

MACRAES PHASE 4 FAST TRACK

Heritage Assessment
2026



Heritage Assessment for Macraes Phase 4 – Fast Track

Commissioned by [REDACTED] and [REDACTED] on behalf of OceanaGold

Prepared by Jeremy Moyle, Chris Jennings, Russell Cook, Renée Sadlier

Reviewed by Chris Jennings

Origin Consultants Ltd

19 August 2026

*Cover: Gay Tan's Cottage seen from
Macraes Road, looking south.*

Document History

Date	Revision	Note
19 August 2026	0	Issue for lodgement.

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
ICOMOS	International Council of Monuments and Sites
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 heritage assessment has been prepared for 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 through to 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.
- Golden Point Underground Mine expansion.
- 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 heritage items that may be affected by the project component.
- Assesses the heritage values of those items.
- Assesses the effects of the project on the heritage values.
- Provides recommendations for the management, mitigation, and/or offsetting of effects from the project component.

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

This assessment is tailored to address the requirements for a resource consent being applied for under the FTAA. A separate archaeological assessment has been provided for the Archaeological Authority under the FTAA.³

¹ OceanaGold, *Macraes Phase Four Project Description: Fast Track Approvals Act 2024* (Unpublished report for OceanaGold (New Zealand) Ltd, 2025).

² Past works have meant that no historic heritage will have survived in brownfields areas.

³ Jeremy Moyle et al., *Archaeological Assessment for Macraes Phase 4 - Fast Track* (Unpublished report for OceanaGold (New Zealand) Ltd, 2026).

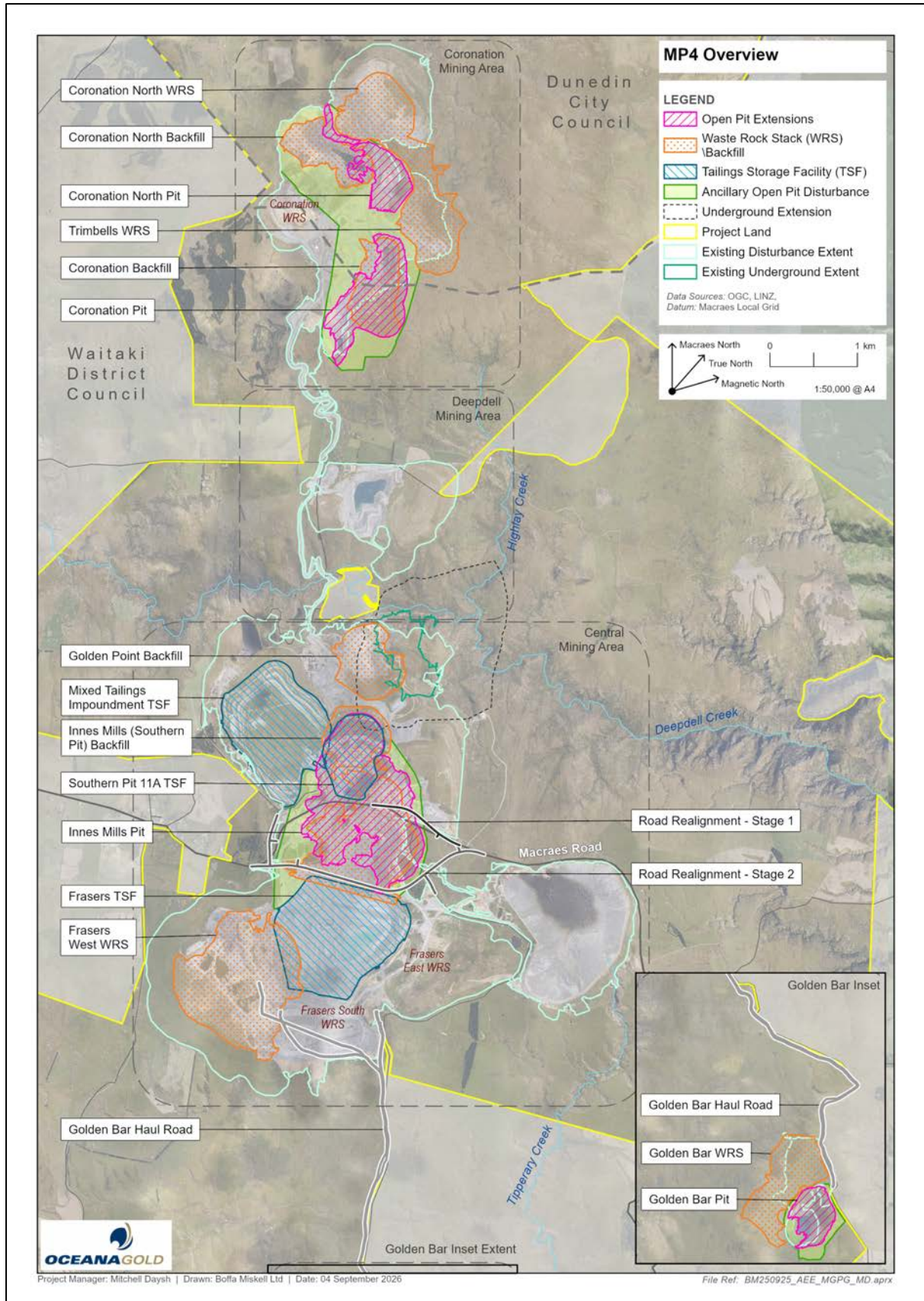


Figure 1. MP4 project overview.⁴

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

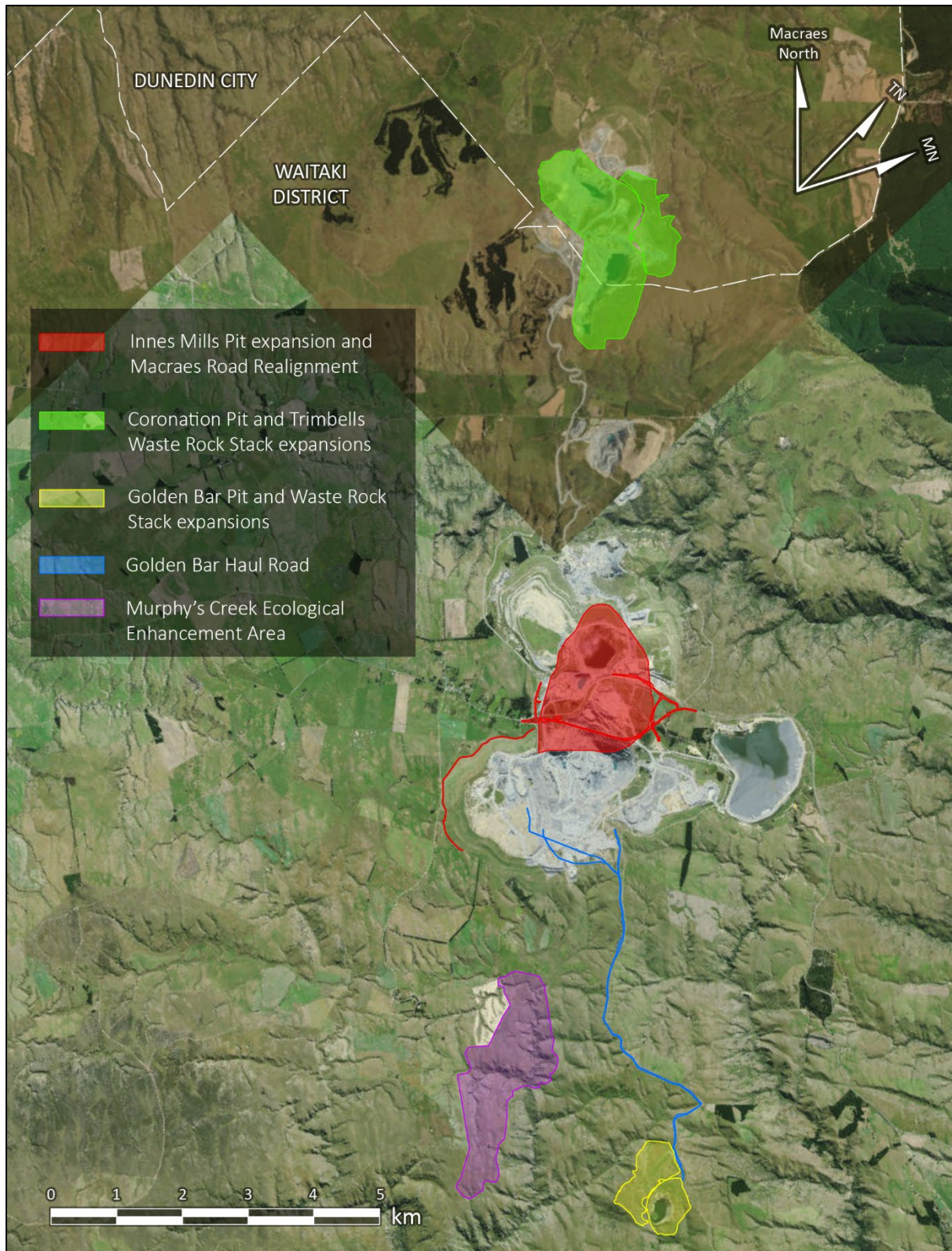


Figure 2. MP4 project components relevant to this report (2021, 2023 LINZ aerial photography).

2 Regulatory Framework

2.1 Resource Management Act 1991

The Resource Management Act 1991 (RMA) requires territorial authorities to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (section 6(f)).

'Historic heritage' is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities.

Historic heritage includes:

- historic sites, structures, places, and areas
- archaeological sites;
- sites of significance to Māori, including wāhi tapu;
- surroundings associated with the natural and physical resources (section 2).

These categories are not mutually exclusive; some archaeological sites may include above ground structures or may also be places that are of significance to Māori.

Where resource consent is required for any activity the assessment of environmental effects is required to address cultural and historic heritage matters, and the actual and potential effects on these (schedule 4 of the RMA 1991 and the District Plan assessment criteria).

2.2 Heritage New Zealand Pouhere Taonga Act 2014

The Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) makes it an offence for any person to destroy, damage, or modify the whole or any part of an archaeological site without the prior authority of Heritage New Zealand Pouhere Taonga (HNZPT). An archaeological site is defined as:

Any place in New Zealand, including any building or structure (or part of a building or structure), that –

- a. 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*
- b. provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and*
- c. includes a site for which a declaration is made under section 43(1).*

Any person who intends to carry out work that may modify or destroy an archaeological site, must first obtain an Authority from HNZPT. This is the case regardless of whether the land on which the site is located is a designated historic place, or the activity is permitted under the District or Regional Plan or a resource or building consent has been granted.

A separate assessment has been prepared for archaeological purposes.

2.3 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 Heritage New Zealand Pouhere Taonga Act 2014

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:

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.

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.

Archaeological authority requirements are considered in the separate Archaeological Assessment report. The historic heritage provisions relevant to a resource consent are outlined below.

2.4 Otago Regional Policy Statements

The purpose of a regional policy statement (RPS) is to achieve the purpose of the RMA by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region. This includes historic heritage.

Otago currently has operative and proposed Regional Policy Statements.

Operative Regional Policy Statement

Objective 5.2 of the Operative Otago RPS requires that: “historic heritage resources are recognised and contribute to the region’s character and sense of identity” and notes that “subdivision, use, and development may risk damage to Otago's rich historic heritage.”

Three policies are outlined to achieve this objective.

- Policy 5.2.1 – Recognising historic heritage
 - Recognise all the following elements as characteristic or important to Otago’s historic heritage:
 - Residential and commercial buildings.
 - Māori cultural and historic heritage values.
 - 19th and early 20th century pastoral sites.
 - Early industrial historic heritage, including mills and brickworks
 - Gold and other mining systems and settlements.
 - Dredge and ship wrecks.

- Coastal historic heritage, particularly Kāi Tahu occupation sites and those associated with early European activity such as whaling.
- Memorials.
- Trees and vegetation.
- Policy 5.2.2 – Identifying historic heritage
 - Identify historic heritage places and areas of regional or national significance, using the attributes in Schedule 5.
- Policy 5.2.3 – Managing historic heritage
 - Protect and enhance places and areas of historic heritage, by all of the following:
 - Recognising that some places or areas are known or may contain archaeological sites, wāhi tapu or wāhi taoka which could be of significant historic or cultural value.
 - Applying these provisions immediately upon discovery of such previously unidentified archaeological sites or areas, wāhi tapu or wāhi taoka.
 - Avoiding adverse effects on those values that contribute to the area or place being of regional or national significance.
 - Minimising significant adverse effects on other values of areas and places of historic heritage.
 - Remedying when adverse effects on other values cannot be avoided.
 - Mitigating when adverse effects on other values cannot be avoided or remedied.
 - Encouraging the integration of historic heritage values into new activities.
 - Enabling adaptive reuse or upgrade of historic heritage places and areas where historic heritage values can be maintained.

Various methods are proposed to implement these three policies, including: Kai Tahu Relationships; Regional City and District Council Relationships; Regional Plans; City and District Plans; Research, Monitoring and Reporting; Education and Information; Funding; and Advocacy and Facilitation.

Proposed Regional Policy Statement

The proposed Otago RPS was notified in 2021. Submissions, hearings, and appeal processes have now been concluded.

Objective HCV-HH-O3 requires that:

Otago's unique historic heritage contributes to the region's character, sense of identity, and social, cultural and economic well-being, and people's understanding and appreciation of it is enhanced, and it is protected for future generations against inappropriate subdivision use and development.

Four policies are outlined to achieve this objective.

- Policy HCV-HH-P3 – Recognising historic heritage
 - Recognise that Otago's historic heritage includes:
 - Māori cultural and historic heritage values and sites, and places and areas.
 - Archaeological sites.
 - Residential and commercial buildings.
 - Pastoral sites.
 - Surveying equipment, communications and transport, including roads, bridges, railway Infrastructure and routes.
 - Industrial historic heritage, including mills, quarries, limekilns, grain stores, water supply infrastructure and brickworks.
 - Gold, limestone and other mining systems and settlements.

- Dredge and ship wrecks, and coastal structures and buildings, including breakwaters, jetties and lighthouses.
- Ruins.
- Coastal historic heritage, particularly Kāi Tahu occupation sites and those associated with early European activities such as whaling.
- Memorials.
- Trees.
- Military structures or remains.
- Historic places within the meaning under section 6 of the Heritage New Zealand Pouhere Taonga Act 2014.
- Policy HCV-HH-P4 – Identifying Historic Heritage⁵
 - Identify the places and areas of historic heritage in Otago in accordance with APP8.
- Policy HCV-HH-P5 – Managing historic heritage
 - Except as provided for in EIT-INF-P13, protect *historic heritage* from inappropriate subdivision, use and development by:
 - Requiring the use of accidental discovery protocols [in accordance with the following if an unidentified archaeological site is located during works]:⁶
 - Work must cease immediately at that place and within 20m around the site.
 - The contractor must shut down all machinery, secure the area, and advise the Site Manager.
 - The Site Manager must secure the site and notify the Heritage New Zealand Regional Archaeologist. Further assessment by an archaeologist may be required.
 - If the site is of Māori origin, the Site Manager must notify the Heritage New Zealand Regional Archaeologist and the appropriate papatipu rūnaka of the discovery and ensure site access to enable appropriate cultural procedures and tikaka to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act, Protected Objects Act).
 - If human remains (kōiwi) are uncovered the Site Manager must advise the Heritage New Zealand Regional Archaeologist, NZ Police and the appropriate papatipu rūnaka and the above process under 4 must apply. Papatipu rūnaka will lead the management of any kōiwi tangata (human remains of a Māori person) that have been uncovered, in line with the Te Rūnanga o Ngāi Tahu Kōiwi Tangata policy 2019. Remains are not to be moved until such time as papatipu rūnaka and Heritage New Zealand have responded.
 - Works affecting the *archaeological site* and any human remains (kōiwi) must not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Works affecting a site of Māori origin or containing kōiwi tangata must not resume until papatipu rūnaka give written approval for work to continue. Further assessment by an archaeologist may be required.
 - Where iwi so request, any information recorded as the result of the find such as a description of location and content, is to be provided for their records.
 - Heritage New Zealand Pouhere Taonga will advise if an archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014 is required for works to continue.

⁵ This policy wording has been amended for clarity and includes criteria outlined in APP8 of the proposed RPS. These are the criteria outlined for identifying historic places in the HNZPTA, though the aesthetic criterion has been removed in the RPS.

⁶ This policy wording has been amended for clarity and includes criteria outlined in APP11 of the proposed RPS.

- Avoiding adverse effects on areas or places which have been identified as having special or outstanding historic heritage or qualities, except that in circumstances [listed] below, they are remedied or mitigated to the extent practicable:
 - Where HCV-HH-P6 applies, or
 - A project has significant public benefit that outweighs the loss of historic heritage
- The activity has functional or locational constraints and has a significant public benefit or will enable access to, and enhance people's understanding and appreciation of the historic heritage area or place, or
 - The area or place is already impacted by an existing, lawfully established activity
 - There is significant risk to safety or property; or
 - Any adverse effects are minor and relate to work necessary to adapt a historic heritage building to modern use.
- Avoiding, remedying or mitigating adverse *effects* on other areas or places with *historic heritage* values or qualities.
- HCV-HH-P6A – Maintenance and enhancement of historic heritage
 - Encourage the ongoing use and adaptive re-use of historic heritage in a way that, as far as practicable, maintains and enhances the identified heritage values.

The methods proposed to implement these policies include requiring that:

- Regional Plans provide for the identification and management of historic heritage located in the *beds of lakes and rivers, wetlands* and the *coastal marine area*.
- District Plans provide for the identification and management of historic heritage outside of these areas.
- Promote the use of incentives and education supportive of historic heritage.

2.5 Waitaki District Plan

The Waitaki District currently has operative and proposed District Plans. However, most of the proposed plan has been withdrawn as of 15 January 2026 due to the Resource Management (Consenting and Other System Changes) Amendment Act 2025, so the proposed objectives, policies, and rules relating to *Historic Heritage Items* no longer have effect. An exemption has been granted to WDC for the *Historic Heritage - Ōamaru Historic Area* provisions, and any new listed heritage items that are not opposed by landowners, but these are not relevant to the MP4 project.⁷ Accordingly, only the operative district plan is considered.

Operative Waitaki District Plan

Section 2.3.1 provides the following objective for historic heritage:⁸

The conservation and enhancement of the heritage values of the District, including historic places and areas, waahi tapu sites and areas, and archaeological sites, in order that the character and history of the District can be preserved and managed.

Seven policies are outlined to achieve the objective:

- To use the District Plan as a means of identifying and protecting important heritage buildings, objects, places and sites, in consultation with the N.Z. Historic Places Trust [now HNZPT], Historical Societies within the District, and the local community.

⁷ <https://www.waitaki.govt.nz/News/Minister-approves-District-Plan-exemptions>. Note: *Historic Heritage - Ōamaru Historic Area* has been exempted from this freeze but is not relevant to the MP4 project beyond the renumbering of Gay Tan's Cottage to HH 274.

⁸ The policies in this section are informed by the International Council of Monuments and Sites (ICOMOS) NZ Charter for the Conservation of Places of Cultural Heritage Value.

- To ensure that, through the implementation of appropriate procedures within the Council's administration, all development and building proposals in the vicinity of recorded waahi tapu and archaeological sites are notified to the takata whenua and to the N.Z.Historic Places Trust, in accordance with the Historic Places Act 1993, in order to enable the implementation of the archaeological provisions of that Act.
- To encourage public participation in the identification and protection of heritage values through education and increased public awareness.
- To encourage the use of protected buildings while ensuring that their valued features are not impaired or destroyed.
- To ensure the protection by the use of Heritage Protection Orders as necessary, and in conjunction with other agencies where appropriate, of significant heritage items which are under threat from demolition, removal or major modification.
- To ensure the Council will work with Kai Tahu Ki Otago to establish processes that protect the sensitivity of information relating to waahi tapu.
- To give weight on whether a heritage impact assessment has been prepared by a suitably qualified expert when considering an application to alter, or add on to, a heritage item listed in Appendix B of the District Plan and, in the case of major alterations or additions, whether a heritage conservation plan has been prepared.

Implementation methods for these policies include:

- The inclusion of an inventory of heritage items in the District Plan, with the items classified into different categories (A and B) according to the significance of their heritage values.
- Assessing the level of protection necessary for a heritage item, through the resource consent process, and to have regard to its significance.
- The use of rules in the District Plan requiring different types of application for demolition, removal or alterations to the heritage items, according to their classification.
- The appropriate waiver or reduction of financial contributions towards public open space and recreation from subdivision or development proposals which incorporate statutory protection for a scheduled heritage item.
- Continuing liaison with the N.Z.Historic Places Trust, local historical societies and takata whenua to promote public awareness of the importance of heritage values.
- To inform the N.Z. Historic Places Trust and the takata whenua when a resource consent has been applied for which may affect an archaeological site identified in the District Plan.

2.6 Dunedin City District Plan

Part of the project area sits within the area administered by the Dunedin City Council (DCC; Figure 2). However, the Dunedin City District Plan has not been considered as the assessed project components will not affect any heritage items in that area.

3 Methodology

This heritage assessment is informed by a desktop review and field survey. The subsequent assessment of heritage value and the effects of the project on those values is based on established national and international approaches.

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 heritage items. 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, ArchSite⁹ (the New Zealand Archaeological Association site recording scheme), and Kā Huru Manu (the Ngai Tahu Cultural Atlas) to identify recorded heritage items.
- 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 that incorporated data from the above sources, located known heritage items, and used to identify areas with additional potential heritage items 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 heritage items within each cell. From this, obvious archaeological features were identified (e.g., tailings, structures, and water races). Areas with heritage 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 items and other possible items identified from the historical research and GIS analysis. ArcGIS Field Maps was used to locate known items using a smartphone in the field. When heritage items or other points of interest were encountered in the field, they were photographed and their location recorded using a Garmin GPS. 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 Heritage Values

Historic heritage values for each historic heritage item identified within or immediately adjacent to the project area are assessed. Values (i.e., criteria) specified in the Operative and Proposed Otago Regional Policy

⁹ 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.

Statements, and the Waitaki District Plan, form the basis of these assessments. Separate assessments are undertaken to address the different historic heritage values specified in the Proposed/Operative RPS and the Waitaki District Plan.

Proposed and Operative RPS

Historic Heritage Value Identification

The Proposed RPS specifies the identification of heritage values in accordance with *APP8 – Identification criteria for places and areas of historic heritage*. APP8 notes that:

The identification criteria in APP8 follows O’Brien, R and Barnes-Wylie J, *Guidelines for Assessing Historic Places and Historic Areas for the New Zealand Heritage List/Rārangī Kōrero* (2019)¹⁰ which has been adopted by Heritage New Zealand Pouhere Taonga as its Significance Assessment Guidelines, with the exception that the ‘Aesthetic’ criterion has been removed.

This includes the following heritage values:

- Archaeological
- Architectural
- Cultural
- Historic
- Scientific
- Social
- Spiritual
- Technological
- Traditional

Significance Grading

APP8 also includes guidance for identifying *Special or Outstanding Heritage Values or Qualities*. This is a near reproduction¹¹ of the heritage identification criteria specified in Schedule 5 of the Operative RPS and the criteria for determining if a place is a Category 1 or 2 historic place in the HNZPT *Significance Assessment Guidelines*:

- The extent to which the place reflects important or representative aspects of [Otago or] New Zealand history.
- The association of the place with events, persons, or ideas of importance in [Otago or] New Zealand history.
- The potential of the place to provide knowledge of [Otago or] New Zealand history.
- The importance of the place to tangata whenua.
- The community association with, or public esteem for, the place.
- The potential of the place for public education.
- The technical accomplishment, value, or design of the place.
- The symbolic or commemorative value of the place.
- The importance of identifying historic places known to date from an early period of [Otago or] New Zealand settlement.
- The importance of identifying rare types of historic places.
- The extent to which the place forms part of a wider historical and cultural area.

These criteria inform the assessment of a significance grade for each historic heritage value identified for an item. This is done in conjunction with the value grading rubric provided in Appendix 3A of the *Guidance on*

¹⁰ Rebecca O’Brien and Joanna Barnes-Wylie, *Significance Assessment Guidelines: Guidelines for Assessing Historic Places and Historic Areas for the New Zealand Heritage List/Rārangī Kōrero* (Heritage New Zealand Pouhere Taonga, 2019).

¹¹ The Operative RPS rephrases some clauses to Read ‘**Otago or** New Zealand’ history/settlement.

*Heritage Impact Assessments for Cultural World Heritage Properties.*¹² Significance grades are summarised in Table 1.

Table 1. Significance grades.

Grade	Description
High	Special or outstanding heritage values or Historic heritage values equivalent to that of a Category 1 Historic Place on the HNZPT List or a Category A item on the Waitaki District Plan.
Moderate	Historic heritage values equivalent to that of a Category 2 Historic Place on the HNZPT List or a Category B item on the Waitaki District Plan.
Low	Some historic heritage values, but not sufficient for formal recognition/protection.
Negligible	Little to no identified heritage value.

Waitaki District Plan

Historic Heritage Value Identification

Section 2.3.4 of the Waitaki District Plan specifies the following historic heritage values informing the listing of historic heritage items:

- Historical and social significance.
- Cultural and spiritual significance to takata whenua.
- Architectural significance.
- Technological significance.
- Group significance.
- Landmark significance.

Unlike the Operative and Proposed RPS there is no guidance for identifying these values. Accordingly, the HNZPT *Significance Assessment Guidelines* is used to inform the identification of all but the landmark and group significance. Professional judgement is used to identify these latter two values.

Significance Grading

Section 2.3.4 also identifies two significance categories:

- Category A – The heritage item warrants permanent preservation because of its exceptional significance to the district. The Council would be unlikely to approve any significant alteration (but would take steps to arrange compensation or acquisition if the owners' property rights are unreasonably restricted). Category A shall include all places of special or outstanding historical or cultural heritage significance that are included in Category 1 of the HNZPT List.
- Category B – Preservation of the heritage item is encouraged. The Council will be more flexible regarding significant alterations. Category B shall include all places of special or outstanding historical or cultural heritage significance that are included in Category 2 of the HNZPT List.

¹² International Council on Monuments and Sites, *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS, 2011).

Given that these categories align with Category 1 or 2 historic places, the same approach to significance grading outlined above is used.

3.4 Assessment of Effects

The effects of a proposal on heritage values is a function of the value grade and the scale of change (Table 2). This approach follows that outlined in the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* and the NZTA *Historic Heritage Impact Assessment Guide for State Highway Projects*,¹³ with some changes in terminology made to bring it in line with New Zealand planning language.

Table 2. Rubric for assessing effects based on heritage value and the scale of change.

		Scale of Change				
Value Grade		No change	Negligible	Minor	Moderate	Major
	High	Nil	Less Than Minor	Minor/Less Than Minor	Minor/More Than Minor	More than Minor/Significant
	Moderate	Nil	Nil/Less Than Minor	Less Than Minor	Minor	Minor/More Than Minor
	Low	Nil	Nil/Less Than Minor	Nil/Less Than Minor	Less Than Minor	Less Than Minor/Minor
	Negligible	Nil	Nil	Nil/Less Than Minor	Nil/Less Than Minor	Less Than Minor

Some key considerations guiding the use of this approach include:

- The “scale or severity of impacts or changes can be judged taking into account their direct and indirect effects and whether they are temporary or permanent, reversible or irreversible.”¹⁴
- Effects may be either adverse or beneficial (e.g., less than minor adverse, less than minor beneficial).
- When two effect levels are available (e.g., Less Than Minor/Minor) then professional judgement is required to determine which one is appropriate on a case-by-case basis.
- Cumulative effects must be considered in the assessment. These can be several different effects from one activity on a heritage item, the effects of several activities on a heritage item, or the incremental effects of a number of activities over time.¹⁵
- Effects assessments for each heritage item must be supported by a qualitative summary.

An overall assessment of the effects on heritage of each project component and the MP4 project is also made. NZTA notes that:

In general, if the effects on all heritage resources were adverse the overall impact would be the highest impact. Conversely, if the effects were all beneficial, the average level of benefit would be selected, rather than the greatest, as assessments should be conservative.¹⁶

¹³ New Zealand Transport Agency, *Historic Heritage Impact Assessment Guide for State Highway Projects* (NZTA, 2015).

¹⁴ International Council on Monuments and Sites, *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*, 9.

¹⁵ New Zealand Transport Agency, *Historic Heritage Impact Assessment Guide for State Highway Projects*.

¹⁶ New Zealand Transport Agency, *Historic Heritage Impact Assessment Guide for State Highway Projects*, 40.

3.5 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 potential heritage items.
- The volume of past surveys of heritage items 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 heritage items recorded 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 investigation, such as test pitting, was undertaken.

4 Historical Overview

Archaeological evidence demonstrates a pattern of widespread Polynesian settlement of Aotearoa New Zealand by the early 14th century,¹⁷ with more recent research indicating settlement as early as 1250 AD¹⁸. 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.¹⁹ The three iwi eventually merged through conflict, marriage, and alliances. The Kāi Tahu Whānui²⁰ quickly spread across the region, developing different types of settlement sites dependent on the available local resources and environmental conditions.²¹ 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.”²²

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.²³

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.²⁴ 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.²⁵ Further afield, there is archaeological evidence of moa hunter sites, silcrete quarries, ovens, rock shelters, and wooden bowls within the Strath Taieri.²⁶

¹⁷ 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.

¹⁸ 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>.

¹⁹ 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.

²⁰ Waitaha, Kāti Mamoe and Kāi Tahu are referred to collectively as Kāi Tahu whānui.

²¹ 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>.

²² Jill Hamel, *The Archaeology of Otago* (Department of Conservation, 2001).

²³ Hamel, *The Archaeology of Otago*.

²⁴ WA Taylor, *Lore and History of the South Island Māori* (Bascands Ltd, 1952), 141–48.

²⁵ 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).

²⁶ Jill Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District* (Unpublished report for Department of Conservation, 2000).

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

the spring and early summer up the Taieri River is recorded as a traditional activity by the Ōtākou people. Eels and birds, particularly weka, were collected and tikumu (for weaving) and 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.²⁷

By the 1850s, the land was being settled by European farmers with pastoral leases and sheep runs.²⁸ 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.²⁹ Hopkinson's Station was recorded near the south-eastern border of the run, to the north-east of Dunback Hill.³⁰ Macraes Flat is suggested to have been named after a shepherd working for Hopkinson who lived in the area.³¹ 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.³² When Bell's lease expired in late 1891, the run was divided into smaller grazing runs.³³



Figure 3. Macraes Township circa 1900.³⁴

²⁷ Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*.

²⁸ J. Hall-Jones, *Goldfields of Otago - An Illustrated History* (Craig Printing, 2005), 163.

²⁹ Helen Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts* (Otago Centennial Historical Publications, 1949).

³⁰ SO16125.

³¹ Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts*.

³² *Otago Witness*, "Agricultural and Pastoral News," 21 December 1899.

³³ *Otago Witness*, "Sale of Crown Lands," 3 March 1892, 11.

³⁴ 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.³⁵ Saxton was declared bankrupt before the middle of the 1860s and both runs were auctioned.³⁶ Douglas, Alderson & Co purchased both and amalgamated the runs in September 1864.³⁷ Large station buildings for the Deepdell Station were constructed (near the junction of Macraes and Horse Flat Road) by the early 1860s.³⁸ Towards the end of the 1800s, the Deepdell Run was divided and offered as a series of smaller grazing runs.³⁹

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.⁴⁰ 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.⁴¹ A topographical sketch of the Highlay District was produced by W. Arthur, the district surveyor, in August 1867.⁴² This map shows the main communication routes and geographical points, including Sister Peaks, Highlay Hill, Horse Flat, and Trimbells Gully.⁴³

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.⁴⁴ Hard rock mining often involved the use of a small stamping battery for crushing stone, 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.⁴⁵

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 1990.⁴⁶

³⁵ *Otago Witness*, 6 April 1861, 3.

³⁶ *Otago Daily Times*, 21 July 1864, 7.

³⁷ *North Otago Times*, 29 September 1864, 2.

³⁸ SO 16320.

³⁹ *Otago Witness*, 9 March 1888, 19.

⁴⁰ *North Otago Times*, “A Trip to the Interior,” 19 June 1877, 2.

⁴¹ Lloyd Carpenter, ‘Finding “Te Wherro” in Otakou’, *MAI Journal* 2, no. 2 (2013): 105–20.

⁴² SO 4535.

⁴³ Thompson, *East of the Rock and Pillar: A History of the Strath Taieri and Macraes Districts*.

⁴⁴ Peter Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey* (Unpublished report for Macraes Mining Company, 1998).

⁴⁵ Benjamin Teele, *Coronation North, Macraes: Archaeological Assessment* (Unpublished report for OceanaGold (New Zealand) Ltd, 2016).

⁴⁶ Teele, *Coronation North, Macraes: Archaeological Assessment*.

5 Previous Historic Heritage Assessment

Most previous historic heritage assessments in the Macraes area have been carried out from an archaeological perspective and associated with recent goldmining activities across various parts of the surrounding landscape. The exception to this is a small number of reports concerned with the conservation of Gay Tan's Cottage. Documents relevant to the MP4 project 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 Macraes⁴⁷

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.

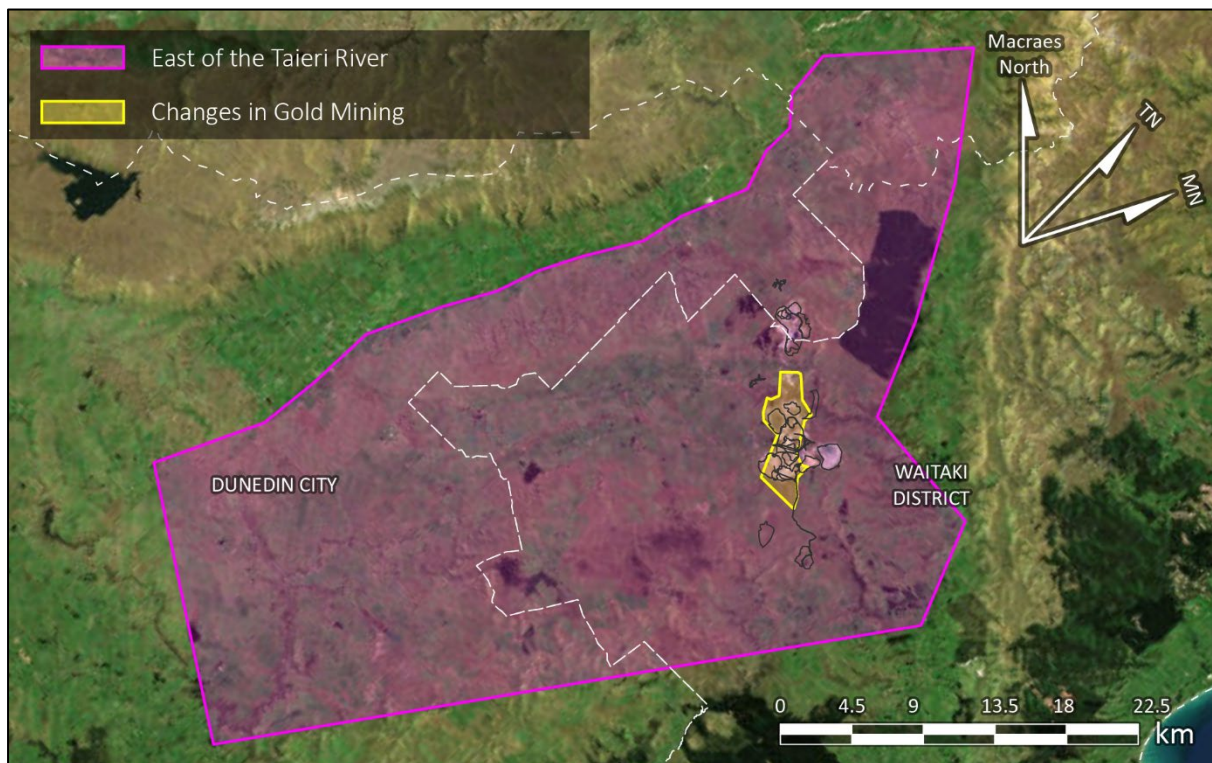


Figure 4. Areas covered by Hamel's reports (2024-2025 LINZ satellite imagery).

5.1.2 2000 – East of the Taieri River: The Archaeology of the Macraes Ecological District⁴⁸

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

⁴⁷ Jill Hamel, *Changes in Gold Mining at Macraes* (Unpublished report for Macraes Mining Company, 1991).

⁴⁸ Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*.

Central Railway). The descriptions of agricultural and infrastructure are supported by fieldwork apparently 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, Macraes⁴⁹

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 Hamel⁵⁰ as I42/24. It consisted of evidence of gold mining along the valley floor, including earth dams, sluicing areas, prospecting pits and water races.

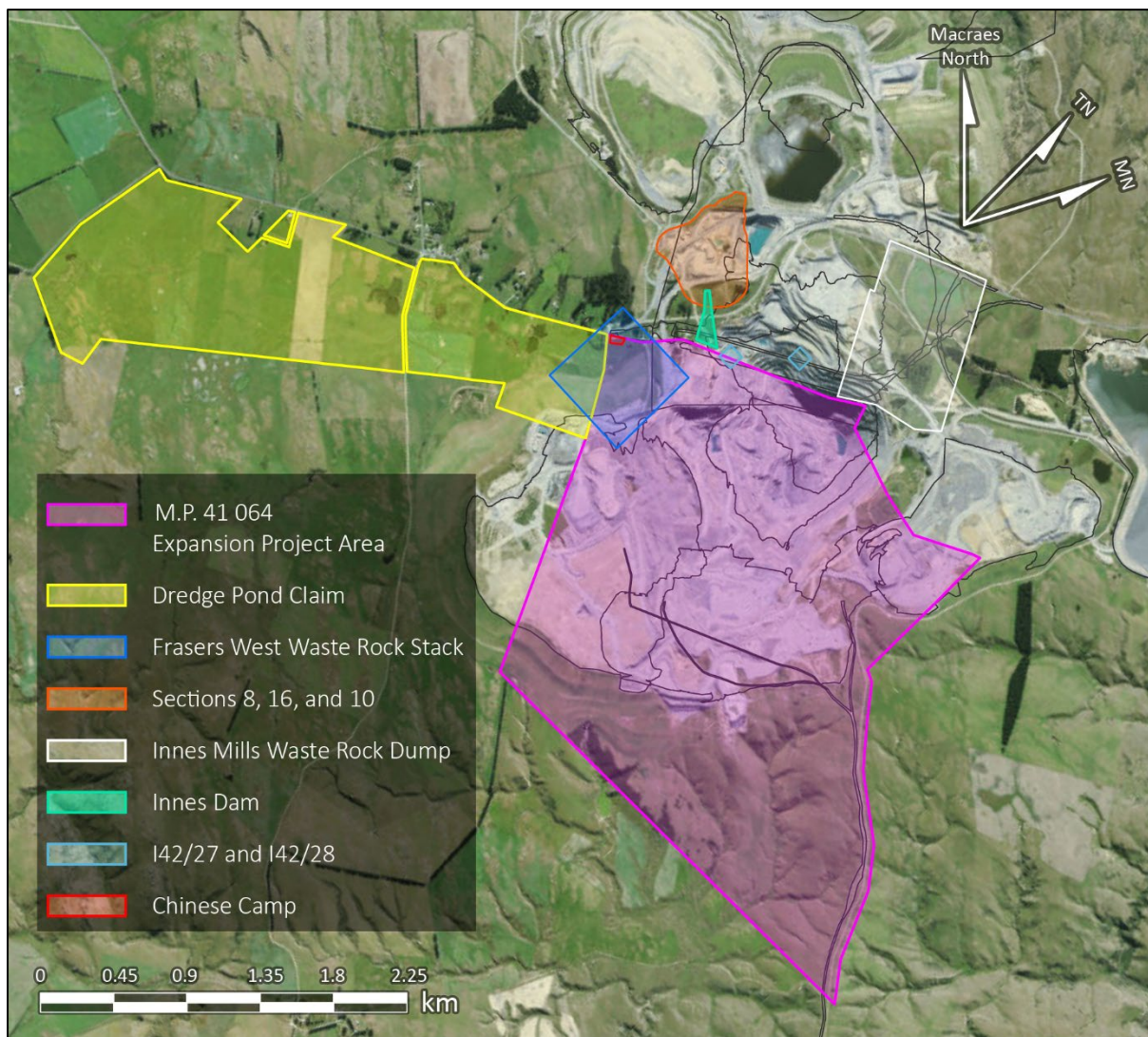


Figure 5. Areas covered by Petchey's central reports (2021 LINZ aerial photography).

⁴⁹ Peter Petchey, *Alluvial Gold Workings, 'Innes Dam', Macraes* (Unpublished report for Macraes Mining Company, 1994).

⁵⁰ Hamel, *Changes in Gold Mining at Macraes*.

5.2.2 1994 – Dredge Pond Licence PL 31-2633, Macraes Flat⁵¹

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 Flat⁵²

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 Site⁵³

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 Survey⁵⁴

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 064⁵⁵

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, Macraes⁵⁶

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,

⁵¹ Peter Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat* (Unpublished report for Macraes Mining Company, 1994).

⁵² Peter Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat* (Unpublished report for Macraes Mining Company, 1995).

⁵³ Peter Petchey, *Innes-Mills Pit Waste Rock Dump Site* (Unpublished report for Macraes Mining Company, 1995).

⁵⁴ Peter Petchey, *Sections 8, 16 & Part 10 Block II Highlay S.D. Archaeological Survey* (Unpublished report for Macraes Mining Company, 1996).

⁵⁵ Peter Petchey, *Archaeological Sites: Part M.P. 41 064* (Unpublished report for Macraes Mining Company, 1996).

⁵⁶ 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. I42/50⁵⁷

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 Assessment⁵⁸

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 Mine⁵⁹

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 Macraes⁶⁰

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, and dating from the late 19th to early 20th century. Features 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.

⁵⁷ Peter Petchey, *Gifford Road Chinese Camp Site: Archaeological Site No. I42/50* (Unpublished report for Macraes Mining Company, 1997).

⁵⁸ Peter Petchey, *Fraser's West Waste Rock Stack Proposed Enlargement: Archaeological Assessment* (Unpublished report for OceanaGold (New Zealand) Ltd, 2004).

⁵⁹ Peter Petchey, *The Golden Bar Mine, Macraes: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1994).

⁶⁰ Peter Petchey, *The Ounce Mine, Macraes: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1994).

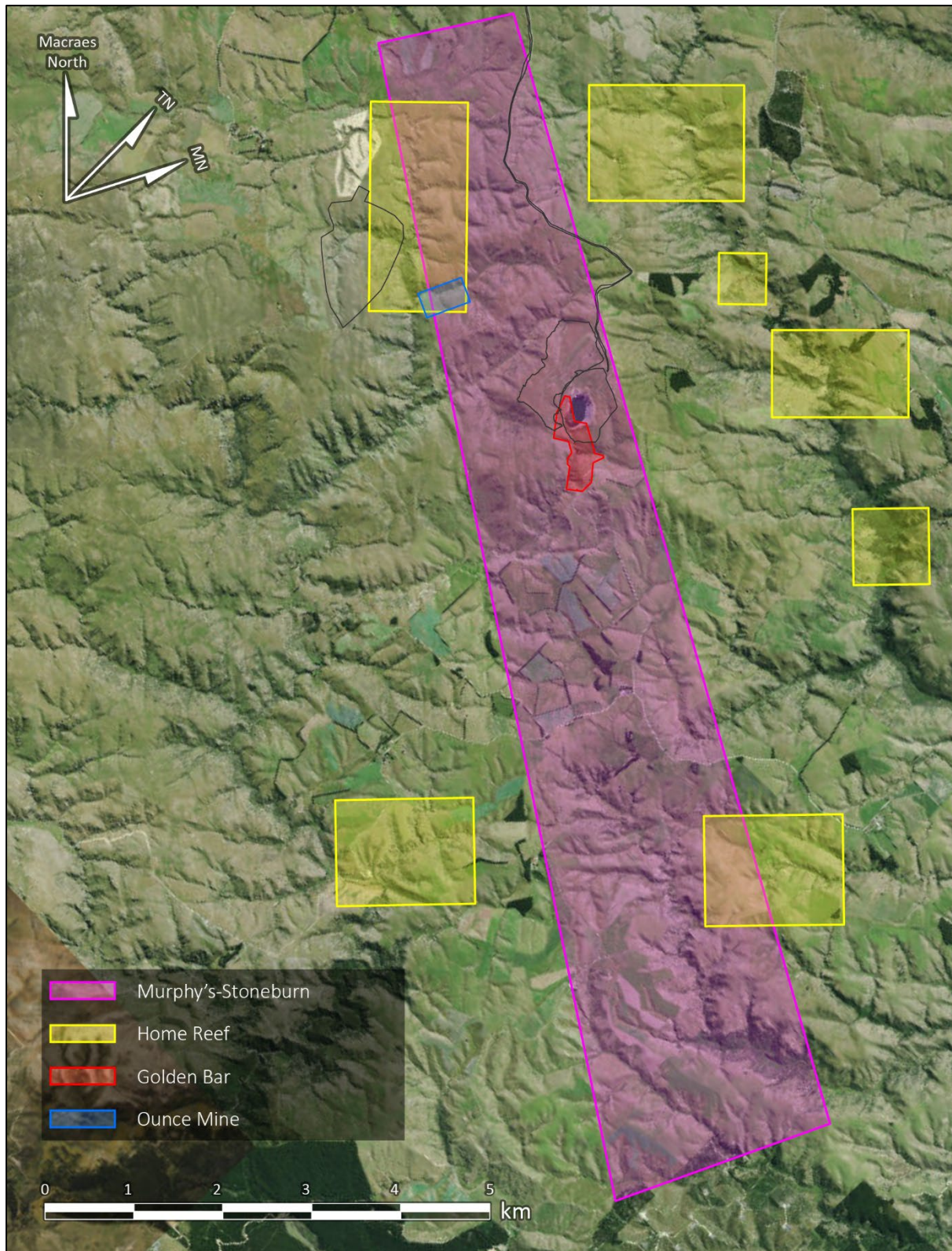


Figure 6. Areas covered by Petchey's southern reports (2021 LINZ aerial photography).

5.3.3 1995 – Murphy’s Flat to Stoneburn Preliminary Archaeological Survey⁶¹

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 Survey⁶²

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 Investigations⁶³

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 Survey⁶⁴

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.

⁶¹ Peter Petchey, *Murphy’s Flat to Stoneburn: Preliminary Archaeological Survey* (Unpublished report for Macraes Mining Company, 1995).

⁶² Peter Petchey, *Home Reef Resource Consent Area, Macraes Gold Project: Archaeological Survey* (Unpublished report for Macraes Mining Company, 1995).

⁶³ Peter Petchey, *Golden Bar Mine, Macraes: Archaeological Investigations* (Unpublished report for OceanaGold (New Zealand) Ltd, 2005).

⁶⁴ 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, Hyde⁶⁵

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.

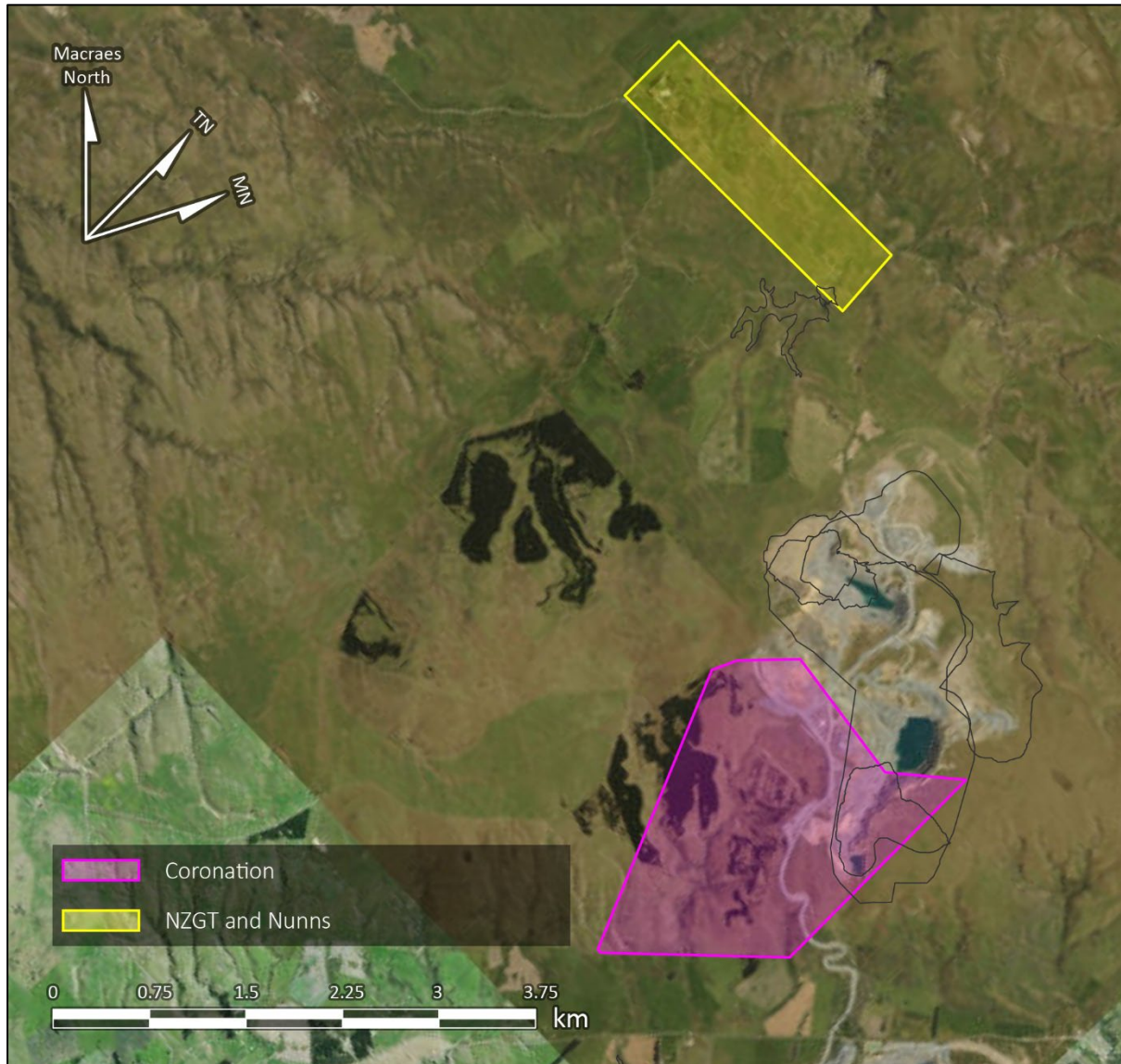


Figure 7. Areas covered by Petchey’s northern reports (2021, 2023 LINZ aerial photography).

⁶⁵ 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 Report⁶⁶

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, Otago⁶⁷

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 19th to early 20th centuries in a gold mining settlement in Otago. The report also presents a detailed record of the repairs undertaken to the building.

5.5.3 2020-2025 - Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage

Maintenance reports for Gay Tan's Cottage have been prepared roughly annually by Origin Heritage. These identify defects in the building and recommend remedial works.⁶⁸



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

⁶⁶ John Gray, *Louis Gay Tan's Cottage, Macraes Flat, East Otago: Conservation Report* (Unpublished report for Gold and Resource Developments (NZ) Ltd, 2001).

⁶⁷ 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).

⁶⁸ Robin Miller, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (Unpublished report for OceanaGold (New Zealand) Ltd, 2020); Robin Miller, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (Unpublished report for OceanaGold (New Zealand) Ltd, 2021); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2022); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2023); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2025).

5.6 Opus International Consultants

5.6.1 2011 – Archaeological Survey – Macraes Phase III⁶⁹

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 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 2009,⁷⁰ 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 – Desk Top Assessment: Archaeological Values Deepdell Station⁷¹

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.

5.6.3 2012 – Archaeological Survey – Coronation Mine⁷²

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),⁷³ 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 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 Mine⁷⁴

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).

⁶⁹ Cathryn Barr, *Archaeological Survey – Macraes Phase III* (Unpublished report for OceanaGold (New Zealand) Ltd, 2011).

⁷⁰ 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).

⁷¹ Greg Gedson, *Desk Top Assessment: Archaeological Values Deepdell Station* (Unpublished report for OceanaGold (New Zealand) Ltd, 2011).

⁷² Sian Keith, *Archaeological Survey – Coronation Mine* (Unpublished report for OceanaGold (New Zealand) Ltd, 2012).

⁷³ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

⁷⁴ Cathryn Barr and TJ O'Connell, *Archaeological Assessment: Proposed Coronation Mine* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2013).

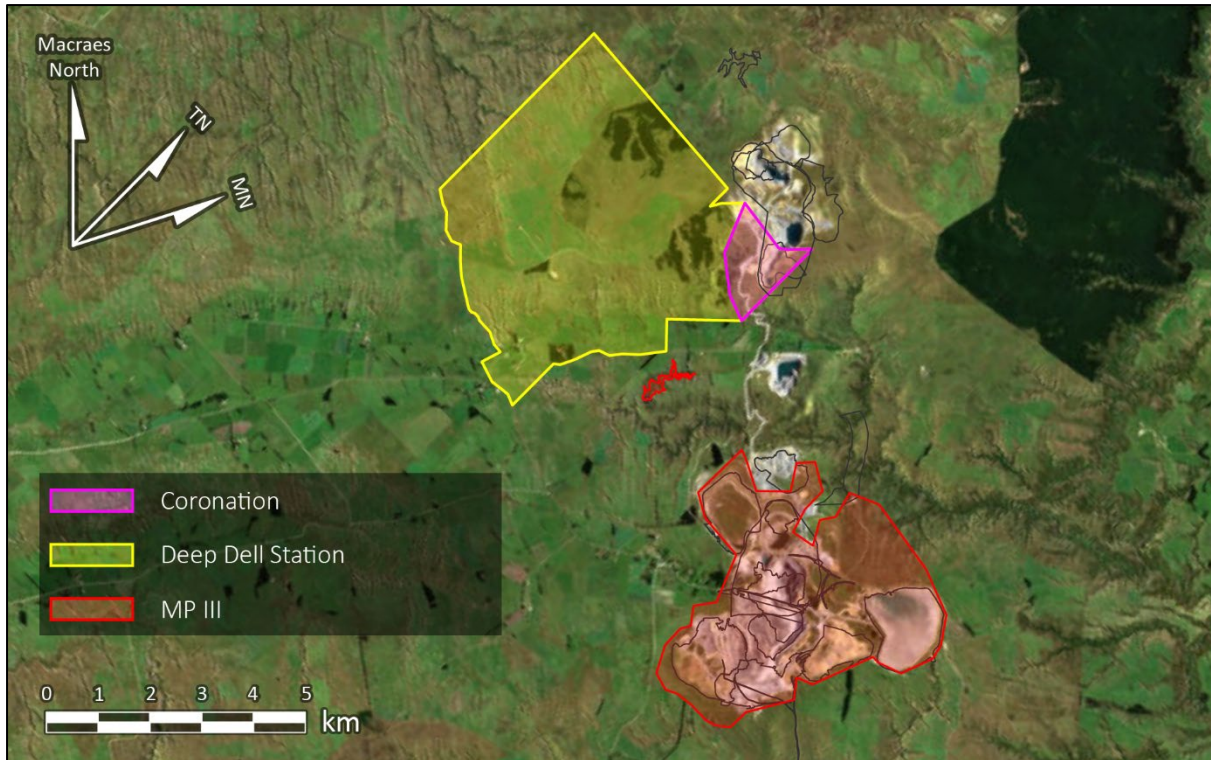


Figure 9. Areas covered by Opus reports (2024-2025 LINZ satellite imagery).

5.7 Brian Allingham

5.7.1 2011 – OceanaGold: Macraes Phase III – Iwi Archaeological Assessment⁷⁵

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.

5.7.2 2013 – Coronation Area Archaeological Survey⁷⁶

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 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 Origin⁷⁷

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 urupā (burial site).

⁷⁵ Allingham, *OceanaGold: Macraes Phase III - Iwi Archaeological Assessment*.

⁷⁶ Allingham, *Coronation Area Archaeological Survey*.

⁷⁷ Allingham, *The Coronation North Project - OceanaGold: Archaeological Assessment Report on Remains of Maori Origin*.

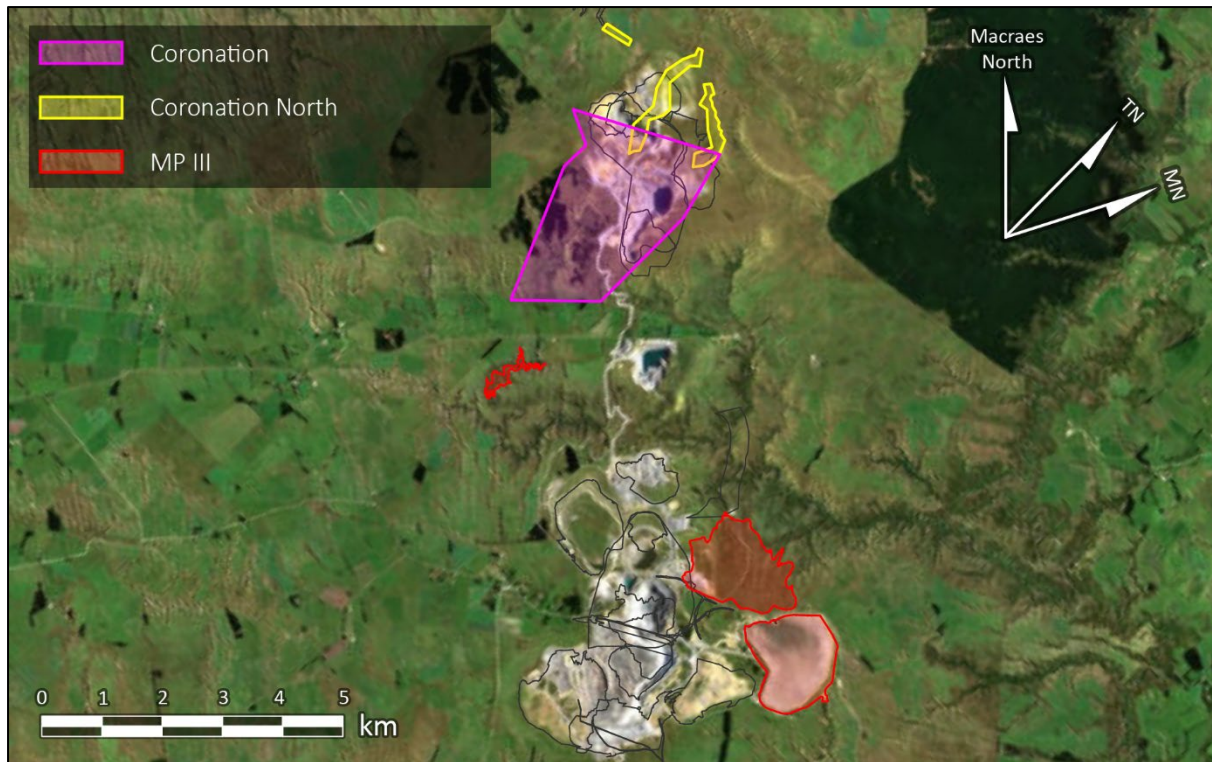


Figure 10. Areas covered by Allingham reports (2024-2025 LINZ satellite imagery).

5.8 Origin Heritage – Northern Area

5.8.1 2014 – Archaeological Assessment of Effects: Proposed Coronation Mine, Macraes, Otago⁷⁸

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).

5.8.2 2015 – Coronation Mine, Macraes, Otago: Archaeological Investigation Report⁷⁹

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 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 2016⁸⁰

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

⁷⁸ Andrea Farminer and Andrew Winter, *Archaeological Assessment of Effects: Proposed Coronation Mine, Macraes, Otago* (Unpublished report for OceanaGold (New Zealand) Ltd, 2014).

⁷⁹ Andrea Farminer et al., *Coronation Mine, Macraes, Otago: Archaeological Investigation Report* (Unpublished report for OceanaGold (New Zealand) Ltd, 2015).

⁸⁰ Teele, *Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham, 2016*.

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 Assessment⁸¹

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).⁸² 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).

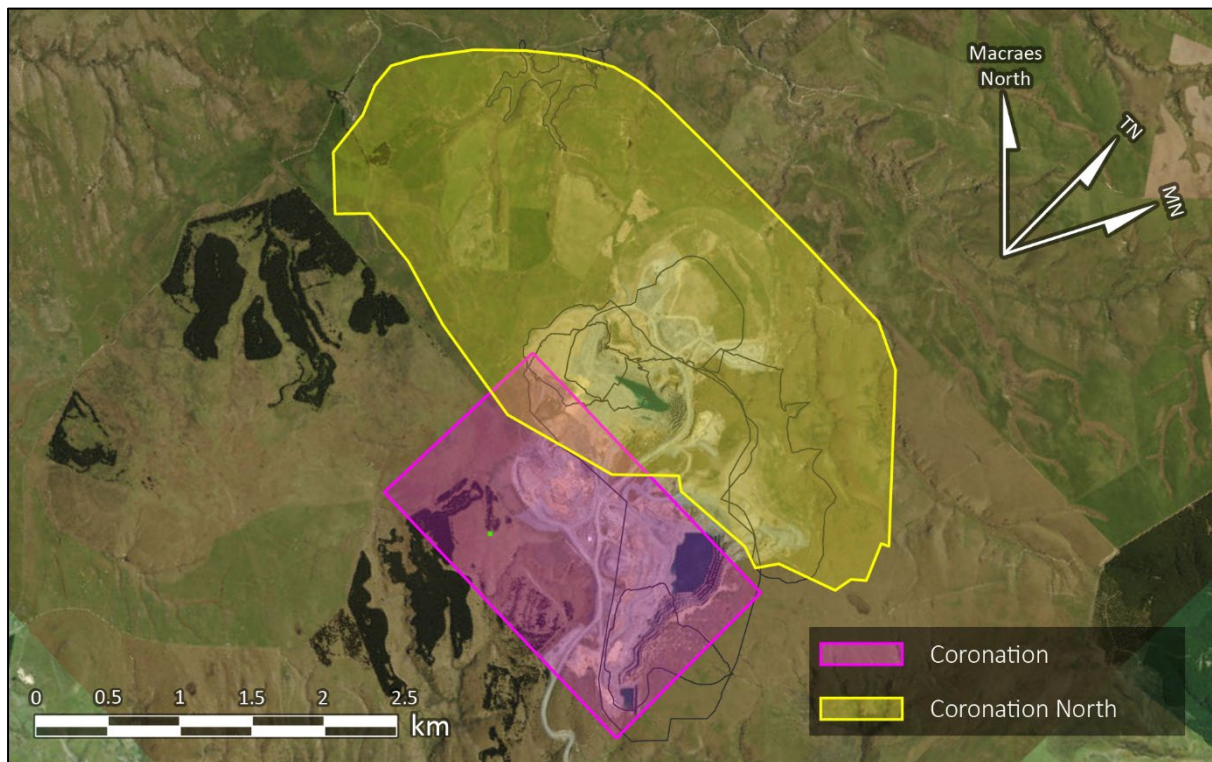


Figure 11. Areas covered by Origin’s northern reports (2021, 2023 LINZ aerial photography).

5.9 Origin Heritage – Central Area

5.9.1 2015 – Frasers and Innes Mills Pit Expansion, Macraes Flat⁸³

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).

⁸¹ Teele, *Coronation North, Macraes: Archaeological Assessment*.

⁸² Hamel, *East of the Taieri River - The Archaeology of the Macraes Ecological District*, 200.

⁸³ Benjamin Teele, *Frasers and Innes Mills Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2015).

5.9.2 2018 – Block II, Highlay SD, Macraes: Archaeological Survey⁸⁴

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.

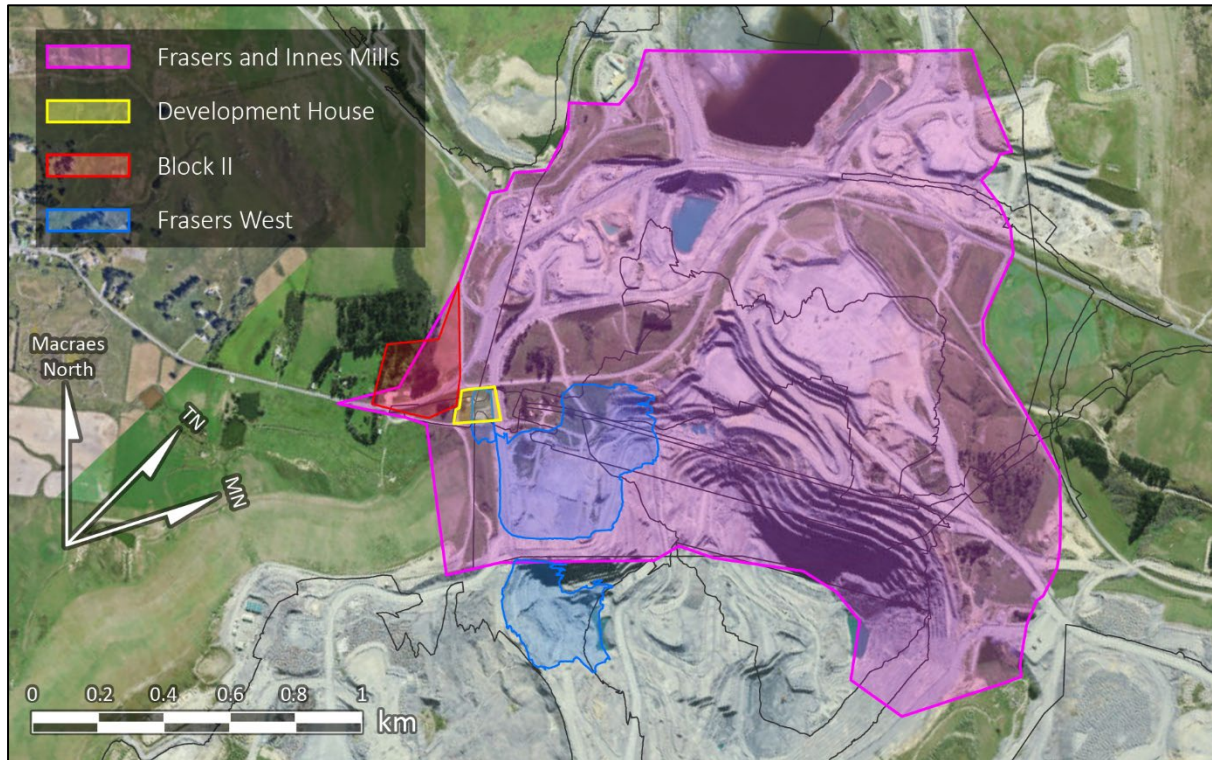


Figure 12. Areas covered by Origin's central reports (2021 LINZ aerial photography).

5.9.3 2019 – Archaeological Assessment for Frasers West Pit Expansion, Macraes Flat⁸⁵

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.⁸⁶

5.9.4 2019 – Development House, Macraes: Historic Summary⁸⁷

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.

⁸⁴ Benjamin Teele, *Block II, Highlay SD, Macraes: Archaeological Survey* (Unpublished report for OceanaGold (New Zealand) Ltd, 2018).

⁸⁵ Benjamin Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished Report for OceanaGold (New Zealand) Ltd, 2019).

⁸⁶ 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.

⁸⁷ Benjamin Teele, *Development House, Macraes: Historic Summary* (Unpublished report for OceanaGold (New Zealand) Ltd, 2019).

5.9.5 2025 – Archaeological Report for Development House, Macraes⁸⁸

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.

⁸⁸ 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.⁸⁹

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.

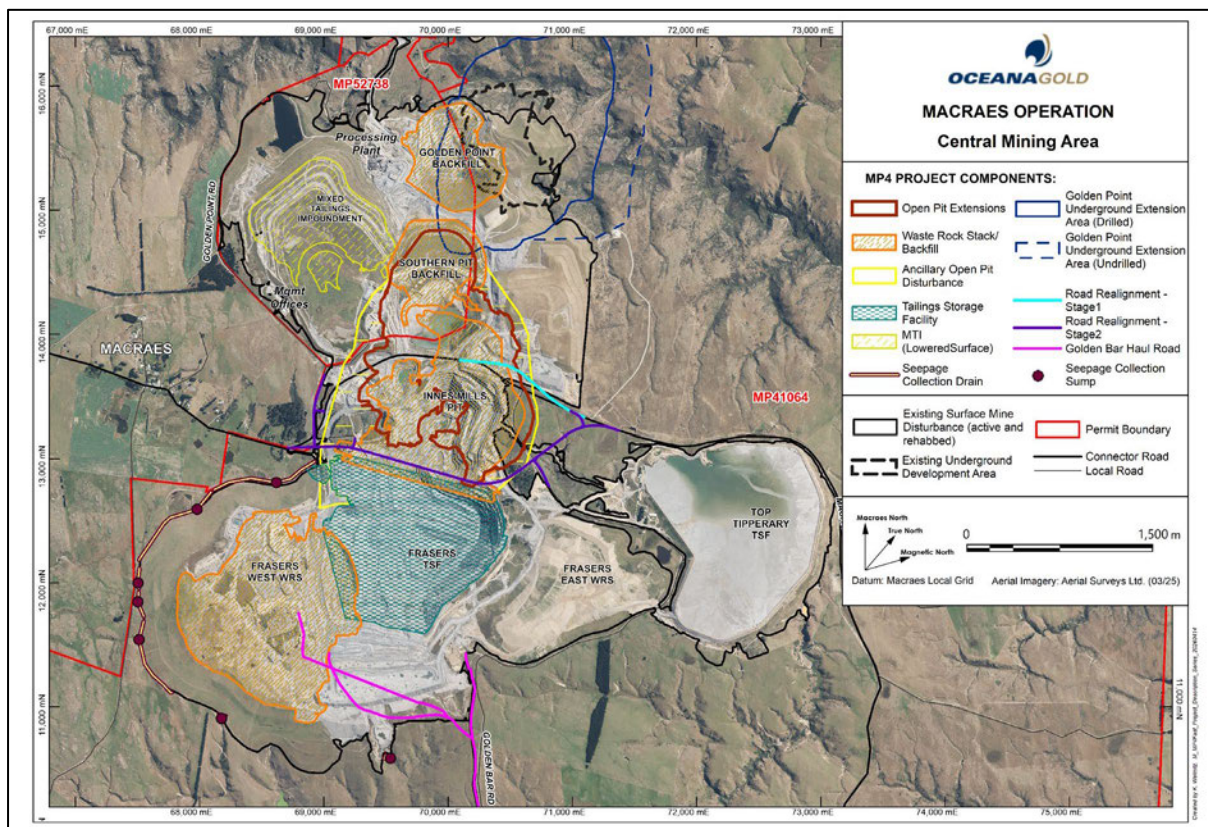


Figure 13. Innes Mills Pit expansion.⁹⁰

⁸⁹ 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.

⁹⁰ 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 around the around Frasers West Waste Rock Stack (2025 OGNZL aerial photography).

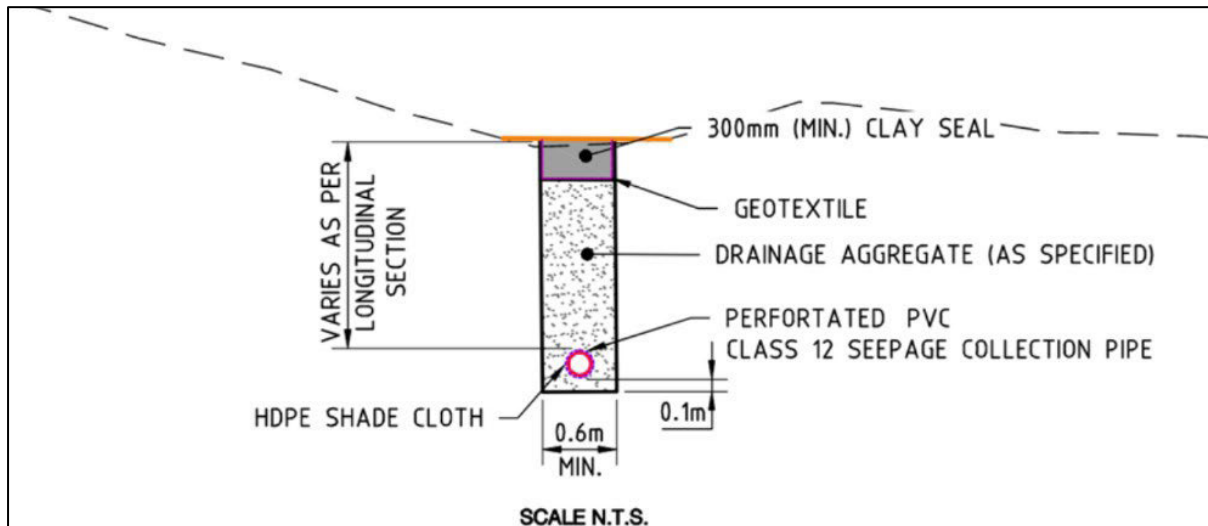


Figure 16. Nominal seepage drain design.

6.1.4 Noise Bund Construction

A noise bund will be constructed on Section 41, Block I, Highlay 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 plans⁹¹ 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.⁹²

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.⁹³ 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."⁹⁴ 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).⁹⁵ However, a later survey plan from 1898⁹⁶ 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.⁹⁷

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 19th 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

⁹¹ SO 421, 620, 624, 625, 4547, 4558, and 4559; Archives New Zealand, R10302772.

⁹² Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished Report for OceanaGold (New Zealand) Ltd, 2019).

⁹³ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

⁹⁴ *North Otago Times*, "A Trip to the Interior," 19 June 1877, 2.

⁹⁵ *Mount Ida Chronicle*, "Application for an Agricultural Lease. District of Mount Ida," 11 February 1876, 2; SO 622 and SO 4539.

⁹⁶ SO 4559.

⁹⁷ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

sheds. These were used as (east to west), Robert Benzie's room, an implement shed, the wash house and the 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.⁹⁸

6.2.2 Previous Historic Heritage Assessment

The following sites in and around the project area are recorded on ArchSite (Figure 21 and Table 3). Most sites in and immediately adjacent to the project area were surveyed by Jill Hamel or Peter Petchey during the 1990s⁹⁹ and have largely been destroyed by past mining activity.¹⁰⁰ Two house/hut sites were excavated by Petchey prior to mining,¹⁰¹ 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. 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* 2022-2023.¹⁰²

Gay Tan's Cottage is the most prominent historic heritage item in the vicinity of the proposed works. Heritage mitigation proposals associated with mine development led to the preparation of a conservation plan for the site in 2001,¹⁰³ its inclusion in the HNZPT List in 2004,¹⁰⁴ the registration of a heritage covenant against the property title in 2006,¹⁰⁵ and the restoration of the building at the end of the 2010s.¹⁰⁶ It is recorded as a heritage item in the Waitaki District Plan (H 166; renumbered to HH 274 in the proposed district plan).¹⁰⁷ The cottage is a Category 2 Historic Place on the HNZPT List (No. 7550). It is also recorded on ArchSite as I42/49, and the site extent has been updated to align with the listing extent (Figure 46) which 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 land survey.¹⁰⁸ Today the cottage is subject to a regime of annual condition

⁹⁸ Petchey, *Innes-Mills Pit Waste Rock Dump Site*, 6–9.

⁹⁹ 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*.

¹⁰⁰ 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.

¹⁰¹ Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

¹⁰² Grant, *Archaeological Report for Development House, Macraes*.

¹⁰³ Gray, *Louis Gay Tan's Cottage, Macraes Flat, East Otago: Conservation Report*.

¹⁰⁴ HNZPT Registration Proposal.

¹⁰⁵ OT13B/336, 7666279.3.

¹⁰⁶ Erin Williams, *Gay Tan's Cottage: Final Report on Archaeological Monitoring at Macraes Flat, Otago* (Unpublished report for OceanaGold, 2012).

¹⁰⁷ While the cottage was renumbered in the proposed district plan, the relevant objectives, policies, and rules are in the operative district plan. See Section 2.5.

¹⁰⁸ HNZPT Registration Proposal and Technical Change Request for Gay Tan's Cottage.

assessment and remedial recommendations by Origin Heritage, though no remedial works have been carried out on the building since *circa* 2021.¹⁰⁹

To the immediate east of Gay Tan's, the Chinese Camp site (I42/50) is also protected by a heritage covenant.¹¹⁰ The exact area protected by this covenant is unclear, as the extent of the Chinese Camp site's archaeological remains has not been established. Additionally, the relevant land parcel specified in the covenant documents is Section 53, but the majority of the buildings identified as making up the Chinese Camp on plan SO 4559 sit largely within Section 55. Petchey did some test excavation at the site of the Chinese huts noted on historic survey plans (Figure 19) and encountered several artefacts, including a Chinese coin. Petchey's conclusion was 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.¹¹¹

Table 3. Table of recorded archaeological sites in the vicinity of the site.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/23 ¹¹²	N/A	Mining – gold	QUARTZ WORKINGS	N/A	Destroyed
I42/24 ¹¹³	N/A	Mining – gold	GOLDMINING SITE	1993/15; 1995/65	Destroyed
I42/25 ¹¹⁴	N/A	Mining – gold	QUARTZ MINING	1996/11; 1998/78	Destroyed
I42/26 ¹¹⁵	N/A	Mining – gold	QUARTZ MINING	N/A	Destroyed
I42/27 ¹¹⁶	N/A	Historic – domestic	HOUSE SITES	1993/14	Destroyed
I42/28 ¹¹⁷	N/A	Historic – domestic	HOUSE	1994/95; 1997/52; 2002/162 ¹¹⁸	Destroyed
I42/30 ¹¹⁹	N/A	Mining – gold	ELEVATOR PONDS	N/A	Destroyed

¹⁰⁹ Miller, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (2020); Miller, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (2021); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (2022); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (2023); Andrew Barsby, *Annual Maintenance Works: External Heritage Fabric - Gay Tan's Cottage* (2025).

¹¹⁰ OT13B/336, 7666279.5.

¹¹¹ Petchey, *Gifford Road Chinese Camp Site: Archaeological Site No. I42/50*, 4.

¹¹² Hamel, *Changes in Gold Mining at Macraes*.

¹¹³ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Alluvial Gold Workings, 'Innes Dam', Macraes*.

¹¹⁴ Hamel, *Changes in Gold Mining at Macraes*.

¹¹⁵ Hamel, *Changes in Gold Mining at Macraes*.

¹¹⁶ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

¹¹⁷ Hamel, *Changes in Gold Mining at Macraes*; Petchey, *Excavation Report, Site I42/27: House Sites, Site I42/28: Stone Ruin, Macraes Flat*.

¹¹⁸ 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).

¹¹⁹ Hamel, *Changes in Gold Mining at Macraes*.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/49 ¹²⁰	Gay Tan's House Grounds	Historic – domestic	Building, Building - cottage, Building - farm, Drain, House floor/ site	2005/277; 2010/432 ¹²¹	Good
I42/50 ¹²²	N/A	Historic – domestic	CHINESE CAMP SITE	N/A	Below surface
I42/51 ¹²³	N/A	Historic – domestic	Hut floor/ site, Sod fence/ wall, Drain	2003/55; 2004/131	Fair
I42/64 ¹²⁴	N/A	Mining – gold	Mining workings, Sluicings/ sluicing face, Water race	2003/55; 2004/131	Fair
I42/215 ¹²⁵	Innes Farm	Historic – domestic	Building.	N/A	Fair
I42/241 ¹²⁶	N/A	Mining – gold	Artificial pond, possibly mining reservoir	2020/120 ¹²⁷	Destroyed
I42/214 ¹²⁸	Griffin House/Development House	Historic – domestic	Site of 19 th century Cottage	N/A	Below surface

¹²⁰ 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*.

¹²¹ Reissue of 2005/277.

¹²² Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹²³ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹²⁴ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

¹²⁵ 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* (Unpublished Report for OceanaGold (New Zealand) Ltd, 2019).

¹²⁶ Teele, *Frasers West Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished Report for OceanaGold (New Zealand) Ltd, 2019), 201.

¹²⁷ Authority not actioned as subsequent research identified I42/241 to be a modern site.

¹²⁸ Petchey, *Archaeological Sites: Part M.P. 41 064*.

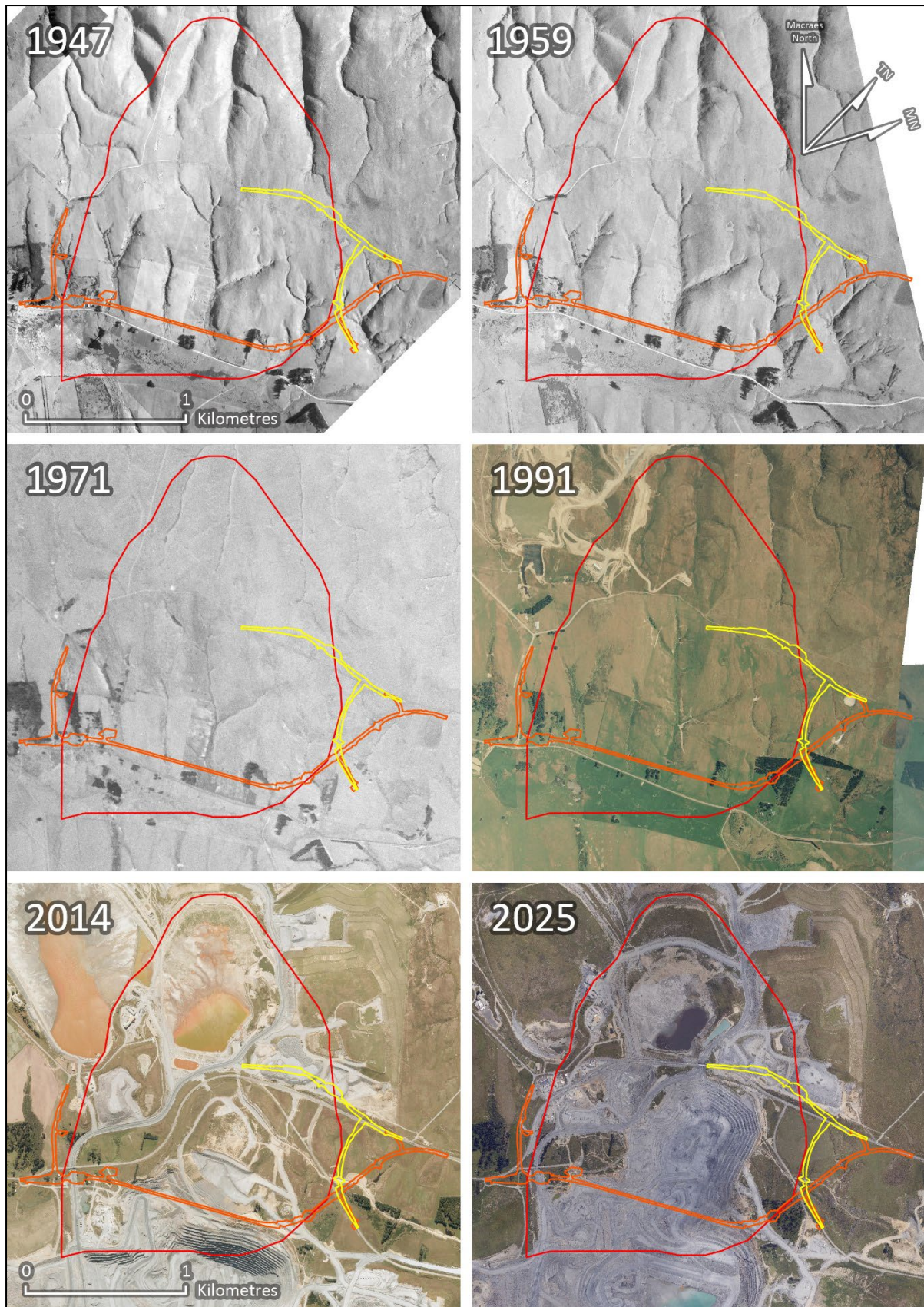


Figure 18. Aerial photographs showing the project area over time.¹²⁹

¹²⁹ Retolens and LINZ Data Service.

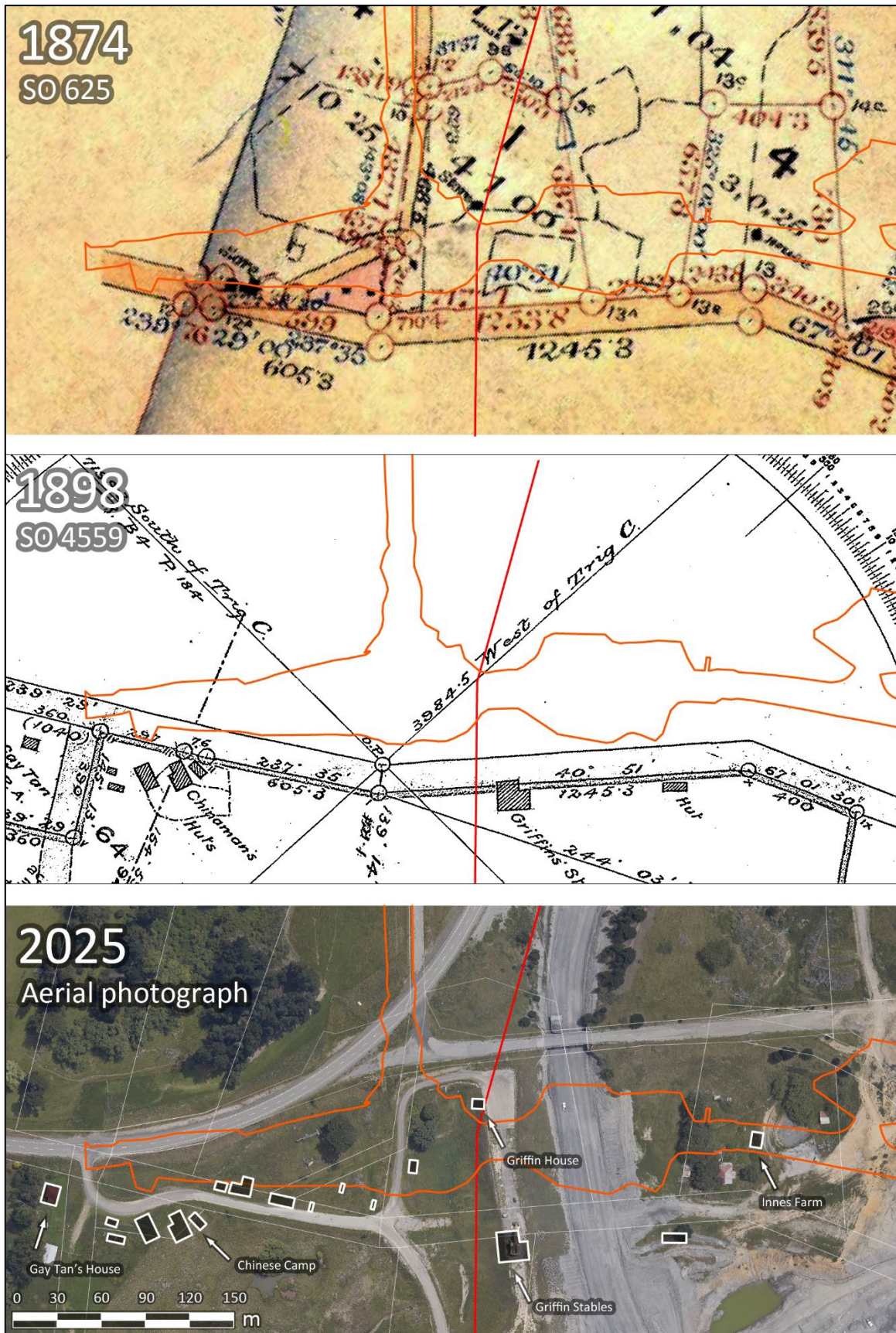


Figure 19. Building locations in the upper township as indicated by historic survey plans.¹³⁰ The project area boundaries are shown (see Figure 14 for full extents).

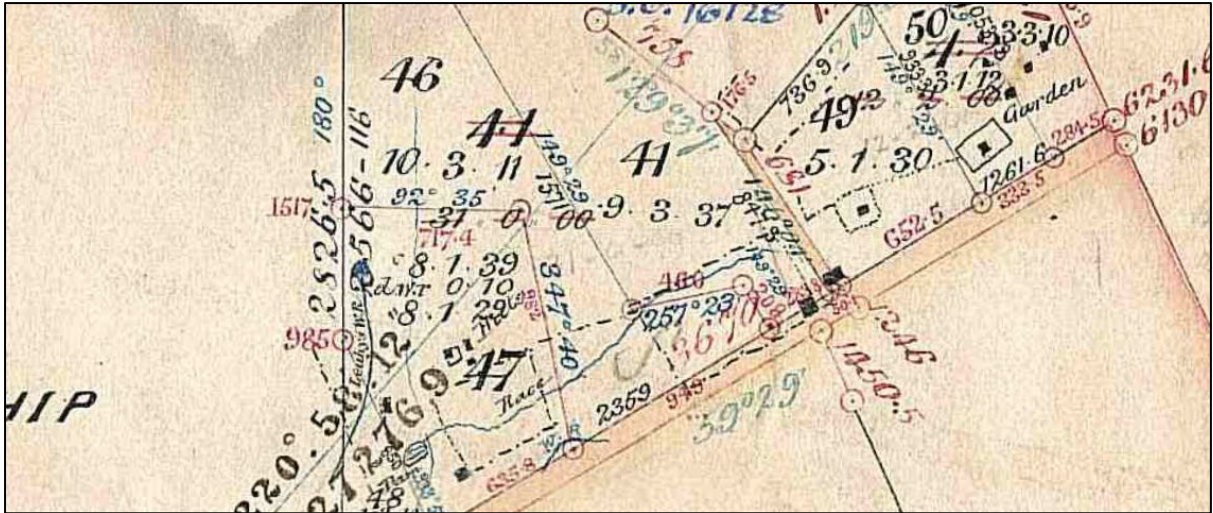


Figure 20. Detail of SO 622 from 1873 showing the 'huts' of a Chinese Camp on Section 47. The proposed noise bund is to be constructed on Section 41 (cf. Figure 17).

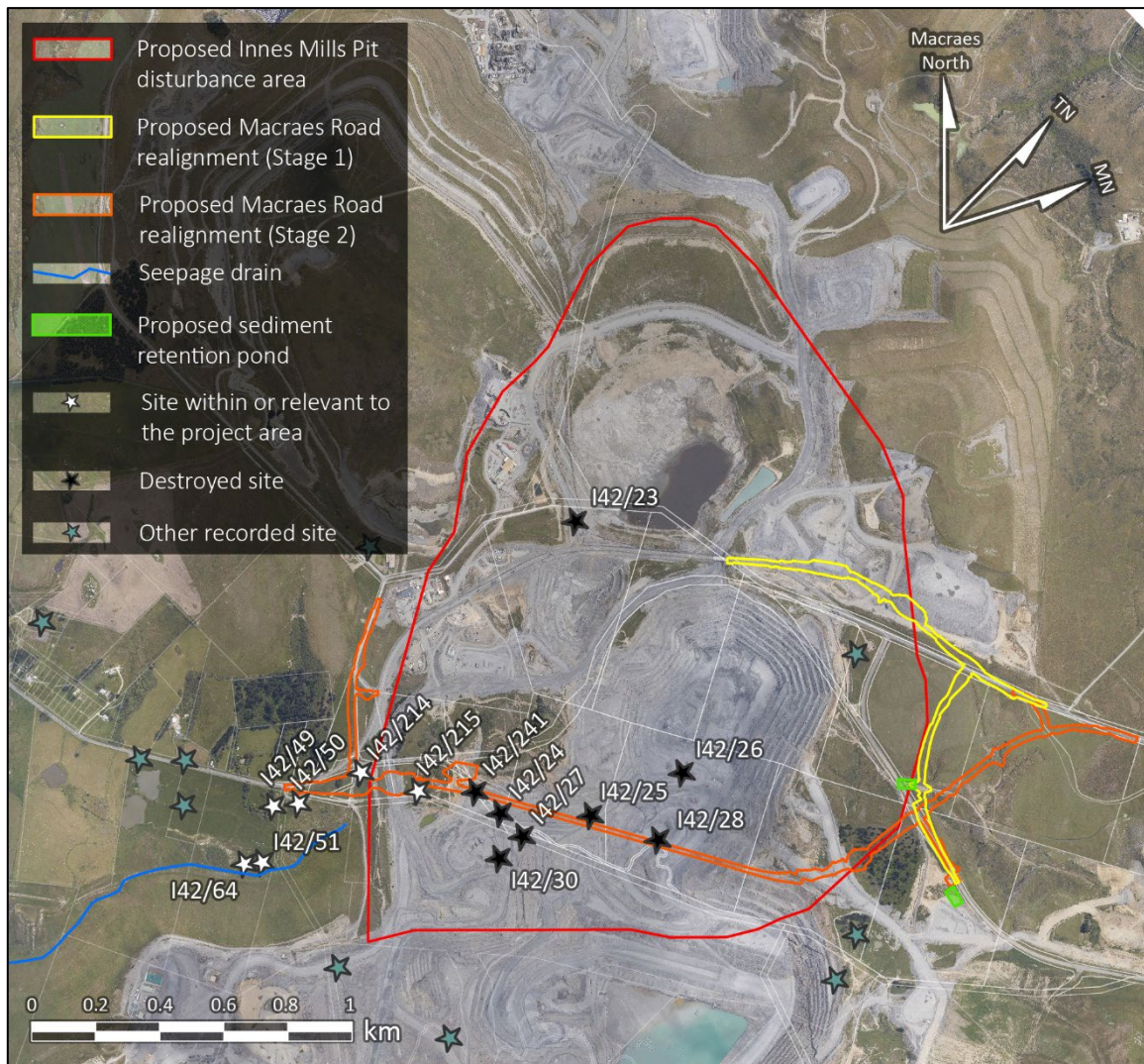


Figure 21. Recorded archaeological sites identified during past surveys (2025 OGNZL aerial photography).

¹³⁰ SO 625 and 4559.

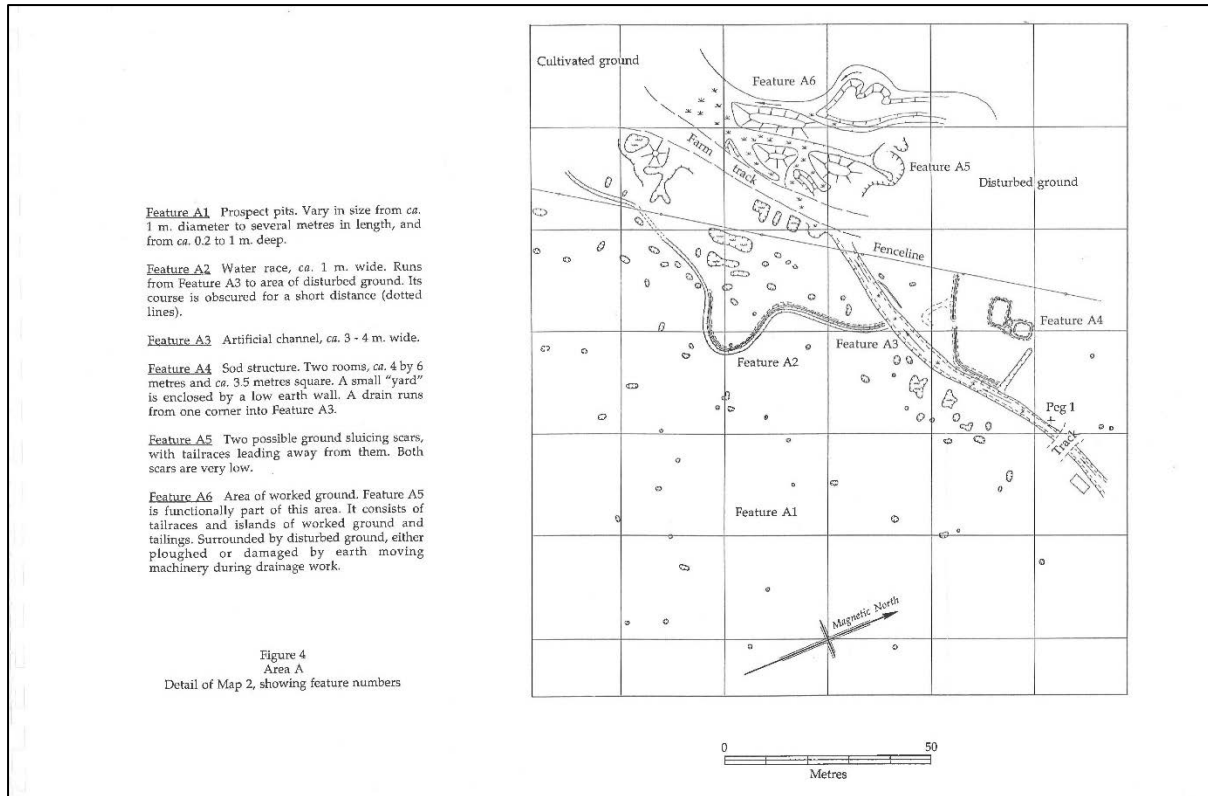


Figure 22. Petchey's survey of I42/51 and I42/64.¹³¹ See Figure 46 for its location within the upper township area.

¹³¹ Petchey, *Dredge Pond Licence PL 31-2633, Macraes Flat*.

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.

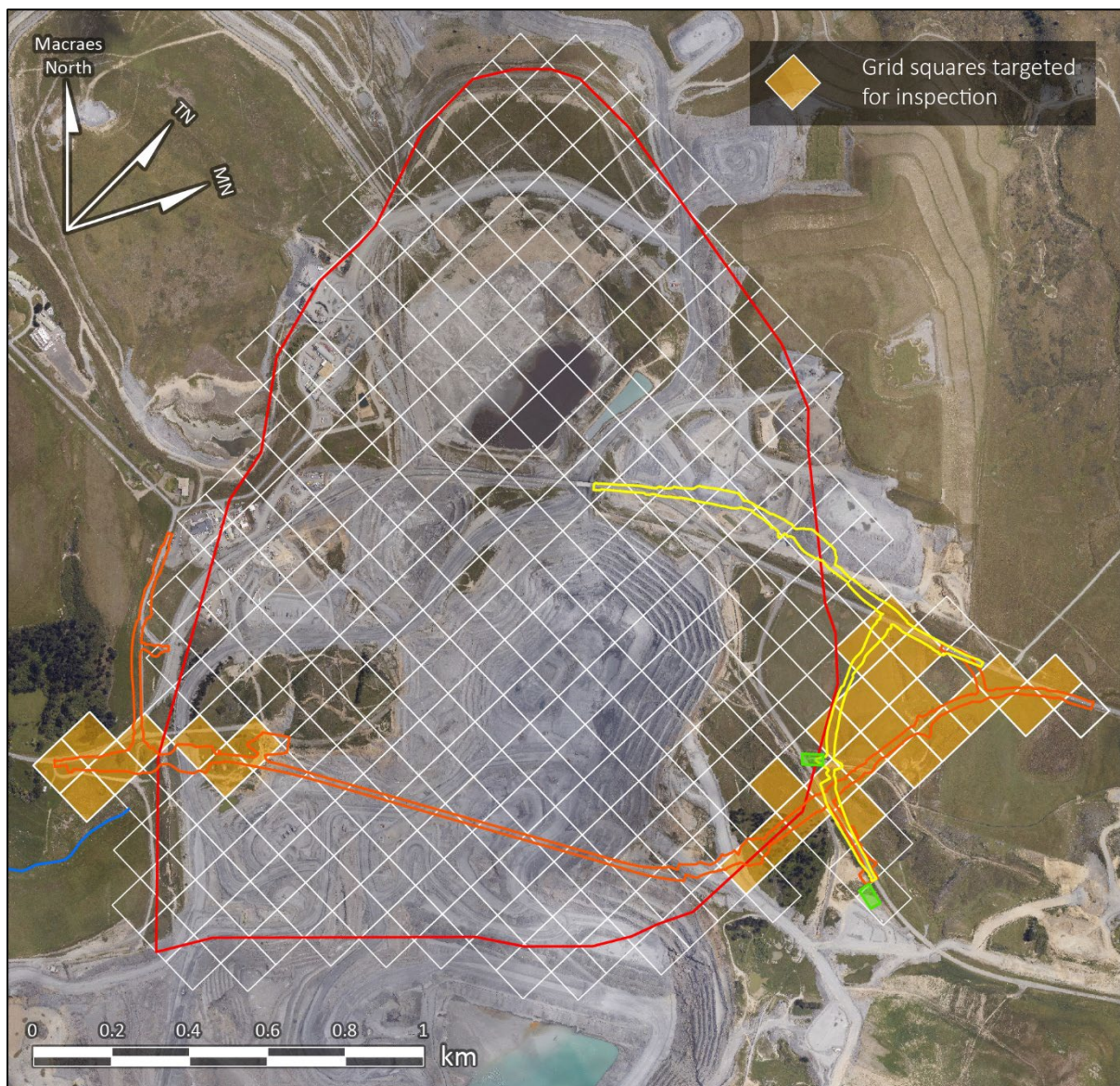


Figure 23. Areas – excluding the French drain, identified for survey based on desktop review. The length of the proposed roads to the east, beyond the pit, were also walked (2025 OGNZL aerial photography).

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 4 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 4. 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

Ref	Building	Details
		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" ¹³² 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.



Figure 25. Innes house, looking west.



Figure 26. Cow shed, looking north-east.

¹³² Petchey, *Innes-Mills Pit Waste Rock Dump Site*.



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).¹³³ 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 46). 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.

¹³³ Benjamin Teele, *Fraser's West Pit Expansion, Macraes Flat: Archaeological Assessment* (Unpublished Report for OceanaGold, 2019).



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

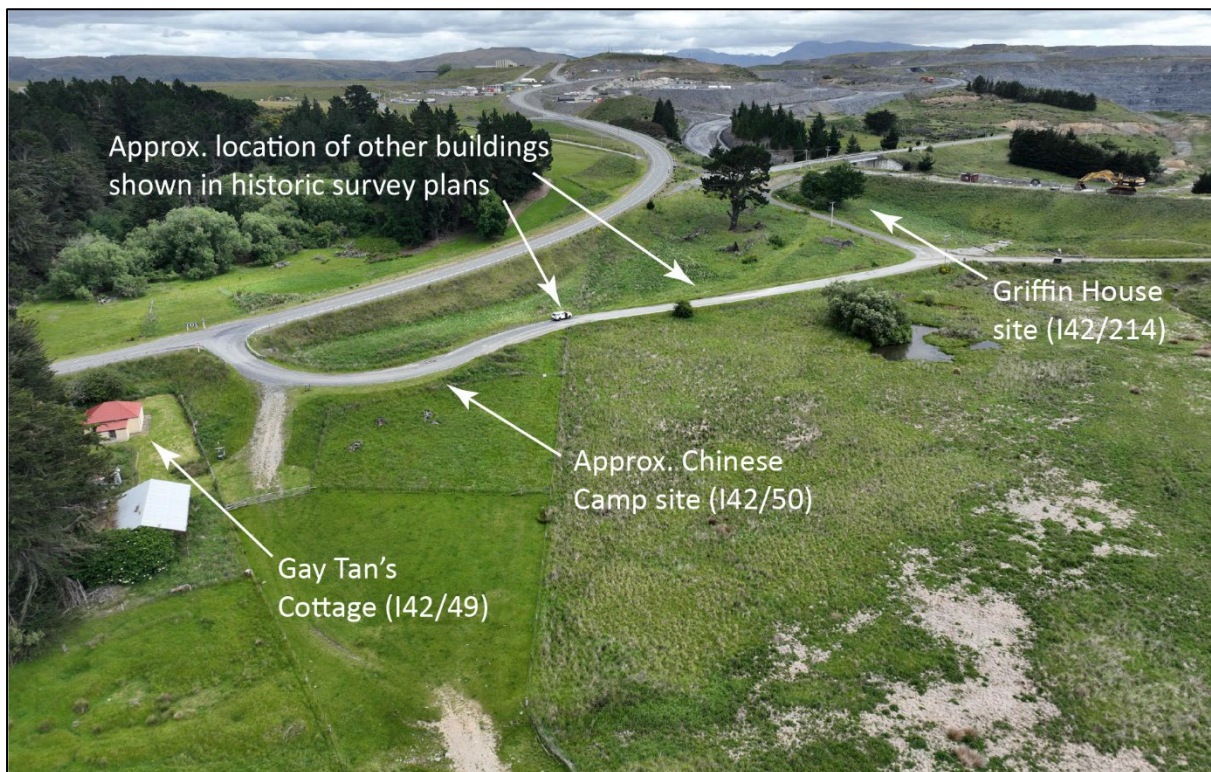


Figure 39. Upper township area, looking north. Site locations are annotated (c.f. Figure 19).

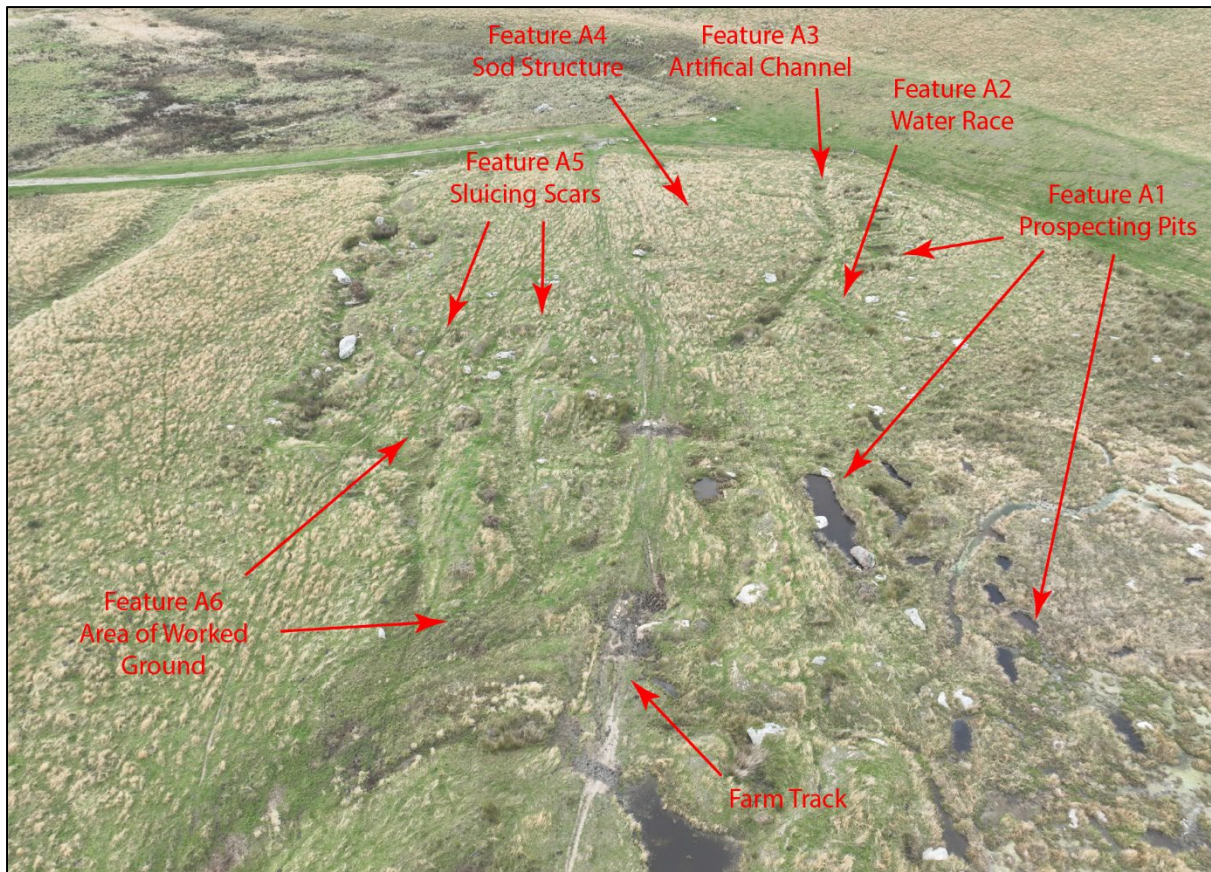


Figure 40. Alluvial workings (I42/64) and sod structure (I42/51), looking north-east (c.f.,Figure 22).



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 5 and shown in Figure 42.

Table 5. 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).

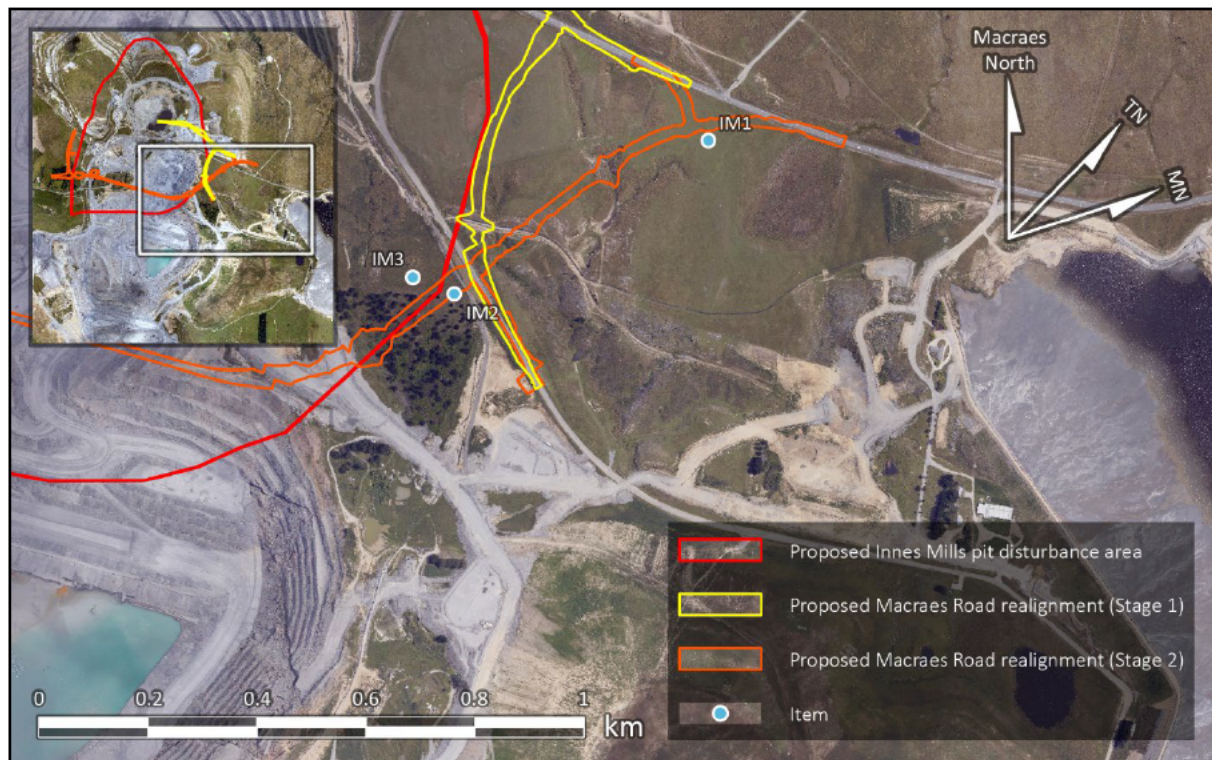


Figure 42. Points of interest along the road realignment routes (2025 OGNZL aerial photography).



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 Heritage Values

The heritage values of the historic heritage items in, and immediately adjacent to, the project area are assessed in the tables below.¹³⁴ Heritage items that will not be affected by works have not been assessed. Other points of interest or potential buried archaeological remains are assessed as having negligible heritage values.

Table 6. Otago RPS heritage values of Innes Farm.

Site	Value	Assessment
Innes Farm (ArchSite I42/215)	Archaeological	Despite their prevalence throughout New Zealand, historic farming sites are relatively understudied. This reasonably intact collection of buildings offers some opportunity to address this gap in the record through archaeological inquiry. Assessment – Low
	Architectural	Negligible
	Cultural	Negligible
	Historic	Negligible
	Scientific	Negligible
	Social	Negligible
	Spiritual	Negligible

¹³⁴ See Section 3.3 for an outline of the assessment method.

Site	Value	Assessment
	Technological	Negligible
	Traditional	Negligible

Table 7. Waitaki District Plan heritage values of Innes Farm.

Site	Value	Assessment
Innes Farm (ArchSite I42/215)	Historical and social	Negligible
	Cultural and spiritual significance to takata whenua	Negligible
	Architectural	Negligible
	Technological	Negligible
	Group	Negligible
	Landmark	Negligible

Table 8. Otago RPS heritage values of Macraes Chinese Camp.

Site	Value	Assessment
Macraes Chinese Camp (ArchSite I42/50; Cov. 7666279.5)	Archaeological	Any buried material remaining at the site provides an opportunity to archaeologically investigate the lives of an ethnic minority in Macraes that is less favourably represented in the documentary record. Assessment – Moderate
	Architectural	Negligible
	Cultural	The Chinese Camp, in association with the neighbouring Gay Tan's Cottage, was a notable island of predominantly Chinese culture within a wider historic landscape dominated by Pākehā. Assessment – Moderate
	Historic	The site is associated with Chinese gold miners, a significant and special aspect of New Zealand's gold mining history. The camp itself was an "essential aspect of Chinese experience of goldfield's life in Otago." ¹³⁵ Assessment – Moderate
	Scientific	Negligible
	Social	Negligible
	Spiritual	Negligible
	Technological	Negligible

¹³⁵ Heritage New Zealand Pouhere Taonga, 'Lawrence Chinese Camp', New Zealand Heritage List Rārangī Kōrero, 2018, <https://www.heritage.org.nz/list-details/7526/Lawrence-Chinese-Camp>.

Site	Value	Assessment
	Traditional	Negligible

Table 9. Waitaki District Plan heritage values of Macraes Chinese Camp.

Site	Value	Assessment
Macraes Chinese Camp (ArchSite I42/50; Cov. 7666279.5)	Historical and social	The site is associated with Chinese gold miners, a significant and special aspect of New Zealand's gold mining history. The camp itself was an "essential aspect of Chinese experience of goldfield's life in Otago." ¹³⁶ Assessment – Moderate
	Cultural and spiritual significance to takata whenua	Negligible
	Architectural	Negligible
	Technological	Negligible
	Group	Negligible
	Landmark	Negligible

Table 10. Otago RPS heritage values of Gay Tan's Cottage (Note: Gay Tan's cottage only sits adjacent to the project area and will not be directly affected by the proposed works – see Table 12 below).

Site	Value	Assessment
Gay Tan's Cottage (ArchSite I42/49; HNZPT List No. 7550; WDP HH 166; Proposed WDP HH274; Cov. 77666279.3) The significance assessment here	Archaeological	Gay Tan's cottage is: ...an extremely good example of a late 19th century mud-brick house. Electric lighting has been installed, but apart from that the house has had almost no modifications to its basic layout and remains intact and authentic. This includes the array of outbuildings associated with the house. The intact and authentic character of the building and site gives it archaeological value as a physical text providing insight into the life and culture of Louis Gay Tan and other Chinese miners in the area. Assessment - Moderate
	Architectural	Negligible

¹³⁶ Heritage New Zealand Pouhere Taonga, 'Lawrence Chinese Camp'.

Site	Value	Assessment
reproduces selected elements of the HNZPT listing is adapted from the HNZPT Listing. ¹³⁷	Cultural	The goldmining era forms a significant background to the Chinese presence in New Zealand, a period and culture represented largely by archaeological remains and artefacts. Gay Tan's cottage is a rare example of an intact Chinese gold miner's residence. It represents the contribution that the Chinese miners made to the local community at Macraes and is the most obvious surviving element of the Chinese population there. The house provides an illustration of the transition from itinerant miners to settlers as part of a wider community. It had an association with Gay Tan's family for around forty years, a significant length of time, particularly in a period characterized by transience and change. Assessment - Moderate
	Historic	Gay Tan's house is of special historic importance. It is the last intact Chinese residence in the Macraes area, and it is one of only a few surviving Chinese buildings throughout Otago. This is despite the fact that Chinese miners made up a substantial proportion of the population during the late nineteenth century. As such it represents an important aspect of goldfields history that is otherwise represented by fragmented archaeological sites rather than intact structures. It is also an extremely rare example of Chinese affluence in the goldfields, as most Chinese were poor and lived in small huts. A house of this size, style and permanence was uncommon amongst European miners, let alone the Chinese. Gay Tan was a man well outside the Chinese norm in Otago, being both relatively wealthy and having married a European wife. Assessment - Moderate
	Scientific	Negligible
	Social	Negligible
	Technological	The house and outbuildings... illustrate some of the main construction techniques used in the Otago goldfields. The house and dairy are of plastered mud brick... while the workshop has a timber frame with corrugated iron cladding. The garage is also of ironclad timber, but also includes flattened kerosene tins. These construction techniques are all common, but Gay Tan's house provides an extremely compact example of them, which add considerably to the other values of the house. Assessment - Low
	Traditional	Negligible

¹³⁷ Heritage New Zealand Pouhere Taonga, 'Gay Tan's Cottage', New Zealand Heritage List Rārangi Kōrero, 2004, <https://www.heritage.org.nz/list-details/7550/Gay%20Tan's%20Cottage>.

Table 11. Waitaki District Plan heritage values of Gay Tans Cottage.

Site	Value	Assessment
Gay Tan's Cottage (ArchSite I42/49; HNZPT List No. 7550; WDP HH 166; Proposed WDP HH274; Cov. 77666279.3) The significance assessment here reproduces selected elements of the HNZPT listing is adapted from the HNZPT Listing.¹³⁸	Historical and social	Gay Tan's house is of special historic importance. It is the last intact Chinese residence in the Macraes area, and it is one of only a few surviving Chinese buildings throughout Otago. This is despite the fact that Chinese miners made up a substantial proportion of the population during the late nineteenth century. As such it represents an important aspect of goldfields history that is otherwise represented by fragmented archaeological sites rather than intact structures. It is also an extremely rare example of Chinese affluence in the goldfields, as most Chinese were poor and lived in small huts. A house of this size, style and permanence was uncommon amongst European miners, let alone the Chinese. Gay Tan was a man well outside the Chinese norm in Otago, being both relatively wealthy and having married a European wife. Assessment - Moderate
	Cultural and spiritual significance to takata whenua.	Negligible
	Architectural	Negligible
	Technological	The house and outbuildings... illustrate some of the main construction techniques used in the Otago goldfields. The house and dairy are of plastered mud brick... while the workshop has a timber frame with corrugated iron cladding. The garage is also of ironclad timber, but also includes flattened kerosene tins. These construction techniques are all common, but Gay Tan's house provides an extremely compact example of them, which add considerably to the other values of the house. Assessment - Low
	Group	Negligible
	Landmark	Gay Tan's Cottage is a reasonably prominent landmark immediately adjacent to the Macraes Road. Assessment - Low

6.5 Alternative Options

The relocation of the Stage 2 road realignment to intersect with the former Macraes road formation (*circa* 1999¹³⁹) 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:

¹³⁸ Heritage New Zealand Pouhere Taonga, 'Gay Tan's Cottage'.

¹³⁹ See SO 24927.

- 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.

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.

6.6 Recommendations

- While no historic heritage 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 (I42/50) 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.
 - Vibration monitoring instrumentation is already installed at the site (a seisomograph was installed as part of monitoring vibration for the Frasers West mining) and the operation of this equipment will continue throughout the MP4 project.
- The Innes Farm and the former upper township area should be subject to archaeological investigations prior to the works associated with the Innes Mills Pit expansion and Stage 2 road construction proceeding. This should be addressed under the auspices of an Archaeological Authority from Heritage New Zealand and an associated archaeological management plan that provides for:
 - The recording of both 19th and 20th century material.
 - The avoidance of sites that will not be affected by the proposed works.

6.7 Effects of the Proposed Works

Following the adoption of alternative options (where relevant), and the above recommendations, the effects of the project component on the heritage items/points of interest identified are presented in Table 12.

The seepage collection drain for the Frasers West Waste Rock Stack 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 historic heritage. 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).

The two stone features (IM1 and IM3) identified adjacent to the proposed Stage 1 Road realignment will not be affected.¹⁴⁰

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 12.

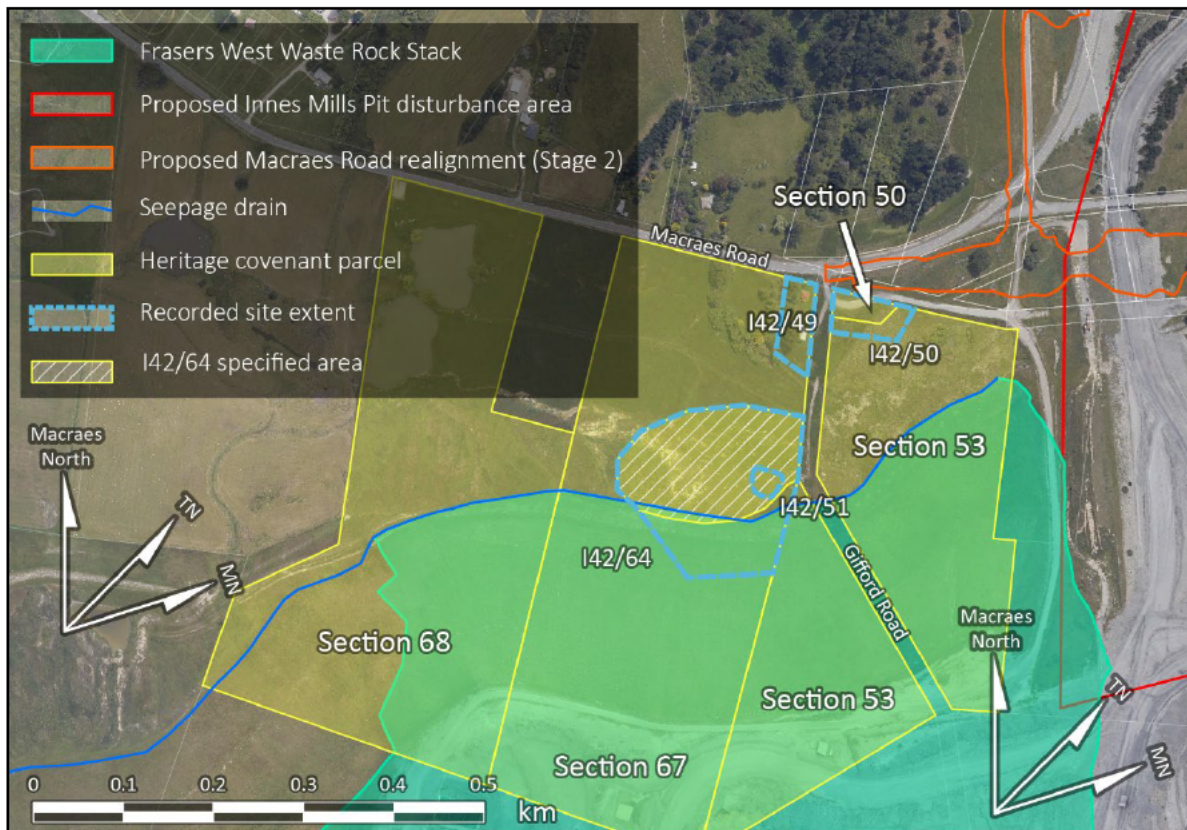


Figure 46. Upper township archaeological sites and heritage covenants (2025 OGNZL aerial photography).¹⁴¹

Table 12. Effects of IM Pit expansion and Macraes Road Realignment.¹⁴²

Item	Heritage Value	Scale of Change	Effect	Comment
Innes Farm	Low	Major	Less than minor adverse	Innes Farm will be destroyed by the pit expansion. However, its relatively low heritage, and the fact that its archaeological value can be realised through further recording, means its removal has only a less than minor effect on historic heritage.
Macraes Chinese Camp	Moderate	Minor	Less than minor adverse	The Stage 2 road construction will avoid the Chinese camp buildings as noted on the historic survey plan, but earthworks will be undertaken in close proximity potentially leading to the destruction of some as yet undiscovered

¹⁴⁰ As buried features they are not susceptible to the effects of vibration.

¹⁴¹ See Section 6.5 below for more information on the heritage covenants.

¹⁴² See Section 3.4 for the assessment rubric.

Item	Heritage Value	Scale of Change	Effect	Comment
				archaeological evidence associated with the site. However, any excavation of archaeological evidence can help realise its archaeological value and the proposed earthworks are not expected to have any meaningful effect on the site's current historical/social/cultural values.
Gay Tan's Cottage	Moderate	Negligible	Less than minor adverse (indirect effect)	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 the cottage, though this will be managed using vibration controls and monitoring to avoid adverse effects. ¹⁴³ While the new road will create a substantial embankment near the building, this is not assessed as affecting any of its identified heritage values and is comparable to the existing road embankment.
Post and Wire Remains (IM2)	Negligible	Major	Less than minor adverse	This will be destroyed by the Stage 2 road construction.
Other potential buried remains in the upper township area (Figure 19)	Negligible	Major	Less than minor adverse	These will be destroyed by the Stage 2 road construction.

¹⁴³ Arne P. Johnson and W. Robert Hannen, 'Vibration Limits for Historic Buildings and Art Collections', *APT Bulletin* 46, nos 2–3 (2015): 66–74; Nick Elith, *MP4 Project Stage 3 Blasting Vibration and Airblast Effects Assessment OGNZL Macraes New Zealand* (Unpublished report for Oceana Gold (New Zealand) Ltd, 2023).

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.¹⁴⁴ The main workings during this initial period were located in the Trimbell’s Gully,¹⁴⁵ 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).¹⁴⁶ 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.¹⁴⁷ 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 1912.¹⁴⁸ 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

¹⁴⁴ *Otago Witness*, “The Highlay Diggings,” 24 May 1862, 5.

¹⁴⁵ *Otago Daily Times*, “The Gold Fields Manual for New Arrivals,” 23 September 1862, 6.

¹⁴⁶ Detailed on SO Plans: SO 4544 (Mountain Den GM Co.), SO 4545 (Eureka GM Co.), SO 4548 (Naseby QM Co.).

¹⁴⁷ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

¹⁴⁸ 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.¹⁴⁹

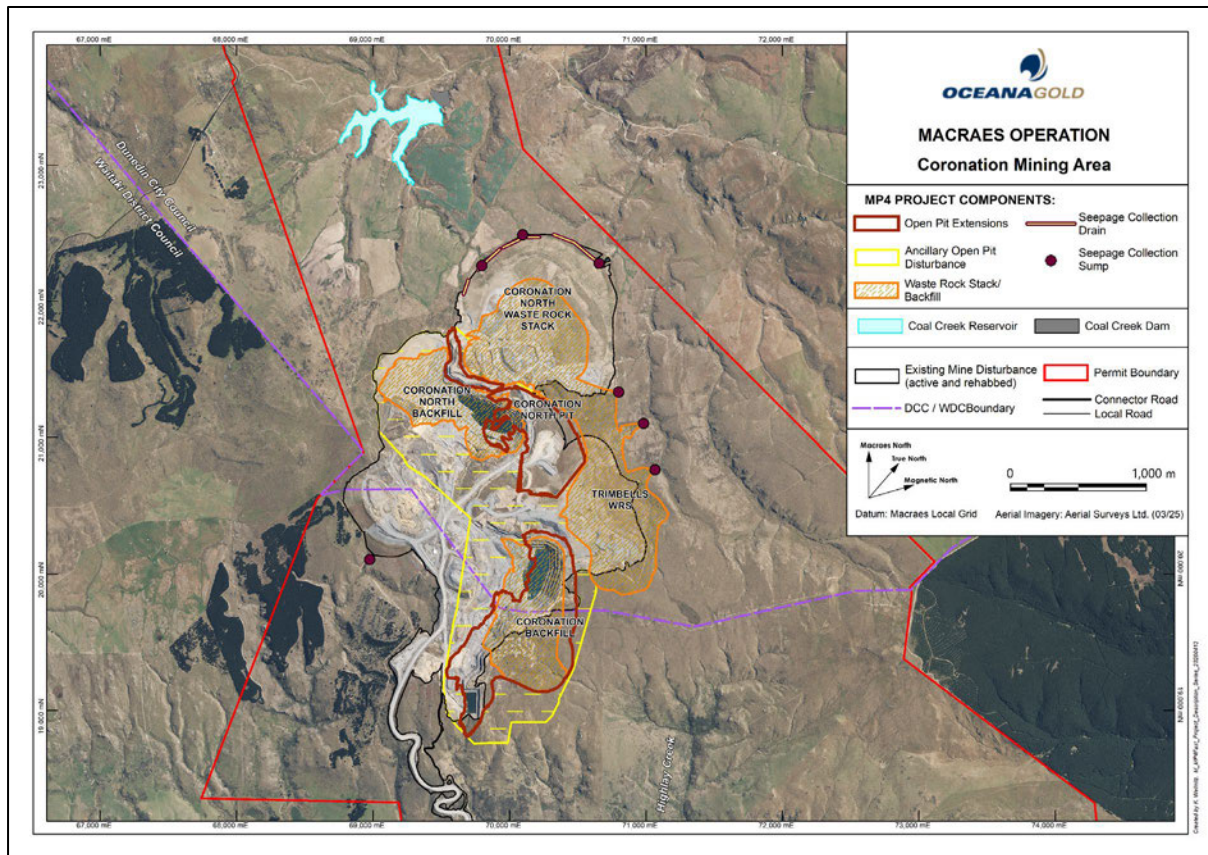


Figure 47. Proposed Coronation and Coronation North Pit expansion.¹⁵⁰

¹⁴⁹ SO 625.

¹⁵⁰ OceanaGold.



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

7.2.2 Previous Historic Heritage Assessment

All previous historic heritage in the area has been identified through archaeological survey. ArchSite records four sites within the project area (Figure 52 and Table 13). Three of these were recorded by Sian Keith and Peter Caldwell in 2011,¹⁵¹ with the remaining site (I42/93) recorded by Petchey in 1998.¹⁵² 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.¹⁵³ 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

¹⁵¹ Keith, *Archaeological Survey – Coronation Mine*.

¹⁵² Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

¹⁵³ Barr and O'Connell, *Archaeological Assessment: Proposed Coronation Mine*.

archaeological sites, but no evidence of Māori activity was found within the current project area.¹⁵⁴ 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.¹⁵⁵

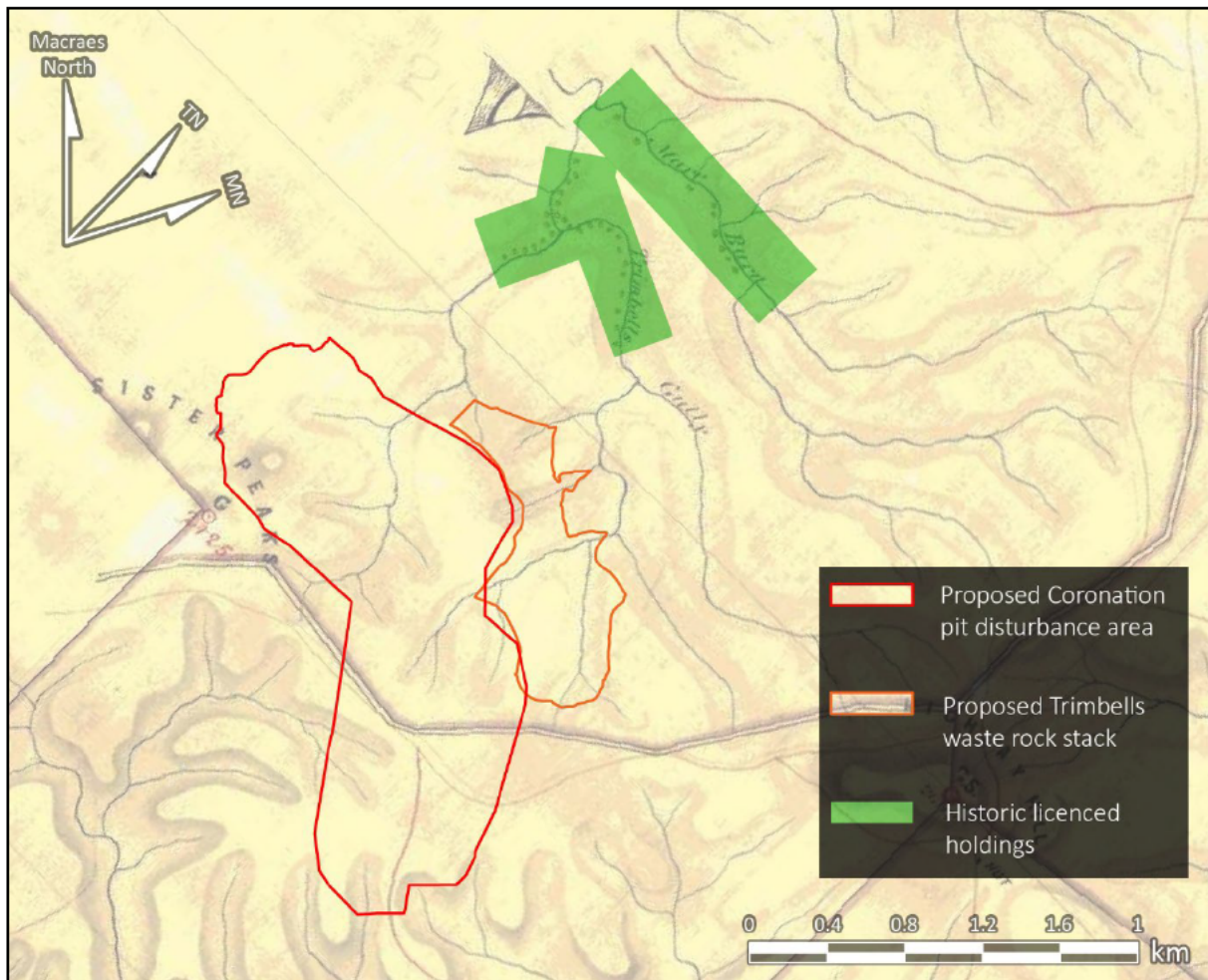


Figure 49. Undated Highlay District topographical map (SO 620) showing project area in relation to workings in Trimbells Gully and Mare Burn (map cropped to area).

Table 13. Details of recorded archaeological sites within or relevant to the project areas.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/93 ¹⁵⁶	Coronation Mine	Mining - gold	Pit, Trench, Adit, Mine	2014/1150	Destroyed
I42/162 ¹⁵⁷	N/A	Mining - gold	Adit, Dam, Mining workings	2014/1150	Destroyed

¹⁵⁴ Allingham, *Coronation Area Archaeological Survey*; Allingham, *The Coronation North Project - OceanaGold: Archaeological Assessment Report on Remains of Maori Origin*.

¹⁵⁵ Teele, *Archaeological Evaluation for Coronation North Survey Area: Report on Possible Iwi Sites Identified by Allingham, 2016*.

¹⁵⁶ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*.

¹⁵⁷ Keith, *Archaeological Survey – Coronation Mine*; Farminer et al., *Coronation Mine, Macraes, Otago: Archaeological Investigation Report*.

Site Number	Site Name	Site Type	Details	Archaeological Authorities	Site Condition
I42/163 ¹⁵⁸	N/A	Mining - gold	Adit, Dam, Prospecting pit/ trench, Reservoir, Sluicings/ sluicing face, Trench	2014/1150	Destroyed
I42/167 ¹⁵⁹	N/A	Mining - gold	Dam, Reservoir	2014/1150	Destroyed

¹⁵⁸ Keith, *Archaeological Survey – Coronation Mine*; Farminer et al., *Coronation Mine, Macraes, Otago: Archaeological Investigation Report*.

¹⁵⁹ Keith, *Archaeological Survey – Coronation Mine*; Farminer et al., *Coronation Mine, Macraes, Otago: Archaeological Investigation Report*.

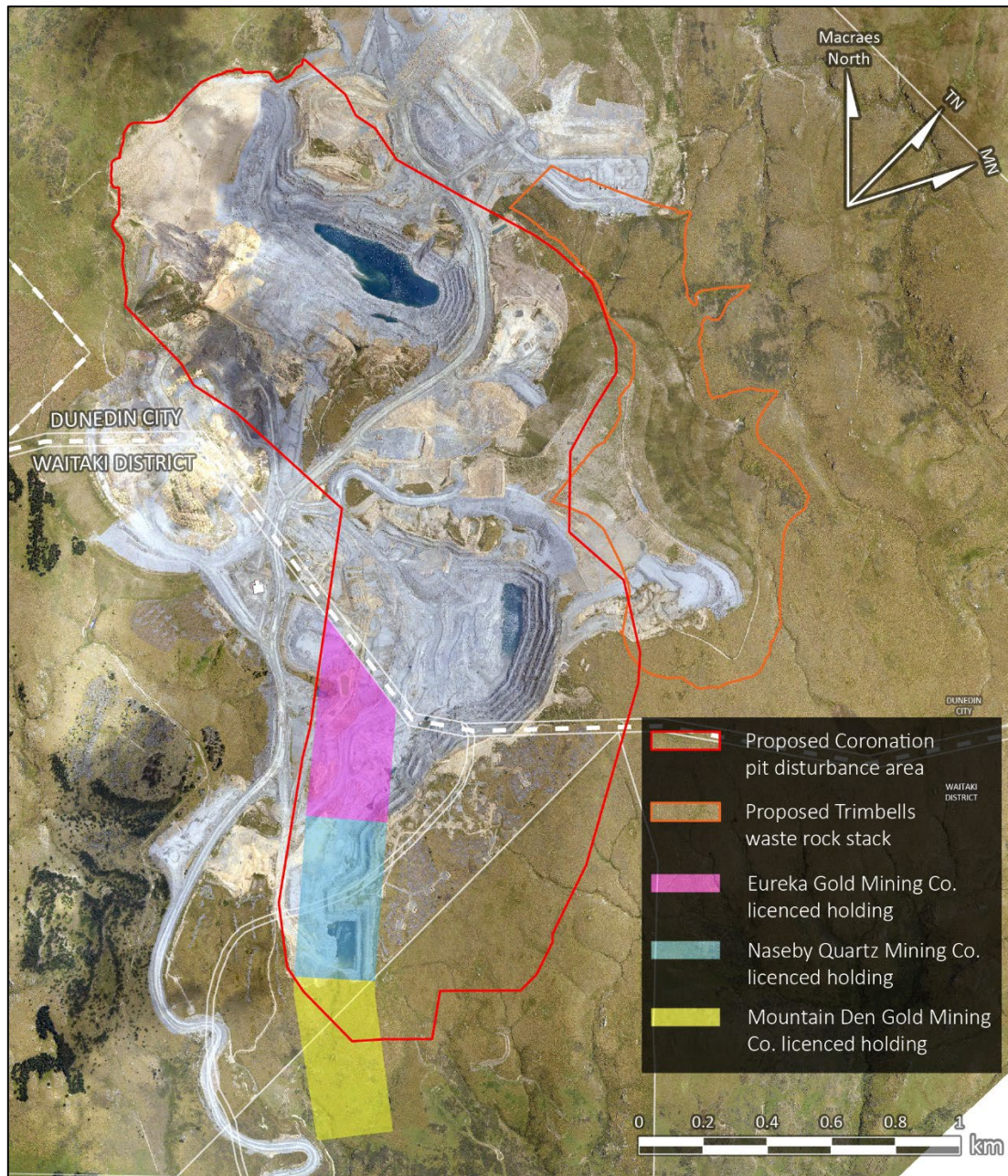


Figure 50. SO 629 Map of Blocks VII and VIII Highlay District (cropped) showing location of project area and 1889 licensed holdings (2025 OGNZL aerial photography).

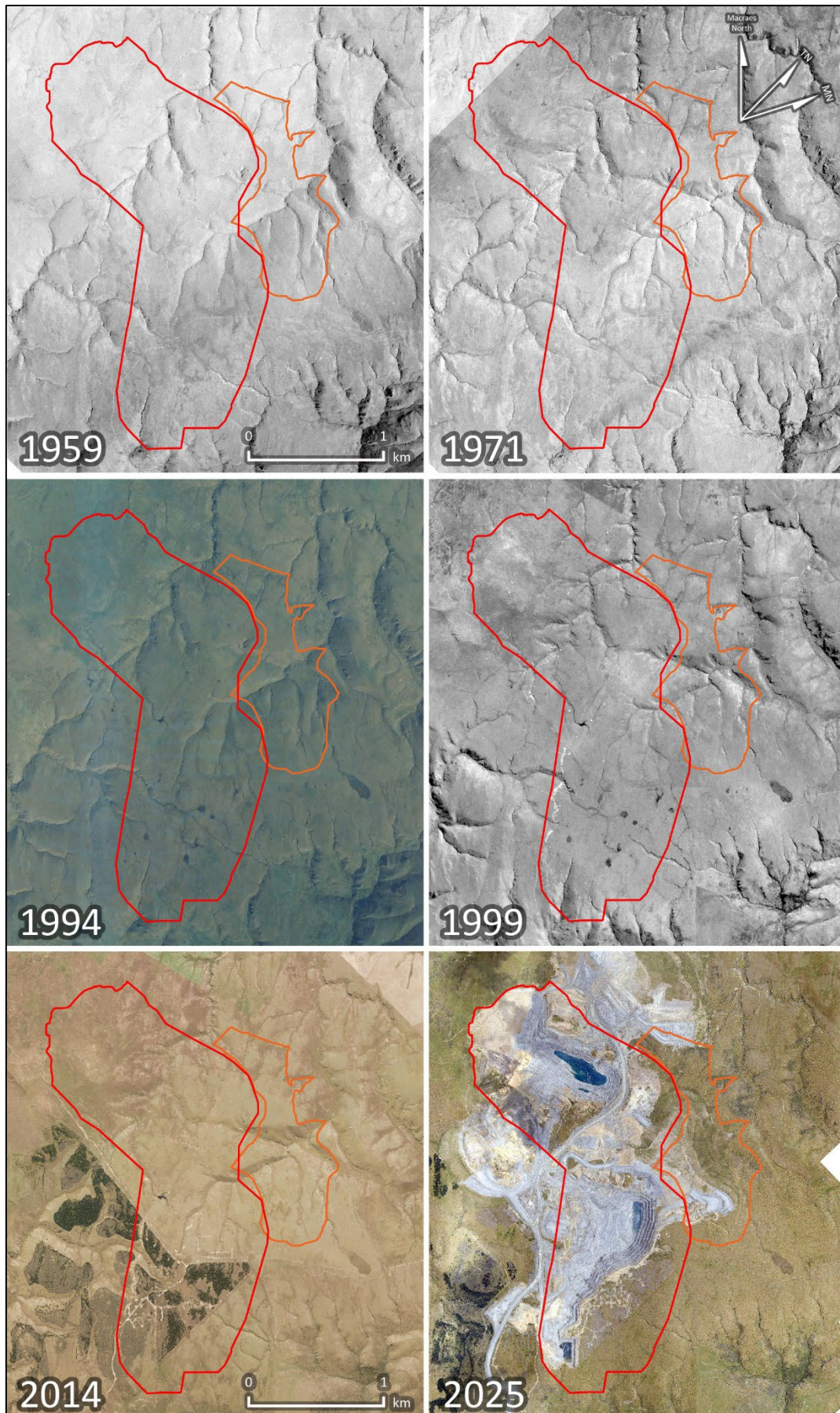


Figure 51. Historic aerial photographs showing the project area over time.¹⁶⁰



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

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

¹⁶⁰ Retrolens, LINZ Data Service.

recorded by past surveys,¹⁶¹ 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 wire) matches the specifications of the Fencing Act 1881.¹⁶² 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.

¹⁶¹ Petchey, *EP 40290 Coronation, Macraes Mining Company: Preliminary Archaeological Survey*; Keith, *Archaeological Survey – Coronation Mine*.

¹⁶² Jeremy Moyle, *Historic Wire Fences - Proposed Refencing Policy* (Unpublished report for Department of Conservation, 2022).

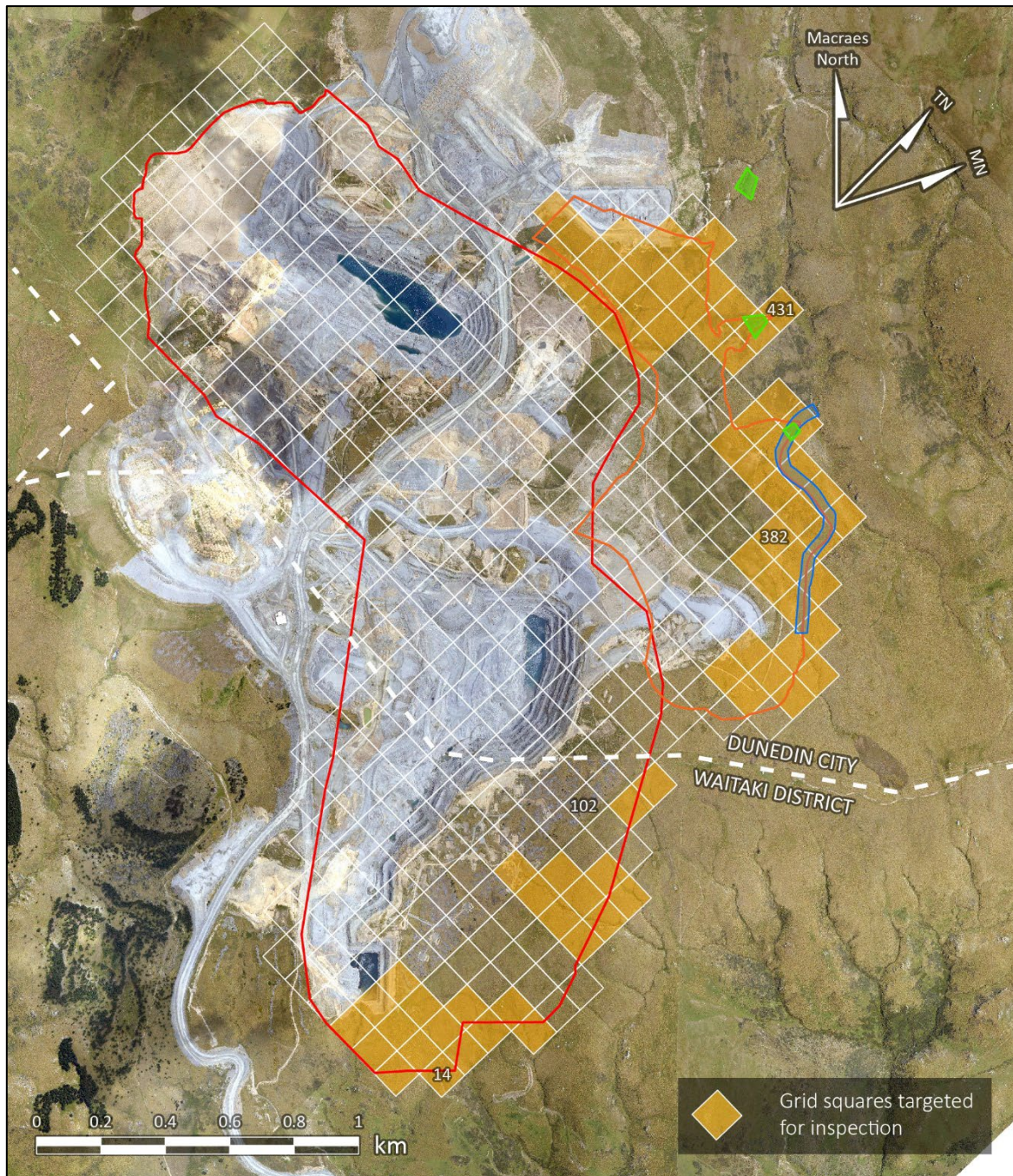


Figure 53. Areas in and around the project area targeted for survey based on historic survey plans and aerial images. The grids related to photographs below are labelled (2025 OGNZL aerial photography).



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



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

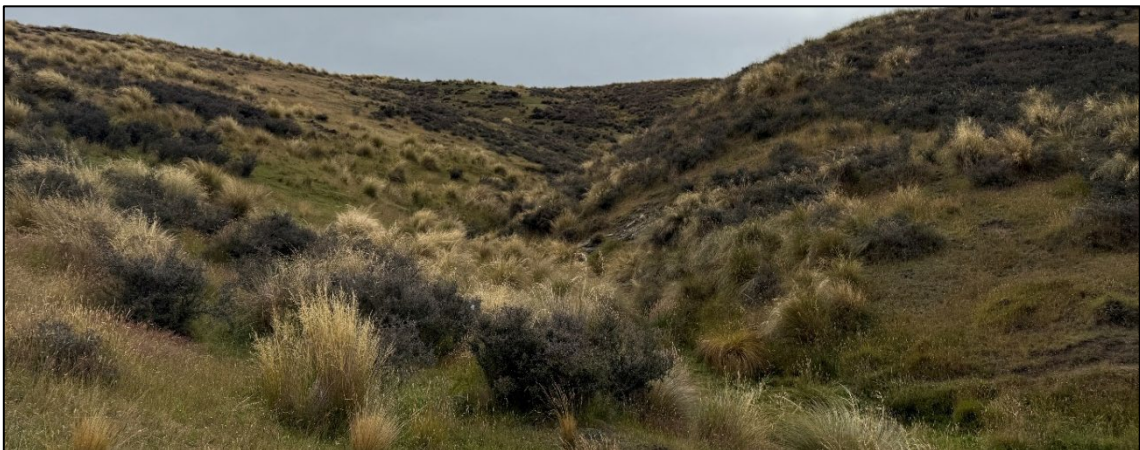


Figure 56. Physical environment in Grid 431, looking south.

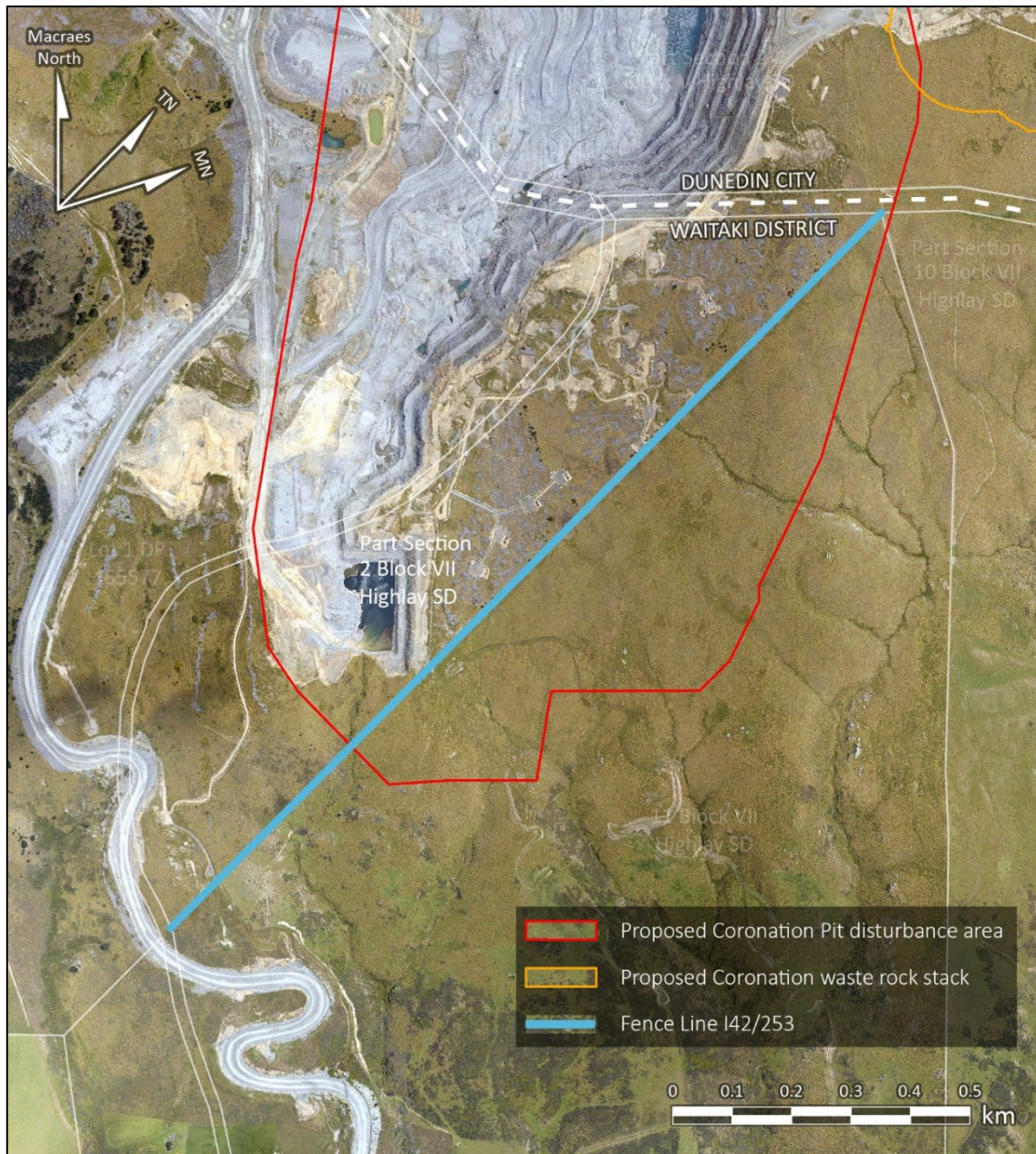


Figure 57. Southern area of Coronation Mining Area pit expansion showing location of Fence Line I42/253 (2025 OGNZL aerial photography).



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

7.4 Heritage Values

The heritage values of the historic heritage item in the project area are assessed in the tables below.¹⁶³

Table 14. Otago RPS heritage values of the fence line.

Site	Value	Assessment
Fence line (ArchSite I42/253)	Archaeological	Negligible
	Architectural	Negligible
	Cultural	Negligible
	Historic	Negligible
	Scientific	Negligible
	Social	Negligible
	Spiritual	Negligible
	Technological	Negligible
	Traditional	Negligible

¹⁶³ See Section 3.3 for an outline of the assessment method.

Table 15. Waitaki District Plan heritage values of the fence line.

Site	Value	Assessment
Fence line (ArchSite I42/253)	Historical and social	Negligible
	Cultural and spiritual significance to takata whenua	Negligible
	Architectural	Negligible
	Technological	Negligible
	Group	Negligible
	Landmark	Negligible

7.5 Alternative Options

The proposed expansion of the waste rock stacks has already been redesigned through the MP4 process to reduce its footprint to minimise as far as possible potential heritage 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 negligible heritage 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 as the relative complexity of managing the historic fence fragment within an active mining area would be disproportionate with the fencelines negligible heritage value. The archaeological recording of the fence is considered suitable mitigation for its loss (see below).

As no other heritage items were observed during works, further alternative options for the project are not considered.

7.6 Recommendations

- The fence line (I42/253) should be recorded prior to its destruction. This should be managed under the auspices of an Archaeological Authority from Heritage New Zealand.

7.7 Effects of the Proposed Works

Following the adoption of alternative options (where relevant), and the above recommendations, the effects of the project component on the heritage item identified are presented in Table 16.

Table 16. Effects of the Coronation Pit expansions and Trimbells Waste Rock Stack.¹⁶⁴

Item	Heritage Value	Scale of Change	Effect	Comment
Fenceline (I42/253)	Negligible	Major	Less than minor adverse	The entirety of fence line will be removed by the expansion of the Coronation Pit. However, a negligible heritage value means its removal has only a less than minor effect on historic heritage.

¹⁶⁴ See Section 3.4 for the assessment rubric.

The proposed works will have no other effects on historic heritage.