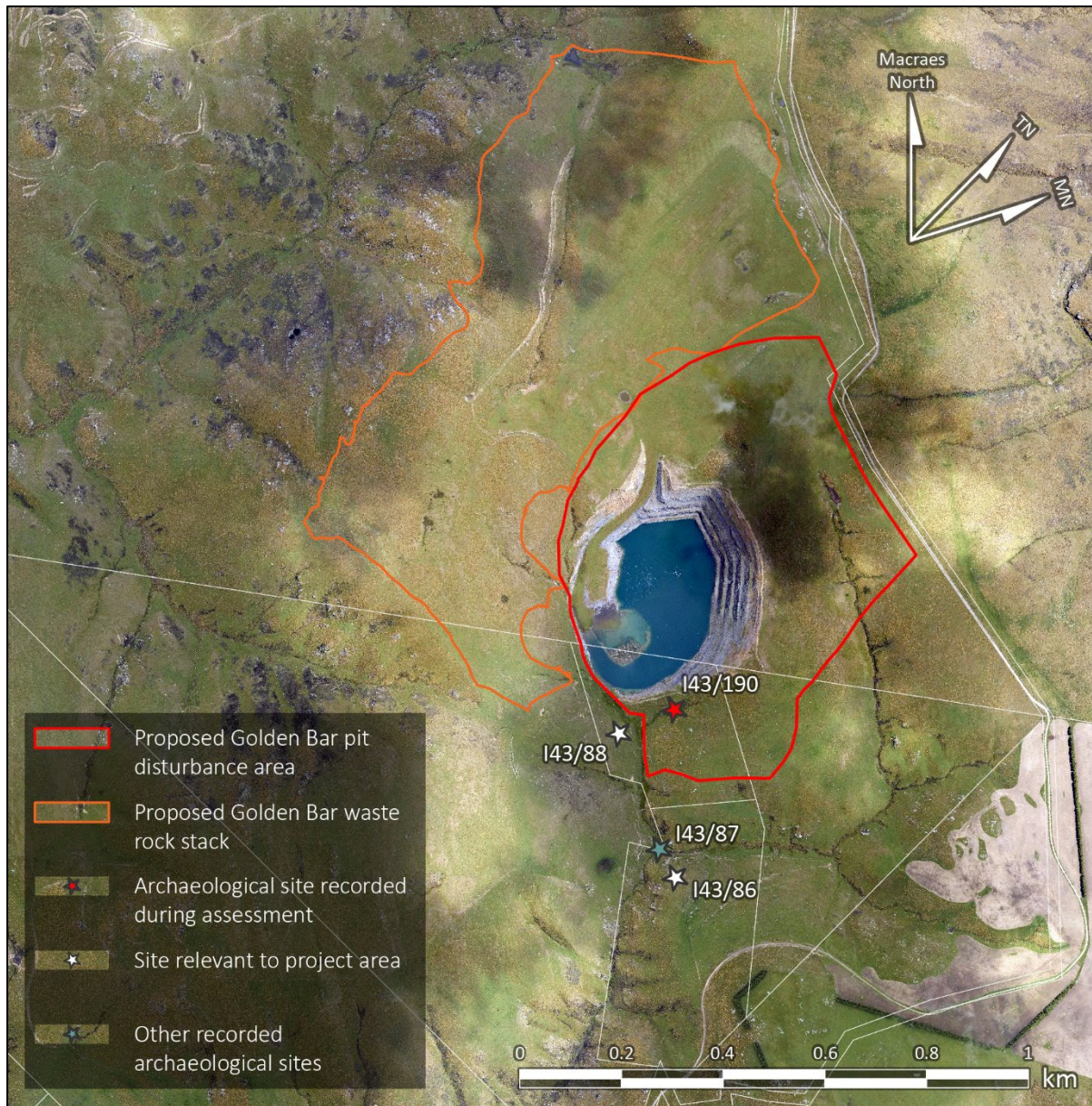


Figure 63. Locations of recorded archaeological sites in and around the project area (2025 OGNZL aerial photography).

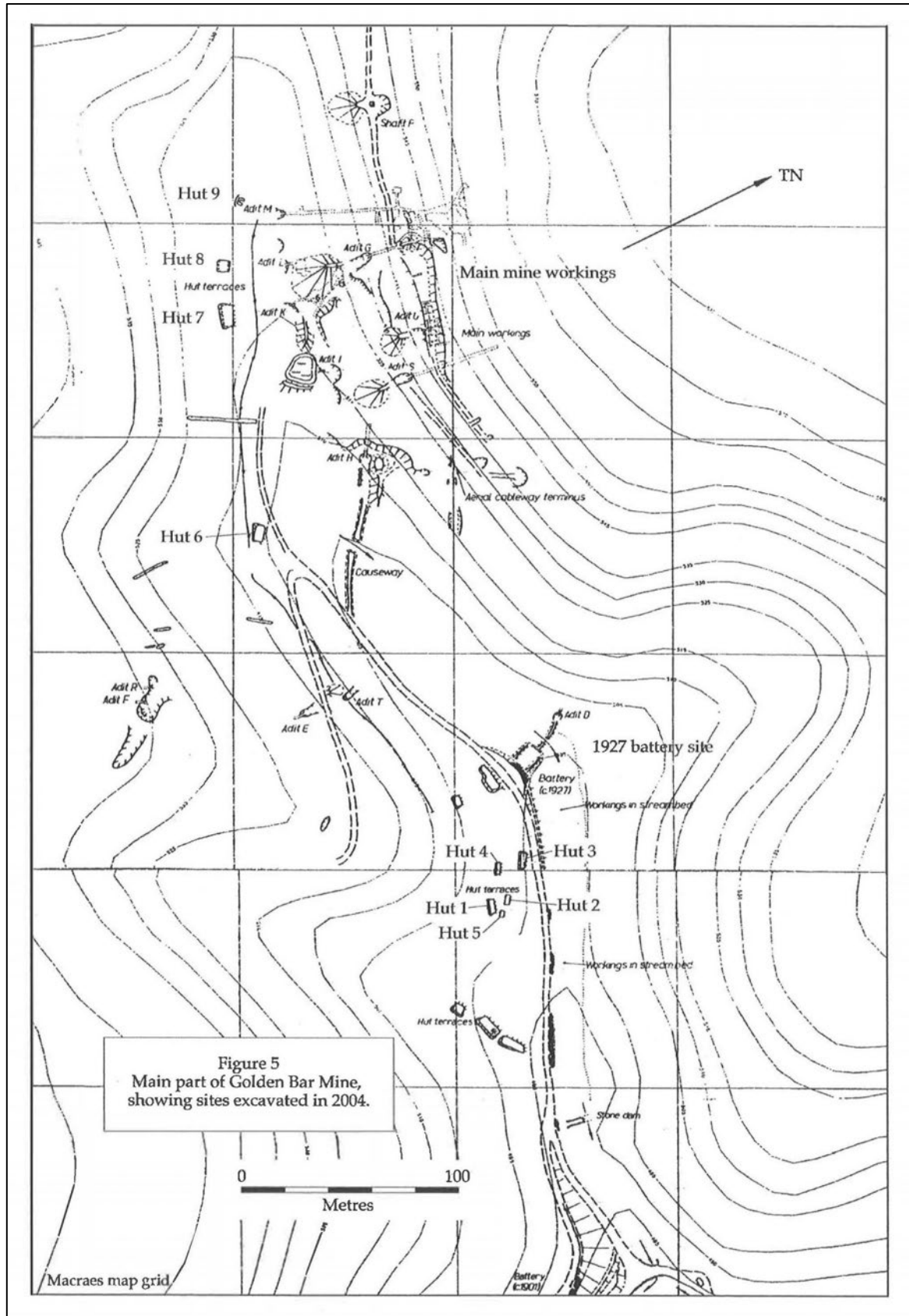


Figure 64. Features excavated under Archaeological Authority No.2002/162. These include the 1927 battery site and Huts 1-9.¹⁶⁶

¹⁶⁶ Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations*.

8.3 Survey

A survey of the project area was undertaken by Jeremy Moyle and Renée Sadlier on 17 December 2025. Additional site visits were made on:

- 2 March 2026 by Moyle and Sadlier to inspect an area of land disturbance within the proposed waste rock stack footprint.
- 15 April 2026 by Moyle and Russell Cook to survey the gully to the north-east of the current pit.

The general areas where archaeological features, or areas with archaeological potential, were identified in the desktop review and visited for survey are shown in Figure 65.

Aside from the sites discussed below, it was determined that the potential for unrecorded archaeological sites in this project component is low based on the desktop review and survey.

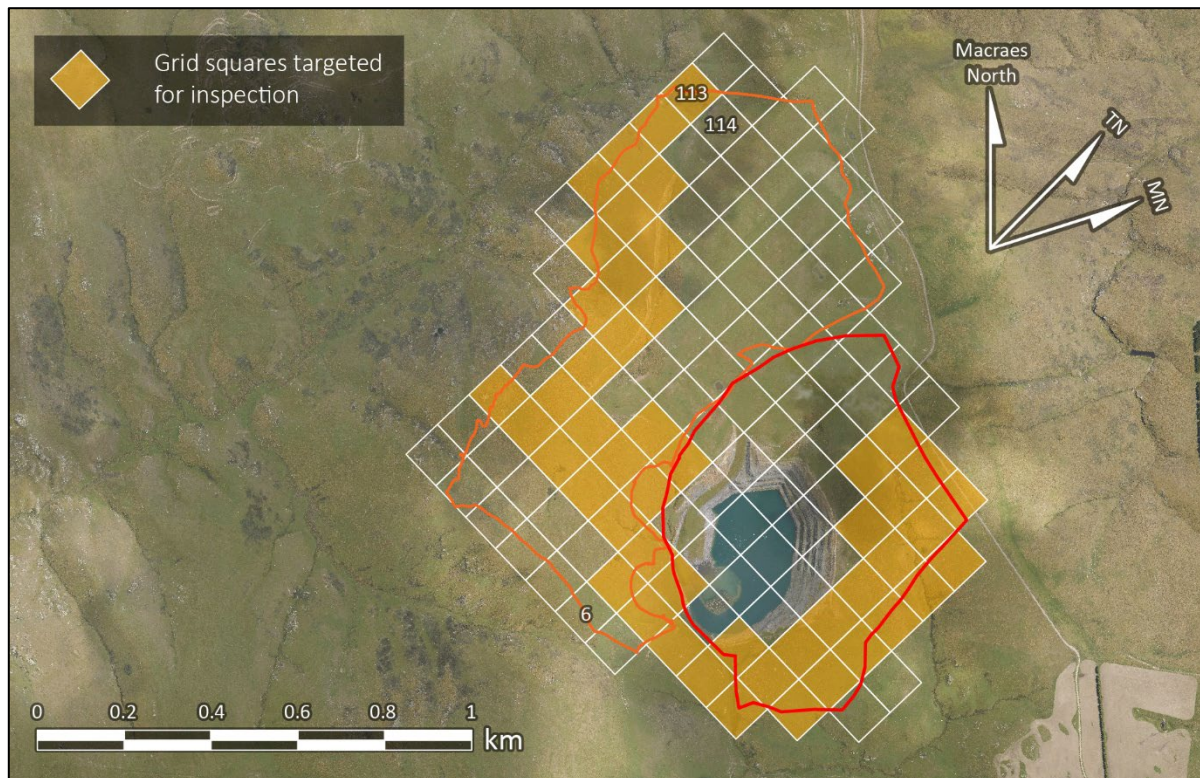


Figure 65. Areas identified for survey based on desktop review (2025 OGNZL aerial photography).

8.3.1 Golden Bar Mine and Battery (I43/86 and I43/88)

The Golden Bar mining site (I43/86) encompasses several features associated with the 19th and 20th century mining system as outlined in Figure 66 and Table 13, and includes two battery sites (archaeological sites I43/87 and I43/88). The 1901 gold battery (I43/87) is outside the pit disturbance area and was not included in the survey. Likewise features of site I43/86 which are located outside of the disturbance area, to the south of the surveyed dam (D), were not included as part of the survey.

Modern mining at Golden Bar Pit has destroyed the majority of the 'main mine workings'¹⁶⁷ previously recorded by Petchey, however most of the remaining features were in good condition and were clearly defined. Vegetation at the site has been maintained by stock grazing. Some features, namely mine workings, were associated with small scale erosion, likely the result of vegetation loss, water damage and stock movement.

¹⁶⁷ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

Terraces were located on slopes north-west and south-east of the 1927 gold battery (Figure 87-Figure 88; I43/88). Some terraces were marked with modern steel waratahs, presumably to aid their re-location. Of the 11 building/hut sites identified during this survey, seven were sites previously excavated in 2003-2004¹⁶⁸ including a building terrace above the 1927 battery site (Figure 95) and Huts 1, 3, 4, 6, 7, and 8 (Figure 89-Figure 116). Huts 5 and 9 were not observed on the ground but their location has been approximated from previous survey maps and LiDAR data. One previously unrecorded terrace was also identified as possible hut/building site adjacent to the locations of the huts marked on the 1897 survey plan¹⁶⁹ (Figure 72-Figure 73). Two of the previously unrecorded terraces were located adjacent to one another on the hillside south-east of the stone dam. The third previously unrecorded terrace was located to the south-west of the area labelled by Petchey as hut terraces.¹⁷⁰

Table 13. Recorded Golden Bar Mine and Battery items.

Ref	Item	Site	Status	Details
AD	Adit	I43/87	Extant	Adit identified as 'Adit D' by Petchey. Adjacent to tramway on the northern side of the creek, located north of 1927 battery (GB). Opening approximately 800mm tall and easily visible (Figure 67).
AE	Adit	I43/87	Extant	Adit identified as 'Adit E' by Petchey. Located south of Adit T. Surrounding area eroding due to loss of vegetation caused by old mine workings (Figure 68).
AF	Adit	I43/87	Extant	Adit to the south of adjacent Adit R. Identified as 'Adit F' by Petchey. Surrounding mine workings causing erosion due to vegetation loss. Adit opening has been partially closed off (Figure 69-Figure 70).
AG	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AH	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AI	Adit	I43/87	Destroyed	Not located during survey. Likely destroyed during creation of Golden Bar Pit.
AK	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AL	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AM	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AR	Adit	I43/87	Extant	Adit identified as 'Adit R' by Petchey, adjacent to Adit F (AF) located to the south (Figure 69).
AS	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
AT	Adit	I43/87	Extant	Adit recorded as Adit T by Petchey. Located north of Adit E. Opening is obscured by tussock growth (Figure 71).

¹⁶⁸ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

¹⁶⁹ SO 4087.

¹⁷⁰ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

Ref	Item	Site	Status	Details
AU	Adit	I43/87	Destroyed	Not located during survey. Destroyed during creation of Golden Bar Pit.
BT	Building/hut terrace	I43/87	Extant	Possible building terrace located close to the huts noted on the 1897 survey of the area (HT). Not identified by Petchey. Next to an area of possible sluicing. No above ground structural evidence.
CW	Causeway	I43/87	Extant, Modified	Remains of a tram causeway running north-west to south-east. Identified by earthen embankments (Figure 74-Figure 75), cuts (Figure 76), and steel tramway line (Figure 77). Partially destroyed by the current Golden Bar Pit.
D	Dam	I43/87	Extant	A dam constructed of dry stacked stone over an earthen embankment, located along the creek approximately 160m south-east of the 1927 battery (Figure 78-Figure 82). Partial collapse of stone wall at northern and southern ends (Figure 79), condition degraded since previous recording by Petchey. Likely related to post-1900 operation of the 1901 battery and/or cyanide plant located approximately 100m downstream (south-east). A license for a dam on the section was granted in 1902. ¹⁷¹
GB	Gold battery	I43/88	Extant, Modified	Constructed in 1927, excavated 2003-2004 by Petchey. Concrete foundations supported plant relocated from the Deep Dell Battery at Horse Flat. Foundations of battery and generator have been clearly defined by previous archaeological investigation (Figure 83-Figure 84). Firebricks associated with the gas producer located on surface in a pile to the north-west of the battery foundations, not in-situ (Figure 85). Clearly defined platform of the tailing pond was located below the road level to the north-east of the battery (Figure 86). ¹⁷²
H1	Building/hut terrace	I43/87	Extant, Modified	Building terrace identified by Petchey as Hut 1. Partially excavated 2003-2004. Likely location of a small timber hut. Terrace and excavated timber post were easily located (Figure 89).
H2	Building/hut terrace	I43/87	Unknown	Was not definitively located during survey, terracing was noted in general area. Partially excavated 2003-2004. Petchey noted Hut 2 was "...located below and to the north-west of Hut 1. It consisted of an irregularly shaped terrace that had been cut into the hillside, measuring approximately 4m by 3m." ¹⁷³
H3	Building/hut terrace	I43/87	Extant, Modified	Possible building terrace located immediately above the old mine road. Identified by Petchey as Hut 3, partially

¹⁷¹ Application No. 1/02. Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey*.

¹⁷² Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

¹⁷³ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*, 22.

Ref	Item	Site	Status	Details
				excavated 2003-2004. No above ground structural evidence, terrace clearly defined (Figure 90).
H4	Building/hut terrace	I43/87	Extant, Modified	Building terrace, identified by Petchey as Hut 4 partially excavated 2003-2004. Possibly occupied by a small hut. No above ground structural evidence, terrace is well defined (Figure 91).
H5	Building/hut terrace	I43/87	Extant, Modified	Not definitively located during survey. Recorded by Petchey as "...located below Hut 1. It consisted of a terrace that measured approximately 4m by 3m, with an earth mound at the eastern end..." ¹⁷⁴ . Partially excavated 2003-2004. The only hut/building site excavated by Petchey with a chimney. Likely associated with mine operation pre-1927.
H6	Building/hut terrace	I43/87	Extant, Modified	Large building terrace, identified by Petchey as Hut 6 partially excavated 2003-2004. Possibly related to mining operation rather than domestic residence. "The lines of several drains... partially visible on the surface..." could not be located during the survey. Terrace itself is well defined (Figure 92).
H7	Building/hut terrace	I43/87	Extant	Building terrace identified by Petchey as Hut 7, excavated 2003-2004. Possible location of a timber framed mining building. Located to the south-west of the Golden Bar Pit. Adjacent to Hut 8 (H8). Terrace was clearly defined, and its extent marked with steel waratahs (Figure 87 and Figure 93-Figure 94).
H8	Building/hut terrace	I43/87	Extant, Modified	Building terrace, identified by Petchey as Hut 8, excavated 2003-2004. Possible location of a domestic residence, previous excavation identified artefactual material related to domestic activity. Stonework scatter and fibrolite found during excavation. Adjacent to Hut 7 (H7). Terrace was clearly defined, and its extent marked with steel waratahs (Figure 87 and Figure 94).
H9	Building/hut terrace	I43/87	Extant	Not photographed during survey, visible on desktop survey.
HCT	Building/hut terrace	I43/88	Extant, Modified	Building terrace identified as Petchey as the possible location of the 'aerial cableway terminus.' Included in description of the 1927 battery site (GB). Partially excavated 2003-2004. No above ground structural evidence, terrace is well defined and location marked with a steel waratah (Figure 95).
HT	Building/hut terraces	I43/87	Extant	'Three hut terraces' identified by Petchey. Recorded on 1897 survey. Terraces are clearly defined (Figure 97). No above ground structural remains.

¹⁷⁴ Petchey, *The Ounce Mine, Macraes: Archaeological Survey*.

Ref	Item	Site	Status	Details
MR	Stone revetment (culvert)	I43/87	Extant, Modified	Area of major revetment is located approximately 50m north-west of dam (D) (Figure 111-Figure 115). This appears to be a culvert, but the inlet and outlet are not evident. Collapse of earth embankment on northern end has caused partial collapse of stone revetting.
P1	Trench	I43/87	Extant	Prospecting trench, located approximately 50m south-east of Hut 7 (Figure 98).
P2	Trench	I43/87	Extant	Prospecting trench, located south of Adit E (Figure 99).
P3	Trench	I43/87	Extant	Prospecting trench, located immediately east of P2 (Figure 100).
P4	Pit	I43/87	Extant	Prospecting pit, located approximately 41m south-east of P3 (Figure 101).
SC	Scarp	I43/87	Extant	Scarp/terrace identified by Petchey. Once adjacent to Adit I which has since been destroyed.
SHP	Shaft	I43/87	Destroyed	Mining shaft 'P' as identified by Petchey. Destroyed during modern mining in the creation of the Golden Bar Pit.
ST	Stone revetted track	I43/87	Extant	Portions constructed in 1901 and 1912. A track/road, partially supported by stone revetment, is located above the stream level and runs north-west to south-east along the Golden Bar Mine site (Figure 106-Figure 110). Revetement occurs on the north-east facing side of the road. Track widens directly in front of the 1927 Gold Battery.
WR	Water race	I43/87	Extant	Shallow cut earth water race running north-west to south-east (Figure 116-Figure 118). Located to the west of the stone revetted track. Possibly constructed in 1924 in connection with the gold battery (GB), application for water race on Section 8 was granted in 1924.

8.3.2 Sluicings (I43/190)

Site I43/190 – recorded as part of this survey – encompasses an area of overgrown sluicings located north of the 1927 gold battery (site I43/88). The sluicings are located east of Golden Bar Pit but have not been impacted by modern mining operations. Two sluiced gullies converge at the creek to the south. The age of this site is not clear, but it likely dates to the 19th century, prior to the establishment of hard-rock mining in the area.

8.3.3 Waste Rock Stack

The Golden Bar Waste Rock Stack largely covers open paddocks (Figure 123-Figure 124). One area of interest was identified, consisting of an area of disturbed ground (potentially indicating historic mining) within the proposed footprint. This was surveyed on 2 March 2026 by Jeremy Moyle and Renée Sadlier. The ground disturbance appeared to be an area affected by natural slumping (Figure 125).



Figure 66. Golden Bar Mine and Battery recorded items. The overall extent of I43/86 is based on Petchey's 1990s survey (2025 OGNZL aerial photography).



Figure 67. Adit feature (AD) adjacent to tramway, looking north-west.



Figure 68. Adit feature (AE), looking south.



Figure 69. Adits R and F (AF and AR). Ranging pole nearest Adit F, looking south-west.



Figure 70. Detail of Adit F (AF) shown in previous photo, looking south.



Figure 71. Adit T (AT), looking south-east.



Figure 72. Interpreted as building site (not specifically identified on Petchey map). Sits within a probable sluiced area, looking south-west.



Figure 73. Two building sites marked with waratahs, BT2 in the foreground and BT3 in the background, looking east.



Figure 74. Tram causeway (CW) embankment, looking south-east.



Figure 75. Looking along tram causeway (CW) embankment and towards Adit D (AD), looking north.



Figure 76. Possible tram causeway (CW) cut, looking east.



Figure 77. Tram causeway (CW) steel remains, looking south-east.



Figure 78. Dam (D) in relation to revetted track (ST), looking north-west.



Figure 79. Dam (D), looking south-east. Breach noted by Petchey on the left.



Figure 80. Dam (D), looking north-west.



Figure 81. Creek, looking upstream towards adit (AD) and pit lake, looking north-west.



Figure 82. Creek workings, looking south-east towards dam.



Figure 83. Battery foundations (GB) (I43/88), looking north.



Figure 84. Battery foundations (GB) (I43/88), possible aerial terminus (HCT) marked with steel waratah in the background, looking south.



Figure 85. Firebricks piled to the west of battery, looking north.



Figure 86. Ranging pole in area of previous excavation in gold battery (GB) tailings pond. Background shows tailings along track, battery foundations (GB) and terrace above battery (HCT), looking south.



Figure 87. Building/hut terraces (huts 7 and 8) north-west of the 1927 battery site, extents marked with waratahs, looking south-east.



Figure 88. Plan shot of hut/building sites to the south-east of the battery site, looking west.



Figure 89. Building site with wood post (H1), looking north-west.



Figure 90. Building site (H3), looking west.



Figure 91. Building terrace (H2), looking south-west.



Figure 92. Building site (H6), looking south-east.



Figure 93. Building site (H7), looking south-east.



Figure 94. Building sites (H7 in the background and H8 in the foreground). Extents marked with waratahs, looking south-east.



Figure 95. Aerial cableway terminus (HCT) to the south of 1927 Gold Battery site, looking south-east.



Figure 96. Possible building terraces (see above) next to sluiced area, looking south.