CORONATION NORTH MACRAES

Archaeological Assessment
May 2016

Origin CONSULTANTS

Archaeological Assessment for Coronation North

Archaeological Sites: I42/86, I42/97, I42/98, I42/221, I42/222

Commissioned by Oceana Gold (New Zealand) Limited

Prepared by Benjamin Teele

Origin Consultants Ltd

May 2016

View of Coal Creek workings including Tramline, water-race and associated abutments for carrying water across the creek. This is the area of the proposed earthen dam.

Executive Summary

The following archaeological assessment relates to proposals by OceanaGold to extend the existing Coronation Pit, create a new pit to the north (Coronation North Pit), and designate a new area for a rock stack (Coronation North Waste Rock Stack). It has been titled by the company as the Coronation North Project. The assessment site is extensive, covering an area of land situated around Sister Peaks, extending towards the Mareburn catchment in the north. The proposed works are located within the Dunedin City and Waitaki District Council boundaries.

The assessment has identified through archival research, existing ArchSite data, and a site survey that there are extensive archaeological remains in the northern portion of the site area around Trimbells Gully. The earliest known use of the site is from the mid-1860s, when alluvial workings were undertaken in gullies around the Mareburn catchment. The increase in hard-rock mining techniques in the 1880s resulted in a renewed interest in the area, with two battery sites (both outside the assessment area immediately to the north) operated with associated mining features, such as tramways, that extend into the assessment area. The establishment of smaller pastoral runs occurred following the focus by the New Zealand government to break up the early runs, with the Bellfield Homestead settled at the end of the 19th century. Mining works in the Mareburn and Trimbells Gully continued intermittently through the first part of the 20th century before mining works ceased altogether. Recent mining works by OceanaGold have renewed mining activity in the area. Pastoral farming has continued in various forms up until the present day.

The well-preserved and extensive remains of mine workings associated with earlier alluvial and hard-rock mining around Trimbells Gully have high archaeological and heritage values. This archaeological assessment recommends that the requirements of the Heritage New Zealand Pouhere Taonga Act 2014 are followed and that an application for an Archaeological Authority from Heritage New Zealand Pouhere Taonga is made before any site works are undertaken.

Contents

List of Figures

Introduction

This archaeological assessment has been prepared for Oceana Gold New Zealand Limited (OceanaGold) for the proposed expansion of workings titled the Coronation North Project. An archaeological assessment was deemed a requirement as the works will impact a wide area, in which archaeological sites are known to exist. The assessment has been produced to determine the impact of the works and whether an archaeological authority application is required under the Heritage New Zealand Pouhere Taonga Act (2014). The assessment site is centred to the north of the current Coronation Mine pit, approximately 7.5 kilometres northwest from the Macraes Township. The southern boundary runs along the northern slope of Sister Peaks. The northern boundary is located due east of Four Mile Road, immediately to the south of the Mareburn. Matheson Road forms the approximate western border. At the centre of the assessment site is the high point of the Sister Peaks. Highlay Hill is located to the east of the site. The survey area falls within the boundaries of Dunedin City Council. The proposed expansion of the existing Coronation Pit to the south and east is also included in the assessment and is located within the Waitaki District. The legal description of the site is:

- Coronation North Pit – Part Section 2, Block V, Highlay SD
- Coronation North Waste Rock Stack – Part Section 2 Block V, Highlay SD
- Coronation Stage 5 – Part Section 2, Block V, Highlay SD; Lot 1 DP 465577; Part Section 2 Block VII, Highlay SD & Part Section 11 Block VII, Highlay SD.

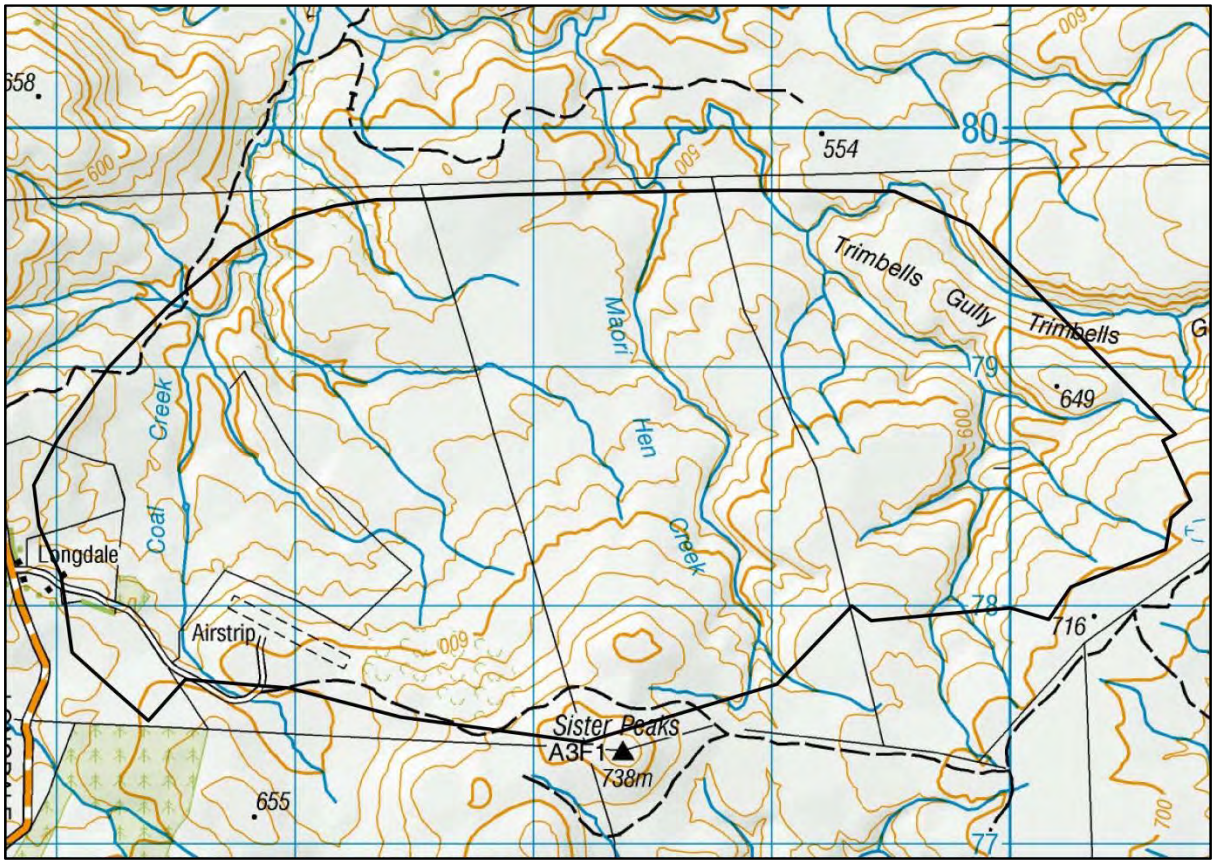


Figure 1. Location of assessment area in relation to Longdale Road and Sister Peaks (Topo50). Note this area does not show the proposed extension to the existing Coronation Pit.

OceanaGold proposes to extend the current Coronation Pit. This extension will occur on the southern and eastern edges of the pit, extending approximately 400m to the south and 300m to the east from the current pit edges. A new pit (Coronation North Pit) will be opened in the

area currently consented for the Waste Rock Stack. The operation of both pits will require the establishment of an extended waste rock stack (Coronation North WRS). The existing haul road will be extended by about two kilometres to reach the Coronation North Pit. Surface water runoff will be managed with diversion drains and silt control dams located in gullies downstream of disturbed areas. This will include the creation of an earthen dam within Coal Creek, and upstream portions of the creek will be subsequently flooded. The project is scheduled to commence in latter half of 2016. The duration of the project is estimated to take five years.

The assessment site contains features that form part of previously recorded archaeological sites. However, their exact location and extent has not previously been recorded on ArchSite due to errors in transcription from old paper records and an absence of modern GPS survey. The sites have accordingly been updated on ArchSite based on the findings of this assessment and survey. These sites include the Upper Mareburn Race (I42/86), a gold battery site (I42/87), and mine workings associated with NZ Gold and Tungsten Mine (I42/97, I42/98). Due to the extended nature of these mine workings, the sites are located both within and immediately to the north of the assessment area.

The purpose of this assessment is to identify any archaeological material that may be affected by the construction of the Coronation North Project. It provides appropriate recommendations for the mitigation and management of any archaeological material encountered. The author of this report is Benjamin Teele, Senior Archaeologist for Origin Consultants, and a member of the NZAA.

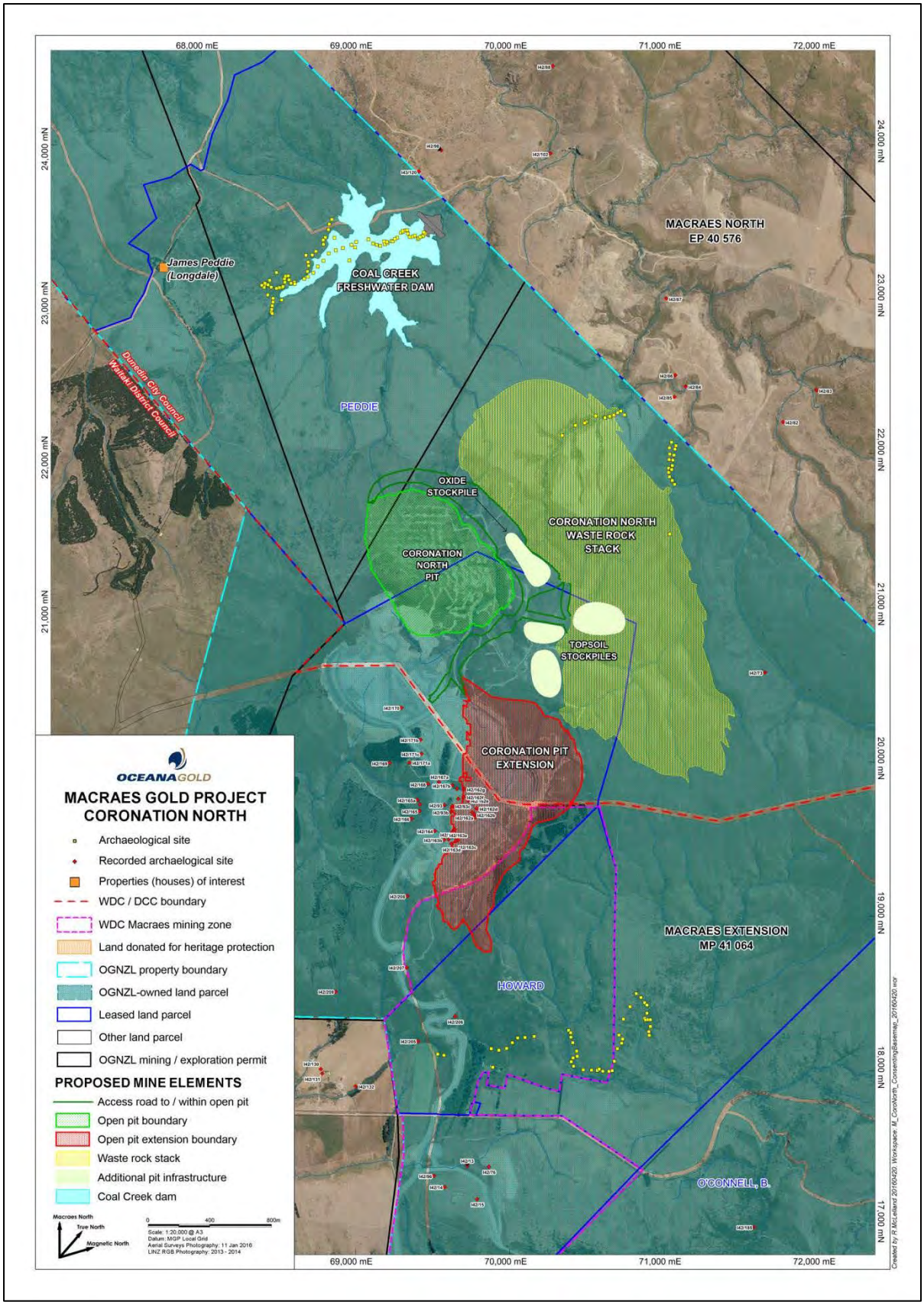


Figure 2. Proposed extensions to Coronation Mine under the Coronation North Project.

Statutory Requirements

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the Heritage New Zealand Pouhere Taonga Act 2014 ('HNZPT Act 2014') and the Resource Management Act 1991 (RMA).

Heritage New Zealand Pouhere Taonga ('HNZPT') administers the HNZPT Act 2014. The Act contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

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

(i) Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(iii) Includes a site for which a declaration is made under section 43(1).

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

The archaeological authority process applies to all sites that fit the HNZPT Act 2014 definition, regardless of whether or not:

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

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

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

HNZPT also maintains the List of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas. The List can include archaeological sites. The purpose of the List is to inform members of the public about such places and to assist with their protection under the RMA.

The RMA requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the 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 6f).

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 wahi tapu;
- surroundings associated with the natural and physical resources (RMA section 2).

These categories are not mutually exclusive and 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 effects is required to address cultural and historic heritage matters (RMA 4th Schedule and the Dunedin City Council District Plan assessment criteria).

Methodology

An archaeological assessment is required to accompany an application for an archaeological authority, as stipulated in the HNZPT Act (2014). The archaeological assessment for this site was carried out using desk-top research methods and included several site visits due to the scale of the area to assess any current standing structures and site features.

The desk-top assessment methodology consulted a wide range of archival sources to try to establish and clarify the historical development and chronology of the site and its heritage values. The assessment used the following types of sources to determine the development and extent of the 19th century development in the area around Sister Peaks and Mount Highlay.

- 19th century surveyors maps and section subdivision maps;
- Land titles and land transfer surveys (LINZ);
- Photographic and documentary archives (Hocken Library, Dunedin City Library Heritage Collections, on-line archive repositories - Archives NZ, DigitalNZ, Hocken Library, National Library of NZ, Museum of New Zealand/Te Papa Tongarewa; PapersPast);
- Mine warden reports;
- NZAA ArchSite;
- Local histories and similar publications.

An archaeological survey was undertaken during visits to the area on the 9th of November, 2015, the 5th and the 14th of January 2016, by Benjamin Teele of JG+A with the assistance of OceanaGold. After accessing various parts of the site by farm track, a survey was undertaken on foot within the assessment boundary. All archaeological features encountered during the survey were photographed and were mapped using a Garmin Oregon 450 handheld GPS. GPS coordinates were taken from the most accessible point of each feature. Several linear features were recorded in a series of GPS coordinates. Note: due to the agreed limits of the survey area these points do not necessarily provide the exact termination points of the linear features, which may extend beyond the survey boundary. These features were then marked on map and aerial imagery specific to areas of archaeological interest (Figure 16, Figure 17). These visits were undertaken to make a visual assessment of the site, which included an appraisal of:

- The approximate age, construction, materials and architectural style of any extant structures on the site; and
- The environs within the site including spatial usage such as recent earthworks, topography, vegetation and any ground-level features of heritage relevance.

The visual assessment was supported by digital photographs that recorded the features of the site. Features outside the assessment area were not recorded. However, where known their presence is noted in this report.

Physical Environment or Setting

The site assessment area is located approximately 7.5 kilometres northwest from the Macraes Township. The southern boundary is defined by the edge of the extended Coronation Pit on the slopes of Sister Peaks. The northern boundary is located due east of Four Mile Road, immediately to the south of the Mareburn. The unformed Matheson Road forms the approximate western border. At the centre of the assessment site is the high point of the Sister Peaks. Highlay Hill is located to the east of the site. The assessment area is relatively remote, with access in part by four-wheel drive farm tracks and on foot. The site's terrain is a mixture of pasture intersected by gullies, particularly in the north. These gullies are part of the larger catchment area of the Mareburn, and at a larger scale the Taieri River. There are isolated rock outcrops in the northern part of the site, and these outcrops appear to be more prominent in the gullies where water action has occurred. On the land above the gullies, the area has been extensively ploughed for pasture. The rockiness and steepness of the gullies has prevented these areas from being ploughed. These areas are and have been accessible to stock, including cattle. Vegetation within the gullies is a mixture of grey shrubland, tussock and exotic weed species. Heading in a southerly direction the terrain slopes upwards towards Sister Peaks, where the current mining operations at Coronation Mine have extensively altered the topography in the area. To the south of the current mine pit, the site slopes back down towards Horse Flat Road, where the terrain flattens out in the valley. The southern slopes are covered in a mixture of exotic and native shrubs, tussock and pasture grasses.

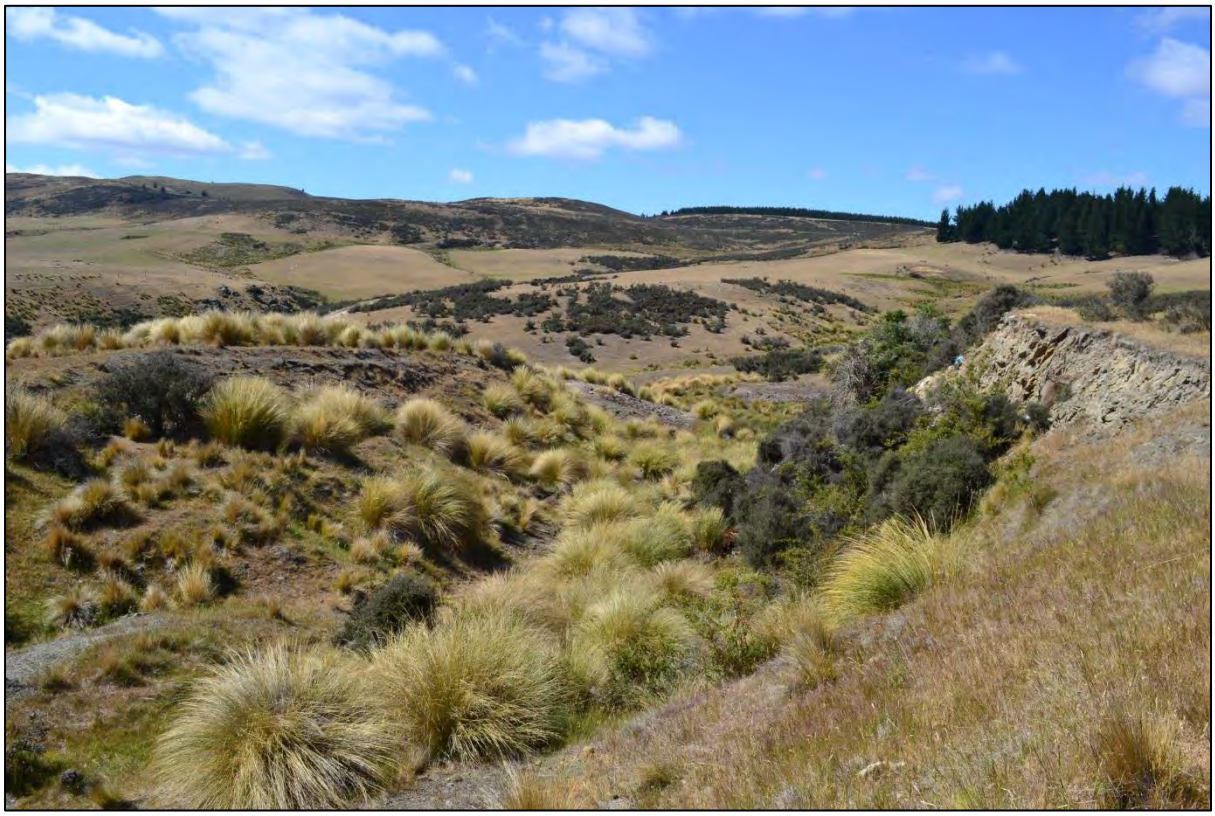


Figure 3. View from northwest edge of site looking south towards Sister Peaks and current Coronation Mine workings. Note tussock and grey shrubland filled gullies with areas above predominantly in grass.

Historical Background to the Assessment Area

Māori Settlement

The earliest human occupation of the South Island and Otago region is considered to be by Polynesian settlers dating from around 1280AD who quickly spread across the region, developing different types of settlement sites dependent on the available local resources and environmental conditions (Wilmshurst, Anderson, Higham, & Worthy, 2008). 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' (Hamel, 2001). Such settlement and exploitation of the abundant resources was not without its impacts however, with much of the forest along the coastal region reduced in extent, 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 subsistence, based on organised food gathering and processing that created settled village communities along the Otago coastline from the mid-18th century onwards (Hamel, 2001).

The plateau country around the Macraes Township appears to have been used consistently, but not intensively, by Māori. This began with early expeditions for resource gathering, particularly moa, and continued into the period of European contact, with adjustments to the resources being targeted. In 2000, Hamel identified around 40 sites within the Strath Taieri and on the Macraes plateau, which included small moa hunter sites, silcrete quarries, ovens, rock shelters and caches, findspots and a possible rock art site. Migration in the spring and early summer up the Taieri River is recorded as a traditional activity by the Otakou people. Eels and birds, particularly weka, were collected, cabbage tree stems were cooked, and tikumu (for weaving) and taramea were harvested. The closest recorded Māori site is 650 metres to the north of the assessment area; it is identified as a rock shelter that contained a green obsidian flake among other artefacts, including Chinese ceramics (I42/87). Traditional activities in the area appear to have focused along the Taieri and the adjacent wetlands, as opposed to the exposed plateau country characteristic of the survey area. However, silcrete was an important resource from the earliest exploration phase, and the area was likely visited regularly to collect this material (Hamel, 2000).

European Settlement

The first significant European presence in the area was the result of the discovery of gold in May, 1862. The gold was discovered in Deepdell Creek by James Crombie and his associates. Following this discovery, word spread, and 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 on Macraes Flat, three kilometres to the south of Deepdell Creek. Gold was the main focus of historic mining activities in the area and was concentrated at Golden Point. Initial mining was alluvial, and used methods of potholing and ground sluicing. These methods appear to have been focused on the numerous small creeks and gullies in the area, and undertaken by individuals and small groups who constructed temporary camps and huts. In 1865 the population of Macraes was reported to be 380.

A topographical sketch of the Highlay District was produced by W. Arthur, the district surveyor, in August 1867. This map shows the main geographical points of the area, including Sister Peaks, Highlay Hill, Horse Flat, and Trimbells Gully (Figure 4). Another topographical map of the Highlay District shows the location of the Macraes Township, along with what appears to be the location of alluvial workings on part of Horse Flat, the upper reaches of Highlay Creek, and around Trimbells Gully and the Mareburn (Figure 5). The date of this survey is uncertain, but it corresponds to an outline of the 1867 topographical sketch, suggesting it was produced at a roughly contemporaneous time.

Figure 4. Topographical sketch of the wider Highlay District, August 1867 (SO 4535) showing geographical points of interest. Note the rectangular outline on the left part of the survey appears to correspond with SO 620 (Figure 5).

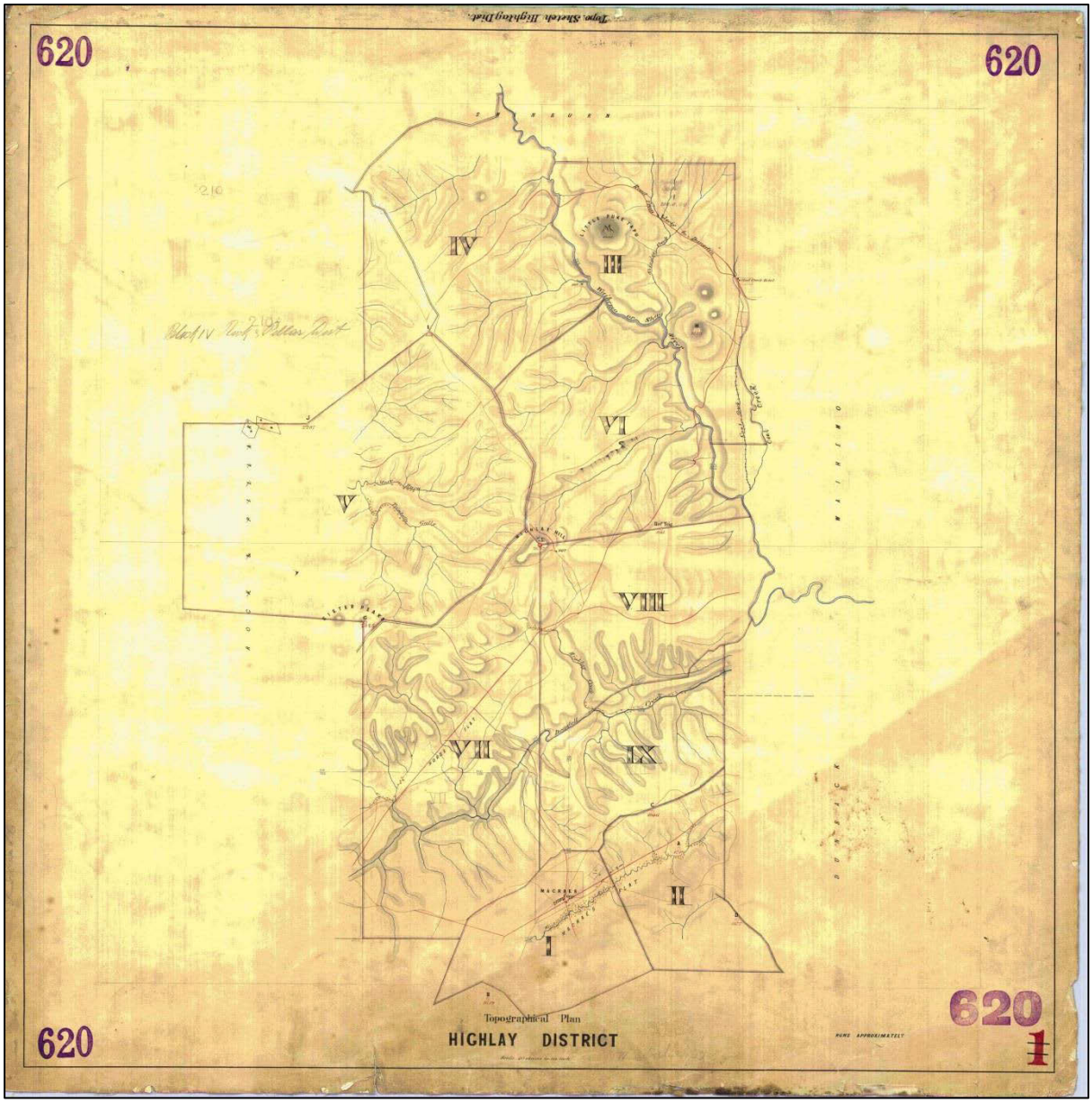


Figure 5. Topographical plan of Highlay District (SO 620). No known date, but likely around 1867, and related to topographical sketch SO 4535.

Figure 6. Goldmining at 4 Mile Creek, Fullarton. The cottage in the picture is likely to be representative of the type constructed by miners in the wider area (Hocken Snapshop).

In addition to mining operations, large parts of the area had been designated as pastoral runs in the 1850s. In 1855, J. M. Saunders applied for Run 109, which extended from the Shag River to just south of what was later called Macraes Flat. This application appears to have lapsed, and was taken over by Charles Hopkinson. Macraes Flat is suggested to have been named after a shepherd working for Hopkinson who lived in the area (Thompson, 1949). The most prominent run in the Macraes area became known as Deepdell, and the homestead was situated to the northwest of the Macraes Township on Horse Flat Road. As a result of minor 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 1874 survey (SO 625) of the area designated the boundaries of these blocks, as well as the auriferous reserves designated for mining operations. The Deepdell run was divided into considerably smaller parcels in 1888 as part of the government's policy of breaking up large pastoral runs.

The first hard-rock mine was established in the area in 1866 and was originally called the "Eclipse", before being renamed as the Duke of Edinburgh (Petchey 1998). Hard-rock mining often involved the use of a small battery for crushing stone, a dam, shafts, and areas of prospecting pits and trenching.

The mining population declined into the 1870s, and by 1872 mining at the Duke of Edinburgh had ceased. 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 centuries, a number of hard-rock mines were established in the Macraes 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 man-power. As a result, these were often operated as companies, with shareholders subscribing to the operation of the mine.

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 prospecting occurred sporadically throughout the century, before more substantial mining operations began in 1990.

Upper Mareburn and Trimbells Gully

The first European use of the land around the Mareburn was as part of a larger pastoral run (No. 109). At the outbreak of the gold rushes, Mr Saxton was in charge of the run that covered the Mount Highlay goldfields (Otago Witness, 1862). The area around the Mareburn and Mount Highlay was the site of early alluvial gold rushes east of Hyde. In mid-1862 it was noted in the regional newspapers that a payable gold field had been discovered in the "vicinity of the Highlay diggings" (Lyttelton Times, 1862). Soon, it was reported that a great number of people were on their way to this new field (Otago Witness, 1862). Before this rush, there was only a scattering of tents spread throughout the gullies in the area. The rush was focused around Mount Highlay, and included the numerous small tributaries that fed the Mareburn (alternatively spelled Mare Burn). One of the main upper branches of the Mareburn includes Trimbells Gully. This gully (also spelled Timbrell's, Trimbrell's) was described as commencing at the foot of the Highlay Hills, and about five miles in length (Otago Daily Times, 1862c). It was described as "very tortuous… the sinking is very shallow, seldom exceeding five feet, through alluvial black soil, clay, and drift…" (Otago Daily Times, 1862a). Mining operations focused on the beds of gullies and on the hill slopes (Wellington Independent, 1862). Towards the end of 1862 a publication was run in the Otago newspapers detailing the various gold fields to provide help for prospective miners. This publication outlined details on how to reach the goldfields, provided a description of the terrain, and what operations were being undertaken. "The Mount Highlay diggings are situated in the valley of the Upper Taieri, and the main workings are at Timbrel's Gully, and at Deep Dell and Filly Burn, tributaries of the Taieri River, but several parties of miners are scattered over the surrounding country in every direction… Water is plentiful; and sluicing is in consequence the favorite[sic] mode of mining" (Otago Daily Times, 1862b).

The next year, another rush was recorded at the Fullarton Diggings (Otago Daily Times, 1863). This gold field was located closer to Hyde, and was likely a continuation of the gold seams running through the area in a roughly northwest direction. In 1863, it is suggested that around 2,000 miners were working in the Mount Highlay area (Wood, 1970). Several of the claims turned out to be "duffers", but some produced well-paying claims. A common concern with workings in this area was the lack of water for effectively working claims (Otago Witness, 1866). The construction of the Mareburn race was therefore undertaken and completed by May, 1866 to provide water to these workings, and those workings along its length. When the Mareburn race was completed, it was noted that 'this place, which has been almost abandoned for the last twelve months on account of the scarcity of water…Many portions of this valley have proved highly auriferous, and nothing but the constant want of water would have caused it to have become deserted' (Otago Witness, 1866). The origin of the race began in the upper tributaries of Trimbells Gully, and was likely used to ground sluice claims, supplementing the more difficult early methods of potholing. Miners working their claims appear to have constructed small mud and stone huts, or adapted rock outcrops into shelters (Hamel, 2001).

Alluvial workings in the area appear to have ceased by the early 1870s as claims which never appear to have been particularly rich were worked out (Hamel, 2001). Small scale hard-rock mining operations were also undertaken in the 1860s on the southern side of the Mareburn (Figure 7). Several claims were staked out, but these operations appear to have been phased out along a similar time frame to the alluvial workings.

In the late 1880s, there was a resurgence of hard-rock mining operations in the area, with several mines opened. In 1887 a party, consisting of Hugh McAuley, James Thomas, Niece McNally, and Nicholas Thomas applied for a licensed holding of 25 acres on the western slopes of Mt Highlay, and it became known as the Mt Highlay Mine. Subsequent hard-rock mines were opened in Coal Creek to the south (New Zealand Gold and Tungsten Mine) and in Maori Hen Creek. The Donaldson brothers, who began operating a battery at Golden Point in 1890, were also involved prospecting Coal Creek in the early 1900s, before the creation of the New Zealand Gold and Tungsten Mine that started work in 1907 (Appendix to the Journals of the House of Representatives, 1907). They targeted both gold and scheelite, and material was conveyed to the battery using a three-rail inclined tramway, a system that was popular at the time. The Warden's Reports on quartz mining in the Macraes area make frequent mention of hard-rock mining operations in the area in the early 20th century. All the mines eventually closed during the first half of the 20th century, with some small resurgence of depression era, small-scale mining operations. Pastoral farming, present from the earliest settlement of the area by Europeans, became the dominant activity until more modern mining operations began in the 1990s.

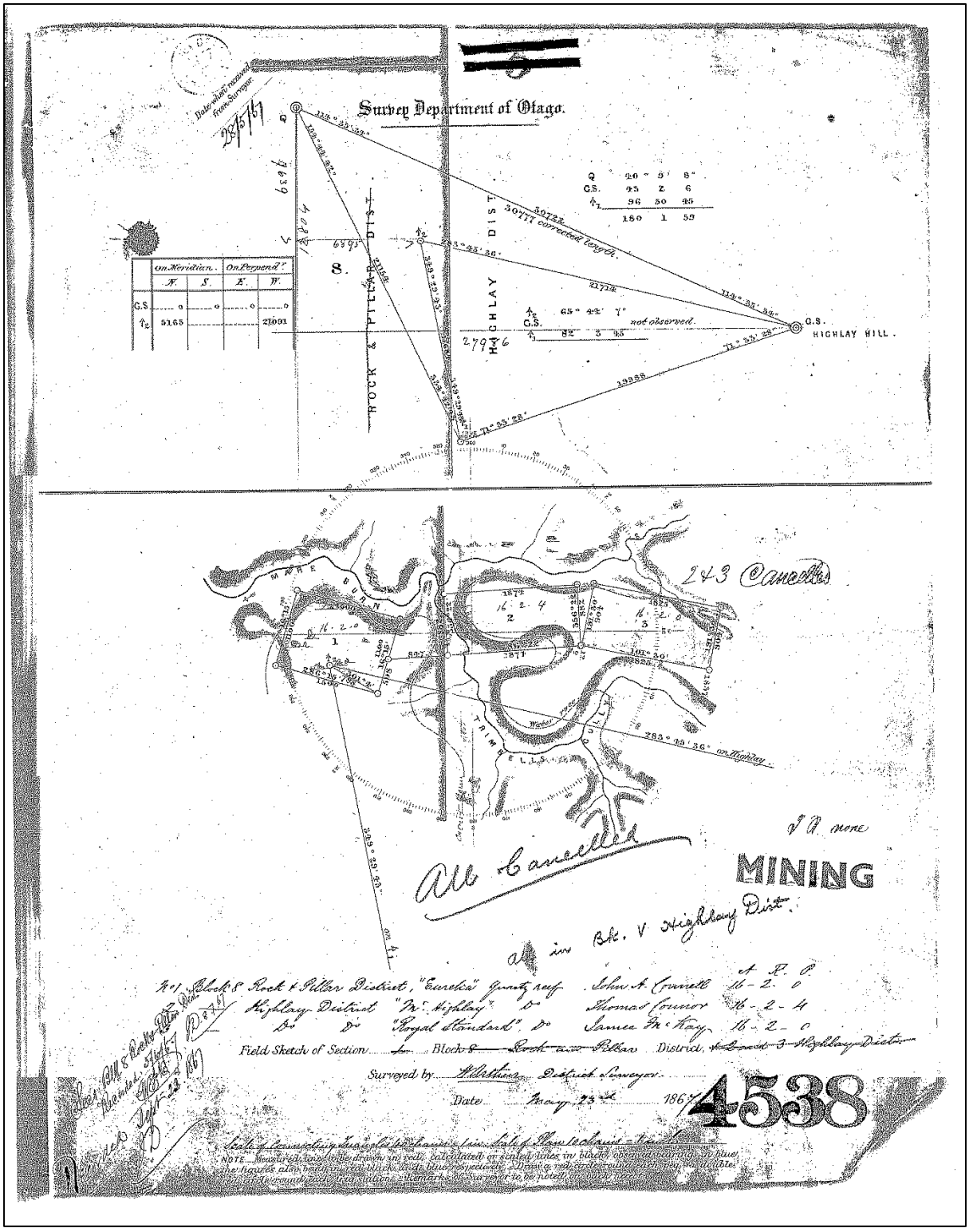


Figure 7. Survey of hard-rock mining claims on the south side of the Mareburn in 1867 (SO 4538). Names included the "Eureka", "Mt Highlay", and "Royal Standard".

Previous Archaeological Work

Allingham (2011) conducted an iwi archaeological assessment in 2011 and noted that the Macraes Flat area was part of a major trail network running north-south and east-west, linking the Waihemo Valley directly with the lower Taieri wetlands bordering Maunga Atua. Two potential rock shelters and a quartzite blade located near the Coronation Mine workings suggest the possibility of further unrecorded archaeological sites and lithic scatters associated with Maori use and occupation of the area. The two potential rock shelters were noted in the large schist outcrops in the upper catchment of Camp Creek around 250 metres west of the quartzite blade find site. The quartzite blade was found on a ridge top in one of the few places in the southern block of the survey area where the actual ground surface was visible. No pre-contact material has been recorded within the current mining area, but Allingham (2013) noted that the open ground surface of the Coronation area consists largely of dense tussock grassland which obscures subtle ground features, making identification of sites difficult.

Early archaeological surveys by Hamel (1991, 1994) identified and recorded a number of mining sites in the Macraes district. This survey was restricted to a specific area, focused around Golden Point Road at Horse Flat. Her report identified that a creek, running to the south west of the study area, contained the remains of old sluicings and it was suggested that this pattern would be common in many of the creeks within the Horse Flat area.

Hamel further suggested that the Horse Flat workings can easily be divided into alluvial workings (generally larger areas of workings, characterised by irregular open pits or faces in the floors of gullies, usually with one low side or a tail race leading out of them); or quartz mining (generally larger operations, but with relatively small pits, much more tidy in shape and with limited drainage - although they may occasionally have a narrow channel cut to drain water from adits). These latter sites are generally located on ridge tops or higher slopes, along definable reefs (Barr, 2011).

Following Hamel's work in the early 1990s, Petchey (1996a, 1996b, 1996c, 1997, 1998, 2003, 2004) undertook several additional surveys of historic mining areas. Of these, the preliminary archaeological survey produced by Petchey in 1998 is the most relevant to the Coronation North project. The result of these extensive but targeted surveys from the 1990s produced a number of newly registered sites. Their focus was predominantly centred on the area now operating as the Coronation Mine, and along Horse Flat, but also included a survey of the mining operations in Coal Creek.

In 2000, Hamel conducted an extensive survey east of the Taieri area, which included the Mareburn catchment, as well as Trimbells Gully and Maori Hen Creek (Hamel, 2000). In her report of her findings, she identified early pastoral sites, hard-rock mining, and alluvial sites, as well as roads and bridges. She identified several new alluvial and hard-rock mining sites around the northern part of the survey area, and which are now recorded on the archaeological site record scheme.

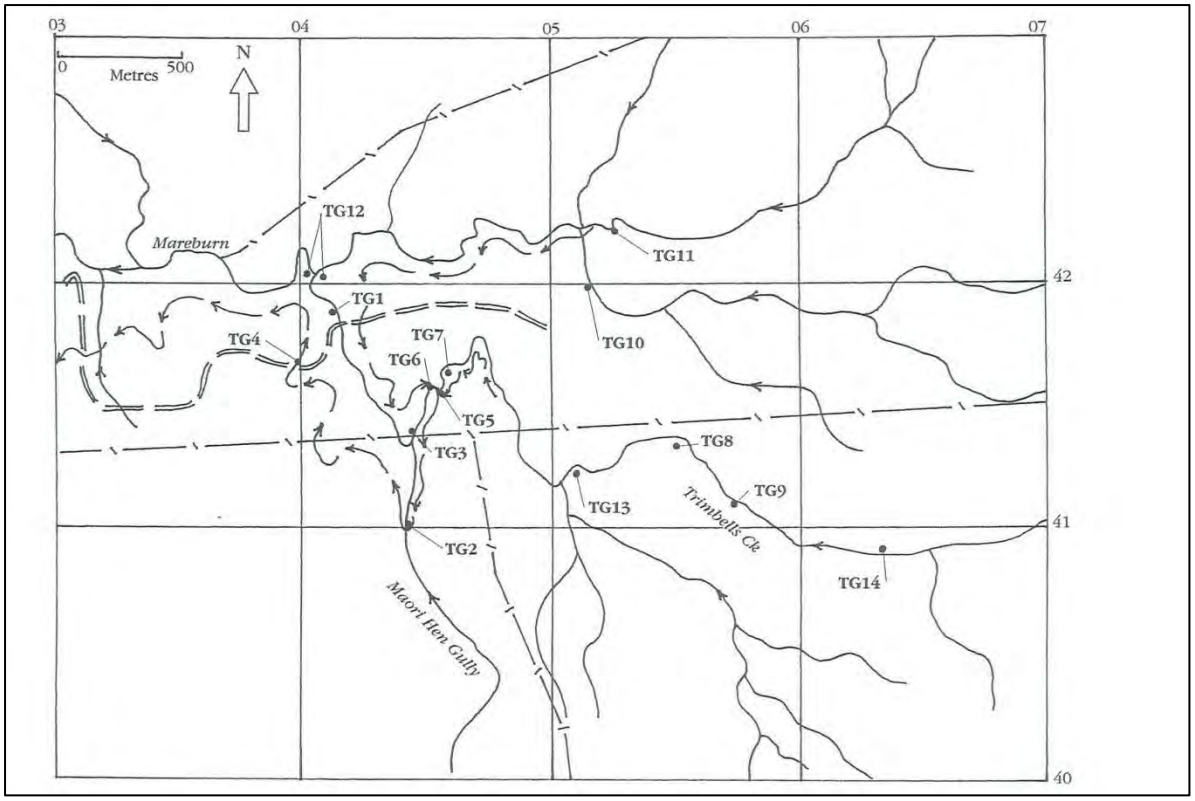


Figure 8. Recording of alluvial features by Hamel in 2000 around Trimbells Gully and Maori Hen Creek (Note Hamel has reversed the designation of creek and gully). See Hamel's East of the Taieri River report for more information.

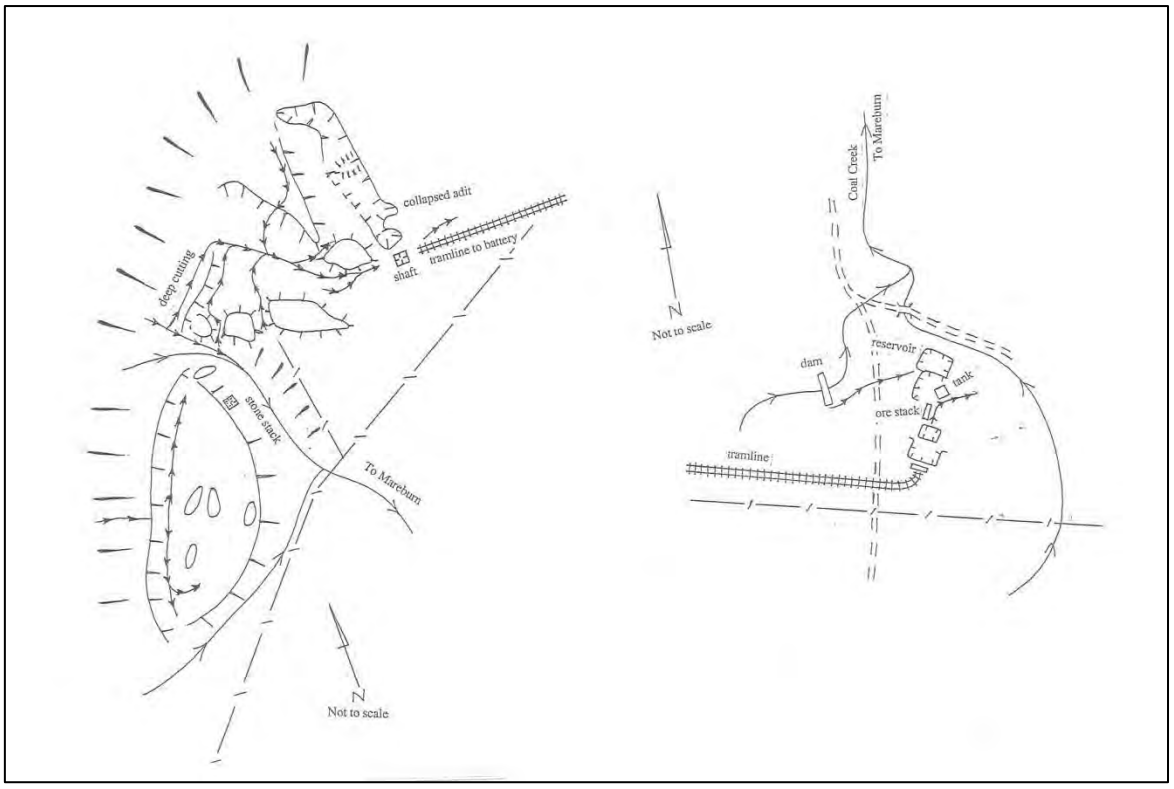


Figure 9. Sketch plan by Hamel in 2000 of the features that form part of the NZ Gold and Tungsten mine. Note that this sketch does not include features associated with the mine found in the upper part of Coal Creek.

Further survey work was undertaken by Opus International Consultants in 2010 focused on Camp Creek and the extensions of the Frasers Waste Rock Stack (Barr, 2010). The area to the north of Coronation Mine has not been the subject of any intensive archaeological focus, although several sites were registered by Hamel in the early 2000s as part of a wider survey of the area.

Barr (2011) compiled a report focused on the Macraes mining area and the recent mining operations. This was followed by an archaeological survey undertaken by Opus (Keith, 2012) that was commissioned by OceanaGold, and was based on a 150ha block on the northern corner of Deepdell Station. This survey encompassed additional historic mine workings associated with the Coronation Mine and identified a further 11 archaeological sites within the survey area. The original site record for Coronation Mine, as identified by Petchey, was subsequently updated. Barr and O'Connell (2013) further updated the site record forms after an additional survey in 2013. No further archaeological features were identified during this survey.

Within the immediate area of Coronation Mine, features recorded by Opus archaeologists included adits, reservoirs, small dams and possible water races. These are all common elements of small gold mining operations that were undertaken during the early rushes (Barr & O'Connell, 2013) and the majority of the identified archaeological features have been located in the sides and bottoms of gullies. However, further archaeological examination of these possible features identified that only the archaeological sites within the Coronation Mine area were prospecting adits, and that other features had been misidentified (Farminer, Miller, & Teele, 2015).

Four authorities to modify archaeological sites (I42/93 – Coronation Mine) have been issued by the Historic Places Trust (HNZPT's predecessor) since 1999 (HPT Authorities 1998/124; 2003/210; 2006/01; 2014/395). The first three authorities were issued for the purposes of gold exploration activities, with each later authority replacing those that had expired, and the 2014/395 authority related to the mining of the Coronation area.

During the survey of the site two new sites were recorded and added to ArchSite. I42/221 refers to the *circa* 1860s alluvial workings in Coal Creek. These are characterised by distinctive tailing humps created through 'paddocking' techniques. I42/222 is the possible site of a miners dwelling and is marked by rectangular earthworks and an upright stone slab. This slab may be a boundary marker, or mark the site of an earlier house. Alternatively it may be the site of a grave as suggested by Brian Allingham during his 2016 survey of the area.

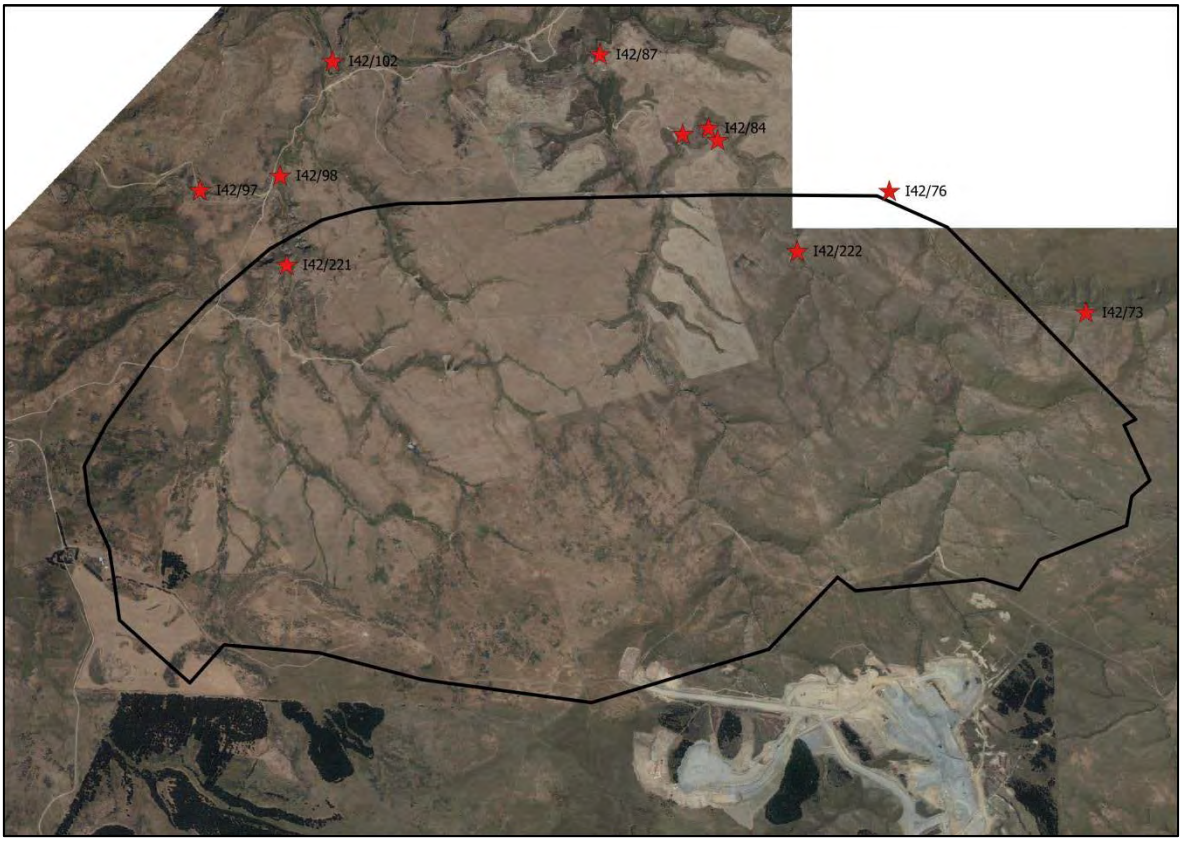


Figure 10. Archaeological sites on ArchSite within and around the survey area.

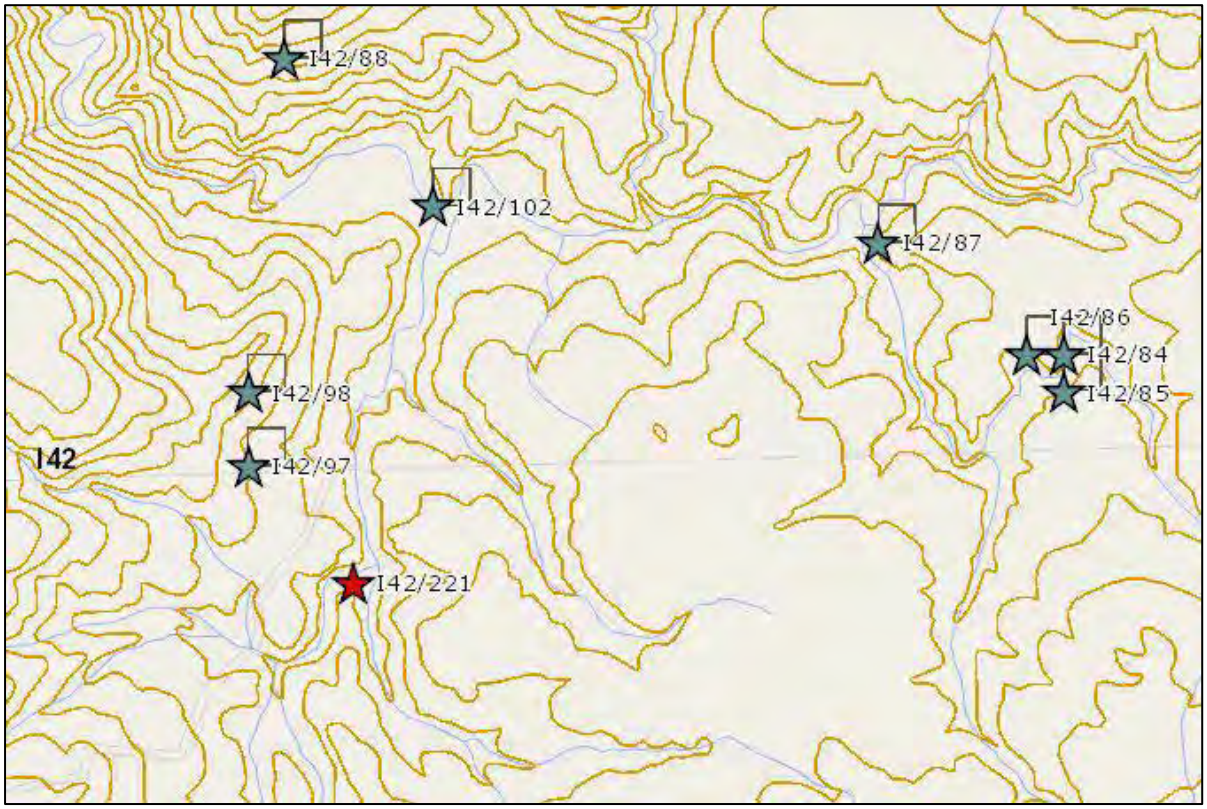


Figure 11 Map showing location of sites within the area of Coal Creek and Trimbells Gully. Note that the exact location of sites is not necessarily denoted by the location of a star (ArchSite 2016).

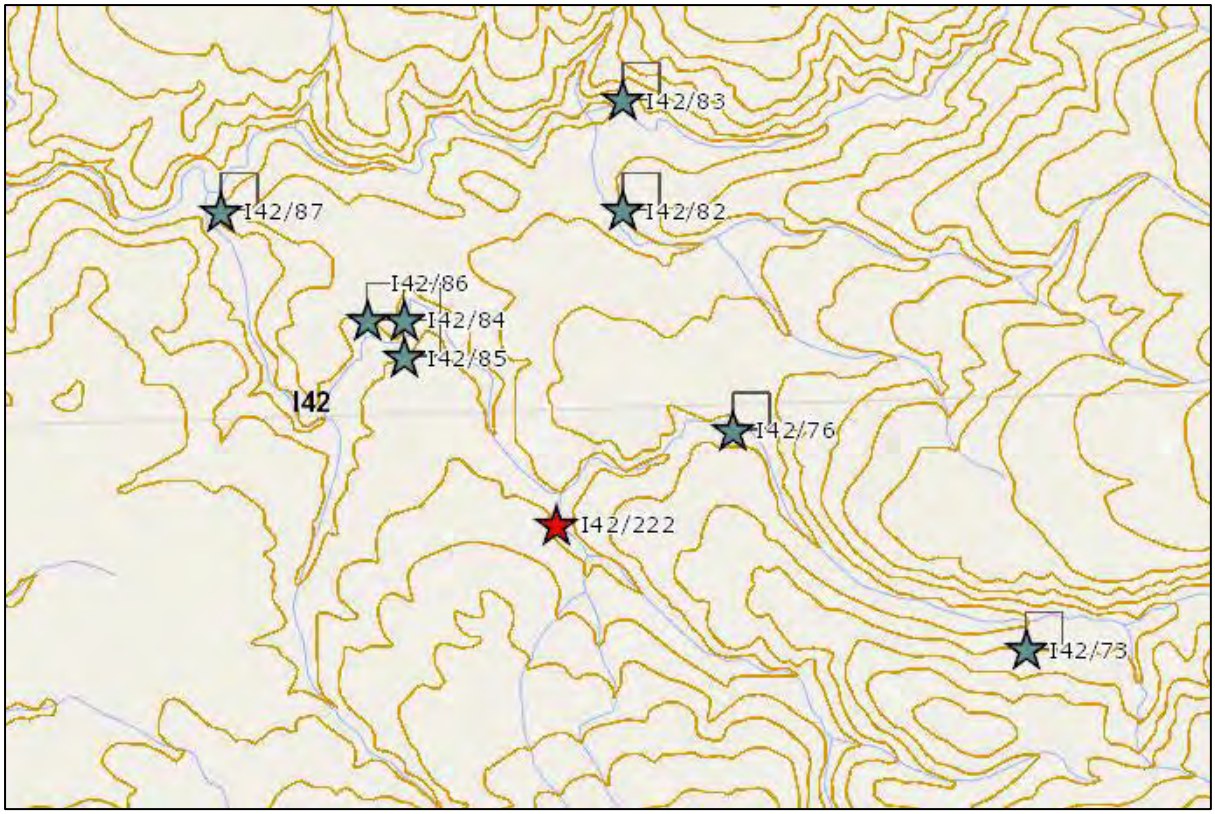


Figure 12. Map showing location of sites within the area of Maori Hen Creek and the upper tributaries of Trimbells Gully. Note that the exact location of sites is not necessarily denoted by the location of a star (ArchSite 2016).

Constraints and Limitations

The key constraints and limitations on the archaeological assessment for the Coronation North Project are considered to be as follows:

- This assessment is based upon desk-based research and a visual survey of the site – no intrusive or investigatory work into the site or its environs has been undertaken to confirm the results of the assessment.
- The area under assessment is extensive, and consists of variable terrain characterised by the sloping sides of Sisters Peak intercut by numerous named and unnamed gullies. Some of these gullies are steep and relatively inaccessible. Additionally, significant patches are covered by a mixture of native and exotic scrub. These factors make a systematic survey of the area very difficult, and any small, discrete features are only likely to be recorded if accidently discovered.
- There are no known photographs taken of the northern part of the site survey area in the 19th century. The small scale alluvial mining ventures undertaken in the Highlay and Horse Flat area appear to have been undocumented. Larger hard-rock quartz mining undertakings were photographed to some extent, but these mines lie outside the assessment area.

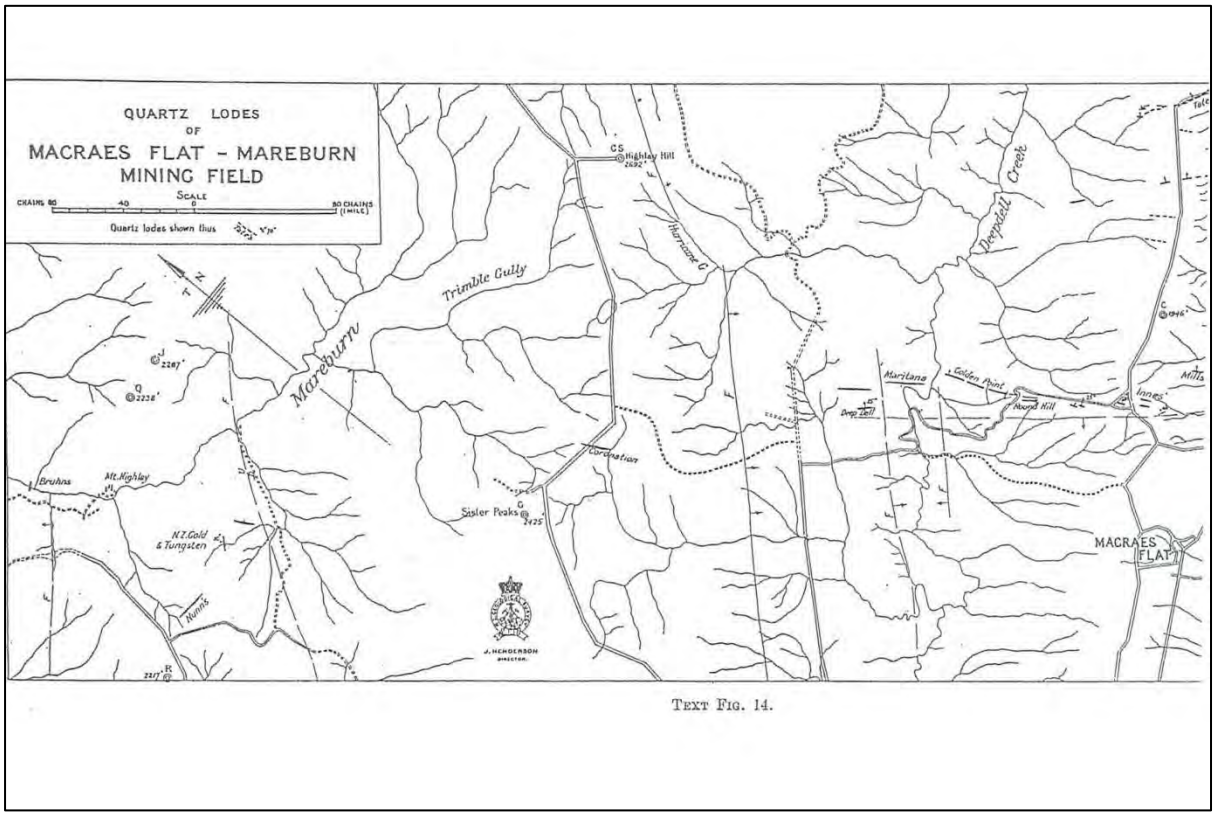
Outcomes - Research Results

Historical Documentation

There is clear documentation from early newspaper accounts of the early alluvial works in the areas north of Macraes. The Highlay (alternatively spelled Highley) workings were first undertaken in 1862, with the bulk undertaking of alluvial workings taking place over the next ten years. There are several mentions of the small gullies around Mount Highlay being worked during the earliest part of the rush. These activities were usually small scale, focused on extracting the more easily accessible deposits. As these deposits were worked out, water races were constructed to allow ground sluicing of claims. The time and expense of constructing water races resulted in their progress being recorded in regional newspapers. The fortunes of the early alluvial fields were also extensively documented by Otago newspapers. Both Horse Flat and the northern area centred on Trimbells Gully were the focus of early alluvial activities. A goldfield 'manual' was published over several months in the Otago papers in 1862 which produced information on the various gold fields for the 'benefits of the new arrivals' (Otago Daily Times, 1862b). Mount Highlay, discovered in June, 1862, is identified as one of the principle gold fields, with the main workings described as being situated at Timbrel's Gully (also spelled Trimbrells and Trimbells), and at Deep Dell and Filly Burn, all tributaries of the Taieri and Shag rivers. Miners are noted as being 'scattered over the surrounding country in every direction'. Numbers for the whole field in November of 1862 were estimated at 500. Due to the abundance of water, sluicing was considered the favourite mode of mining. Even as early as 1862, the discovery of a quartz reef was recorded, and a prospecting claim granted. However, hard-rock mining had yet to be undertaken.

Alluvial working appears to have tapered off in the area in the 1870s, with little subsequent mention of such a method of mining in the Mount Highlay area. In the late 1880s, there was a resurgence of hard-rock mining operations (Otago Witness, 1889). These were undertaken through the formation of mining companies. The investiture in capital and the proposed wealth to be extracted from some of these claims made them the subject of considerable interest. The success of the Donaldson brothers' operations at Deep Dell for gold and scheelite encouraged more prospecting in the area (Otago Daily Times, 1904). Several claims were staked out in the area around Mt Highlay, including the Maori Hen claim which was pegged on Dolphin's run along the Mareburn Creek (Evening Star, 1889). At the

beginning of the 20th century, several claims were established or renewed, including the New Zealand Gold and Tungsten Company. This claim was a well-documented venture undertaken by the Donaldson brothers, and began operation in 1905, and closed in 1918. It appears that the Maori Hen reef was being prospected by Messrs Fortescue and party at a similar time as part of the larger mining resurgence (Otago Witness, 1904, 1905). The NZ Gold and Tungsten claim was shown on both Williamson (1939) and Thompson's (1949) maps (Figure 13, Figure 14, Figure 15). Two additional claims situated around Trimbells Gully were identified by Thomson in 1949 as Maori Hen claim "A" and Maori Hen claim "B" (1949)(Figure 15). The location of the battery sites and associated features of these claims have been surveyed more recently by Hamel (2000) and Petchey (2003).



TEXT FIG. 14.

Figure 13. Map showing the quartz lodes between the Mareburn and Macraes Flat as recorded by Williamson in 1939.

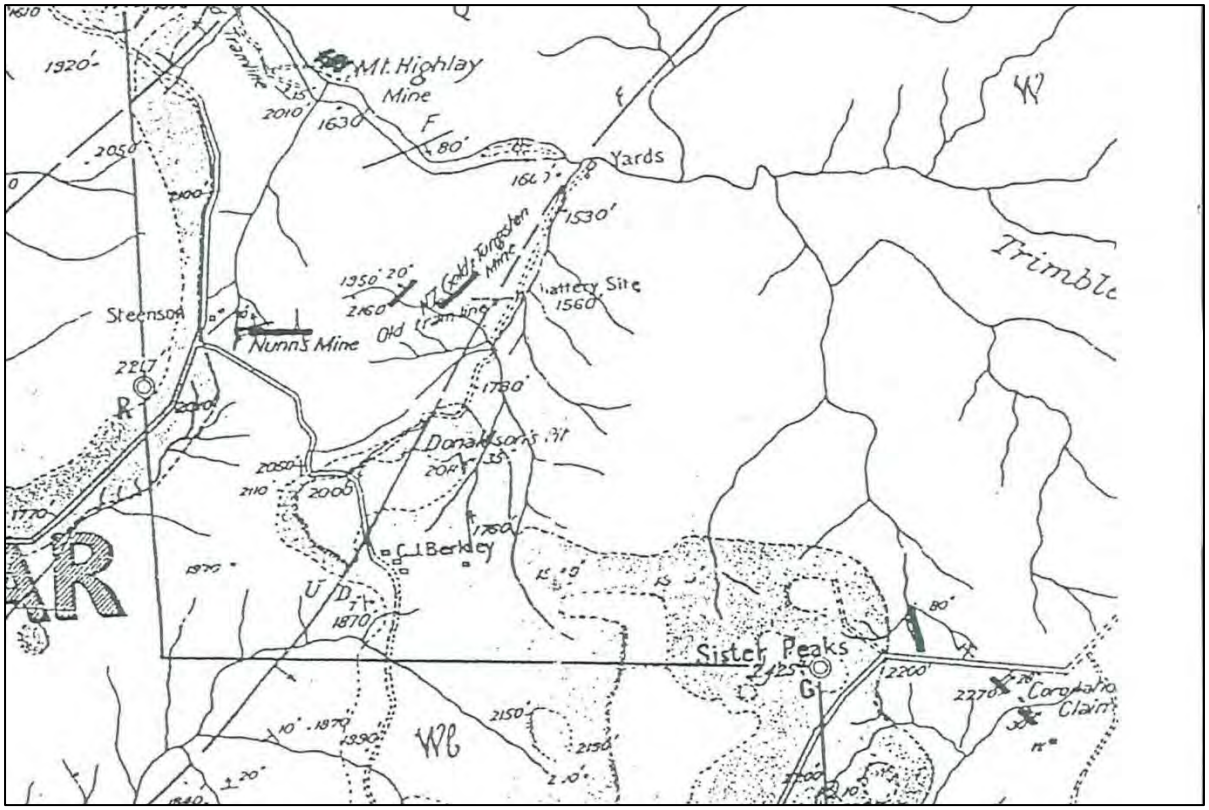
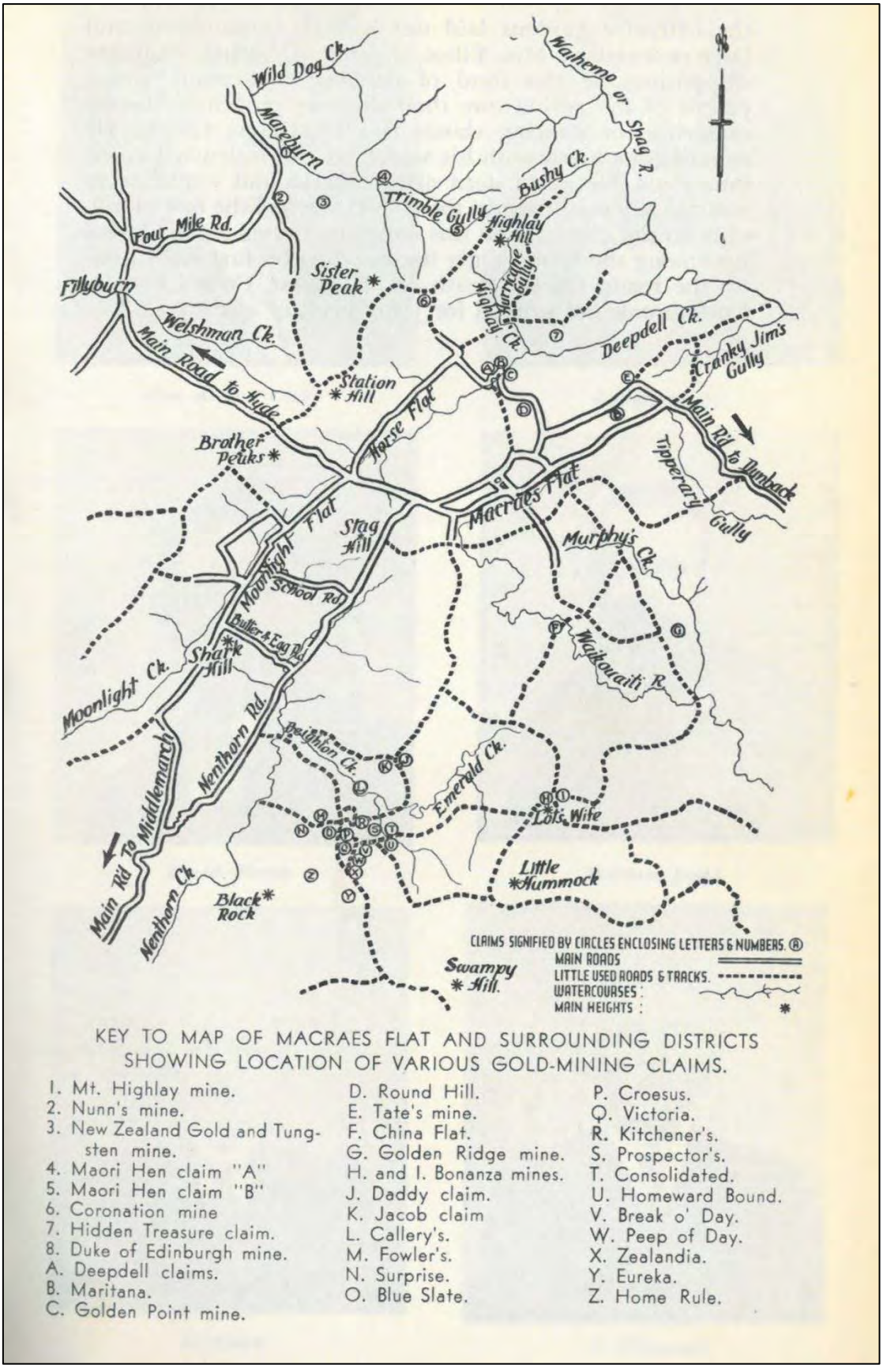


Figure 14. Details of quartz mines in the Mareburn area as recorded by Williamson in 1939 (Williamson, 1939). *The NZ Gold and Tungsten Mine is recorded adjacent to Coal Creek, which runs from above the text Berkley to where the map records' Yards'.*



KEY TO MAP OF MACRAES FLAT AND SURROUNDING DISTRICTS SHOWING LOCATION OF VARIOUS GOLD-MINING CLAIMS.

1. Mt. Highlay mine.
2. Nunn's mine.
3. New Zealand Gold and Tungsten mine.
4. Maori Hen claim "A"
5. Maori Hen claim "B"
6. Coronation mine
7. Hidden Treasure claim.
8. Duke of Edinburgh mine.

A. Deepdell claims.
B. Maritana.
C. Golden Point mine.
D. Round Hill.
E. Tate's mine.
F. China Flat.
G. Golden Ridge mine.
H. and I. Bonanza mines.
J. Daddy claim.
K. Jacob claim
L. Callery's.
M. Fowler's.
N. Surprise.
O. Blue Slate.
P. Croesus.
Q. Victoria.
R. Kitchener's.
S. Prospector's.
T. Consolidated.
U. Homeward Bound.
V. Break o' Day.
W. Peep of Day.
X. Zealandia.
Y. Eureka.
Z. Home Rule.

Figure 15. Recorded gold-mining claims by Thomson in 1949. Note claim numbers 3, 4, and 5 are within the survey area of this assessment. Claim number 6, Coronation mine, has already been the subject of earlier assessments.

On-site Observations

Several site visits were conducted over a period of three months from November, 2015 through to January, 2016. The reason for these multiple visits was due to the initial proposal to ascertain the extent of any archaeological features to the north of the contemporary Coronation Pit. The assessment site covers a significant area, centred on Sister Peaks. It extends north to include the upper tributaries and streams of Coal Creek, Maori Hen Creek, and portions of Trimbells Gully and to the immediate south and east of the existing Coronation Pit.

At the commencement of the initial survey, a boundary had been demarcated to the north of the Coronation Pit indicating a general area where mine expansion might affect. This survey area focused extensively on the upper portions of Coal Creek and Maori Hen Creek, and the northern slopes of Sister Peaks. The southern portion of Trimbells Gully to the west of Highlay Hill was included in this survey. No systematic survey was undertaken outside the demarcated boundary line.

During this initial survey all visible, discrete archaeological sites were recorded. It quickly became apparent that there was a preservation bias of archaeological features concentrated in the various gullies due to the avoidance of disturbance caused by ploughing. Areas above the gullies where the gradient was gentle enough to allow a plough to be used showed no signs of archaeological features. The extent and duration of ploughing on the northern slopes of Sister Peaks appears to have removed any trace of possible sites if they existed in the first place. The protection of sites within the gullies caused by the difficult terrain was generally observed to be very good. Some stock damage had occurred in small isolated instances, and one open refuse pit used to deposit farm detritus including animal carcasses was observed towards the top part of Coal Creek near Longdale Station. Several of the gullies had varying coverage of brush, making some visual survey difficult in isolated areas. However, generally visibility was very good, and sites were clearly observable on the ground, and checked against high resolution aerial imagery. The site plans of areas recorded during the survey are contained in Figure 18, Figure 34, and Figure 41.

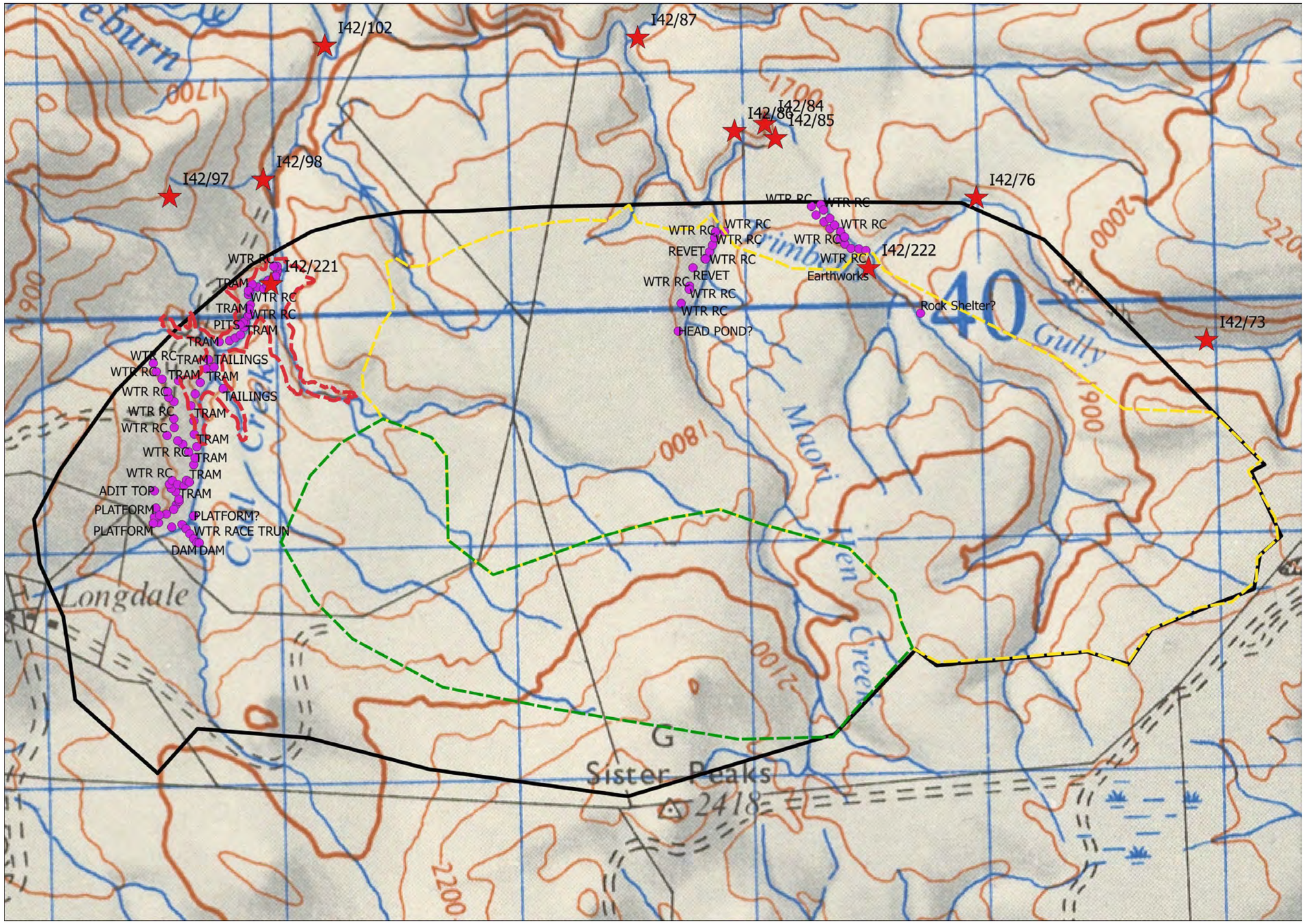


Figure 16. Survey of northern area transposed onto NZMS 1 Hyde (1969) showing area under assessment (black line). Green line marks proposed Coronation North Pit. Yellow line marks proposed Coronation North Waste Rock Stack. Red line marks impacted area of proposed dam. Recorded features during survey shown in purple. Recorded archaeological sites shown as red stars.

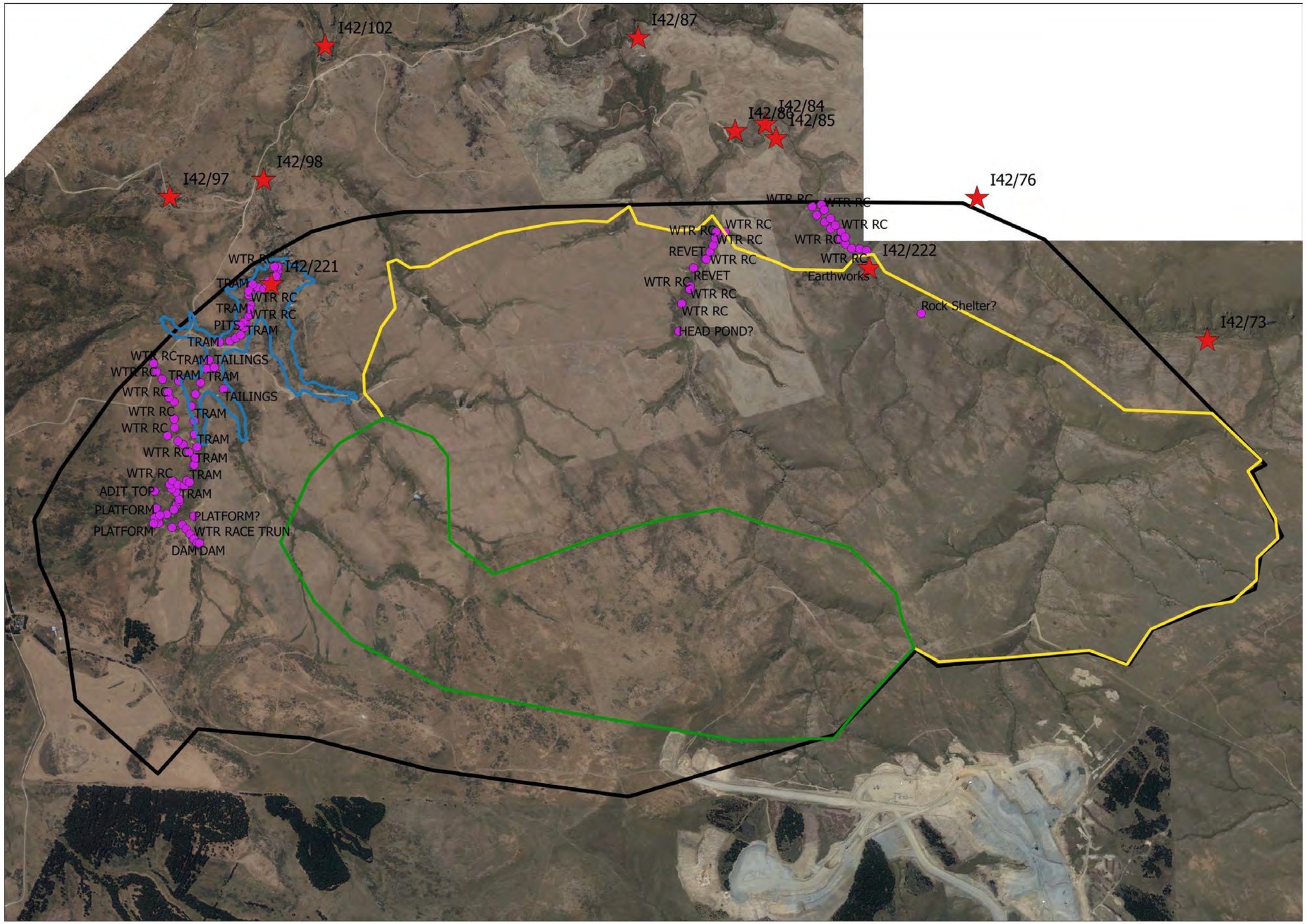


Figure 17. Survey of northern area transposed onto aerial showing area under assessment (black line). Green line marks proposed Coronation North Pit. Yellow line marks proposed Coronation North Waste Rock Stack. Recorded features during survey shown in purple. Currently recorded archaeological sites shown as red stars.

Figure 18. Site plan of archaeological features recorded during survey in Coal Creek area.

Coal Creek

The upper tributaries of Coal Creek were investigated first due to convenience of access (Figure 18). The extensive remnants of a tramway system, including stone revetting and open cut adits were recorded running parallel to the creek. These features form part of the larger hard-rock mining site recorded as the New Zealand Gold and Tungsten mine (I42/97) and associated battery (I42/98). In addition to these features, an extensive water race was mapped along the true left of the creek, cut further upslope than the tramway (Figure 24 - Figure 25). The race was recorded to the edge of the survey area, but could be seen both on the ground and in aerial photographs as extending further to the west. Another water race, possibly part of the same system, was recorded on the uppermost southern branch of Coal Creek (Figure 21 - Figure 23). It was connected to a small dam that had been built across the creek (Figure 22 - Figure 23). The dam was created using an earthen bank built on the downstream side. The date of the dam is unknown. However, its obvious connection to the water race immediately downstream which forms part of the larger mine workings in the area suggests that it may have been constructed at a similar time to the water race(s). It also appears considerably older than other more recent farm dams created in the area. It cannot be discounted that the dam was created for stock purposes during the 20th century. At the head of the tramway system and near an open cut adit is a large rectangular shaped platform (Figure 19 - Figure 20). The diminished vegetation growth on the slightly elevated platform indicates it is likely part of the hard-rock mining operations in the area, although its exact purpose is uncertain. The tramway descends the length of the upper portion of Coal Creek before terminating at the battery site of NZ Gold and Tungsten (Figure 25 - Figure 27). Closer to the battery site another water race had been constructed on the true right of Coal Creek (Figure 27, Figure 30). This water race, like the first one, runs in parallel to the tramway system. Stone revetments for both the tramway and the water race were constructed on the edge of the survey area to allow both features to cross the creek at appropriate levels and continue towards the battery site (Figure 26, Figure 30). Running the main length of this part of Coal Creek are extensive remains of alluvial workings in the forming of potholes and associated tailings (Figure 39 - Figure 40). No clear evidence of ground sluicing was observed. However, a thick mask of vegetation along the creek bed prevented any clear demarcations of features on the ground. These alluvial workings are likely to be associated with the early working of the Highlay field in the 1860s.

Figure 19. Remains of open-cut adit looking south-east towards Sister Peaks, tramline is located at bottom of adit (Photo No. 1).

Figure 20. Rectangular shaped platform at top of tramway. Open-cut adit is in the background (Photo No. 2).

Figure 21. Remains of water race to the southeast of the rectangular platform (Photo No. 3).

Figure 22. Dam with the water race visible on the hillside (Photo No. 4).

Figure 23. Dam in the distance with water-race on hillside to the right (Photo No. 5).

Figure 24. Remains of water-race above tramline to the west (Photo No. 6).

Figure 25. Remains of tram line embankment with water race with the water-race on the hillside above (Photo No. 7).

Figure 26. Stone revetting for tramline along Coal Creek (Photo No. 8).

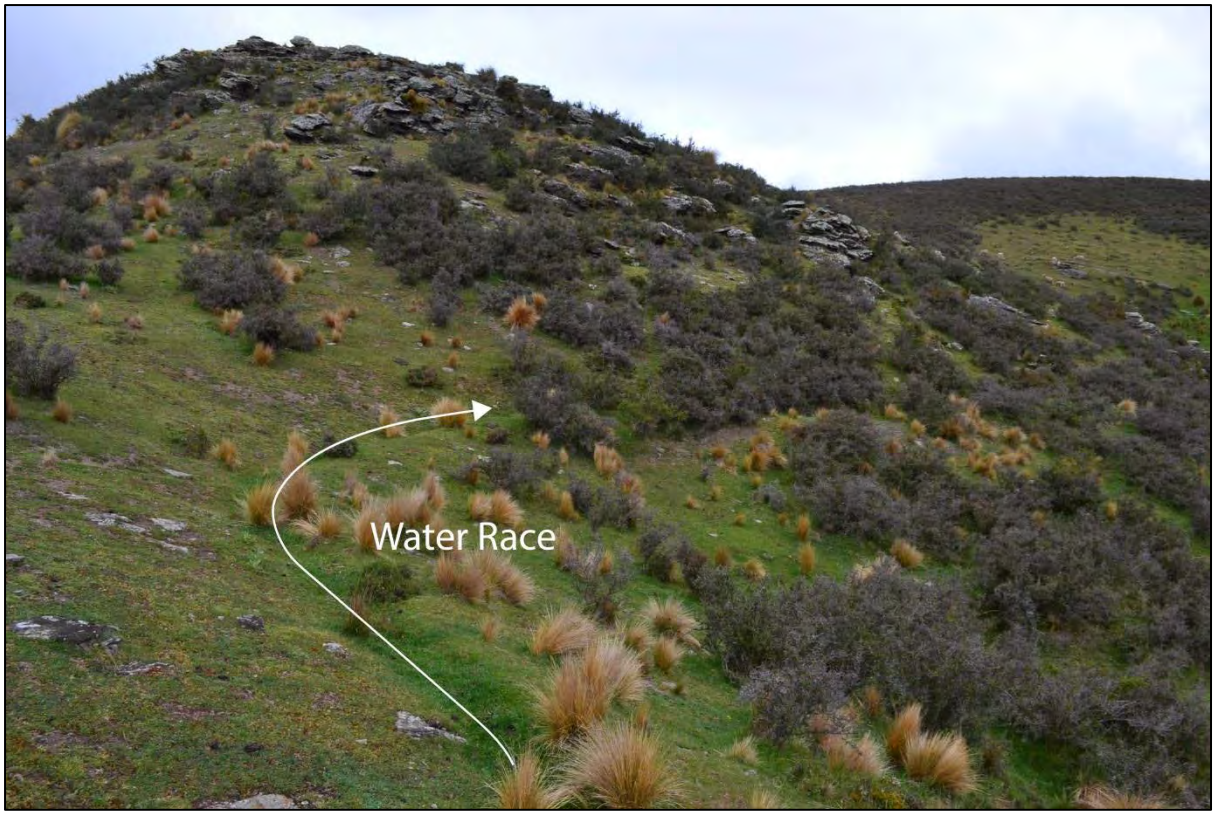


Figure 27. Water race located to the eastern side of tramline (Photo No. 9).

Figure 28. Remains of alluvial workings in Coal Creek (Photo No. 10).

Figure 29. Remains of alluvial tailings from the hillside (Photo No. 11).

Figure 30. Water-race and tramway system with associated stone abutments for transporting the race across the creek (Photo No. 12).

Figure 31.View looking north from the edge of the survey area towards the NZ Gold and Tungsten Battery site (I42/98) and further alluvial workings in Coal Creek (Photo No. 13).

Flats above Gullies

Following the survey of Coal Creek, the flats above the gullies were surveyed. Due to the extensive nature of the survey area, and the amount of observable ground disturbance, a general site overview was conducted by vehicle using a combination of existing tracks for access and finding spots of good visibility. A particular focus was taken on exploring all gullies in the area as these were deemed to most likely contain surviving features. No sites were observed outside these gully systems in the northern survey area, or in any of the smaller gullies on the upper slopes of Sister Peaks.

Figure 32. Area showing creation of modern dam for farming use.

Figure 33. Example of flats above gullies showing extensive ploughing.

Figure 34. Site plan of archaeological features recorded during survey in Maori Hen Creek area.

Maori Hen Creek

The survey then focused on Maori Hen Creek, following the main gully north from its upper end. Clear visibility allowed the gully to be surveyed easily from above. Features were only observed towards the northern edge of the survey area where the creek flows into Trimbells Gully. These features were restricted to a water race that had been cut parallel to the creek, on either side (Figure 36 - Figure 40). Stone revetments had been erected in some places to provide a suitable gradient for the race (Figure 35). Additionally, a stone revetment feature similar to those found in Coal Creek was recorded on the true right of the creek (Figure 37). This feature was likely a crossing point for the race. These race features form part of the Upper Mareburn race and the alluvial workings recorded by Hamel along Trimbells Gully (I42/84-I42/86).

Figure 35. Stone revetment for water-race (Photo No. 14).

Figure 36. Water race along hillside just above bottom of gully (Photo No. 15).

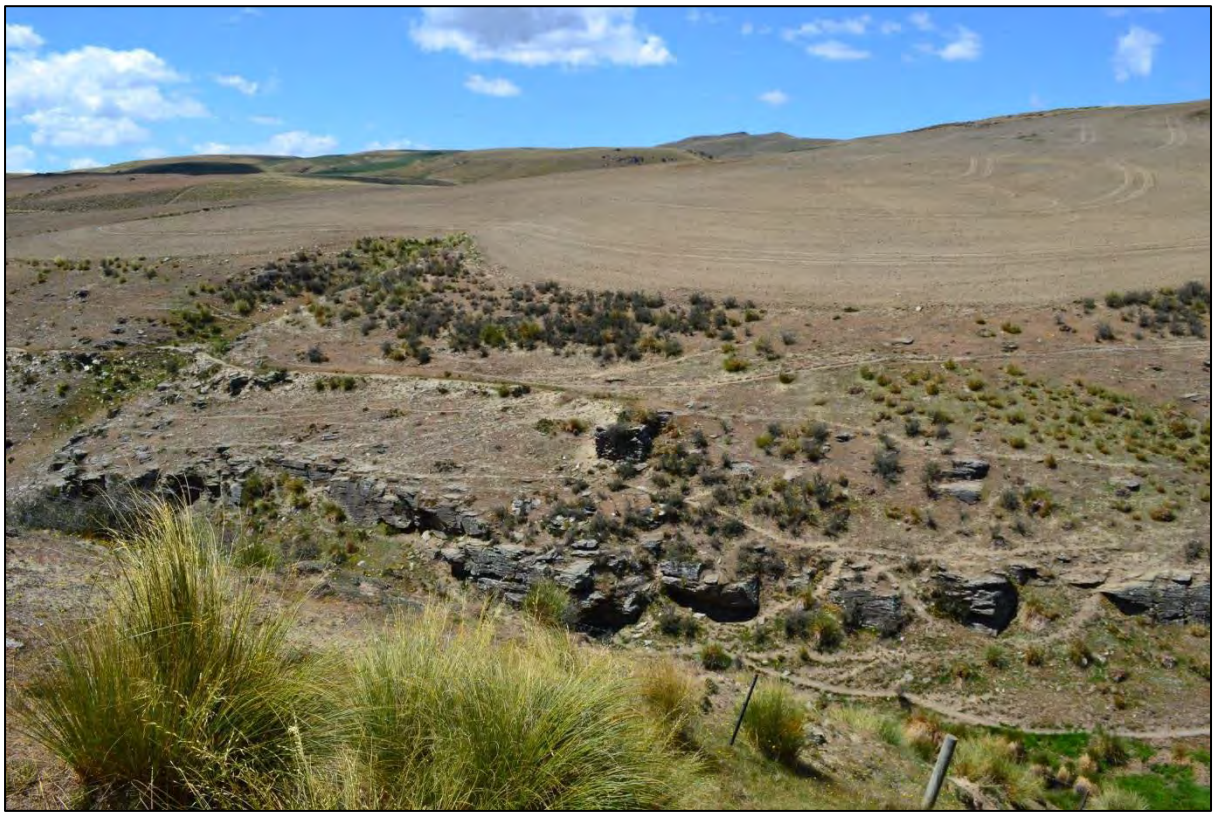


Figure 37. Water-race on eastern bank visible from western bank. Stone revetment used to cross the race across the gully can be seen in the centre of the photograph (Photo No. 16).

Figure 38. Water-race running along eastern bank (Photo No. 17).

Figure 39. Water-race running along eastern bank towards northern boundary of survey area (Photo No. 18).

Figure 40. Looking south upstream at the water-race on both sides of the creek (Photo No. 19).

Figure 41. Site plan of archaeological features recorded during survey in Trimbells Creek area (note the small white square is an artefact of the image).

Trimbells Gully

The upper part of Trimbells Gully was then surveyed. As was found in the adjacent Maori Hen Creek, a water race was located within the southern branch of the gully (Figure 42, Figure 44). This appeared to terminate at the confluence of two smaller upstream tributaries. Again, this race appears to form the uppermost portion of the Mareburn race and to be connected to the alluvial workings that were undertaken immediately downstream. In the centre of the gully towards the northern survey boundary a rock stack was photographed (Figure 43). Its original purpose is unknown, but may a remnant of an early miners dwelling. Further south an upright stone was recorded, again located in the centre of a small tributary gully (Figure 45). This stone was surrounded by what appears to be rectangular earthworks, possibly indicative of the extent of foundations for an earlier structure. This feature was not identified during the original survey, but was noted subsequently. This completed the initial survey focused on the northern slopes of Sister Peaks.

Figure 42. Remains of water race on the southern bank of Trimbells Gully (Photo No. 20).

Figure 43. Stone stack of unknown purpose located in the middle of the gully (Photo No. 21).

Figure 44. Looking west downstream at small pond with water–race visible on southern hillside (Photo No. 22).

Figure 45. View of possible structure foundation with upright stone post (OceanaGold)(Photo No. 23).

East of Sister Peaks

The next survey covered the area to the east of Sister Peaks, beginning at the southern end of Trimbells Gully, and moving south across the plateau and down towards Highlay Creek and Horse Flat. As was found in the northern survey area, the large flat areas of the plateau around the eastern side of Sister Peaks were either extensively modified by ploughing or obscured by forestry blocks. The plateau above Horse Flat lacked the numerous gullies that characterise the northern area, and as such presented a more homogenous landscape. No mining features were recorded along the plateau area. Along the upper reaches of the southern tributaries that feed into Trimbells Gully, several rock overhangs were seen. None of these displayed any obvious sign of human modification, such as fire affected rock, markings, or artefactual material. However, it cannot be discounted that these may have been used as a form of shelter.

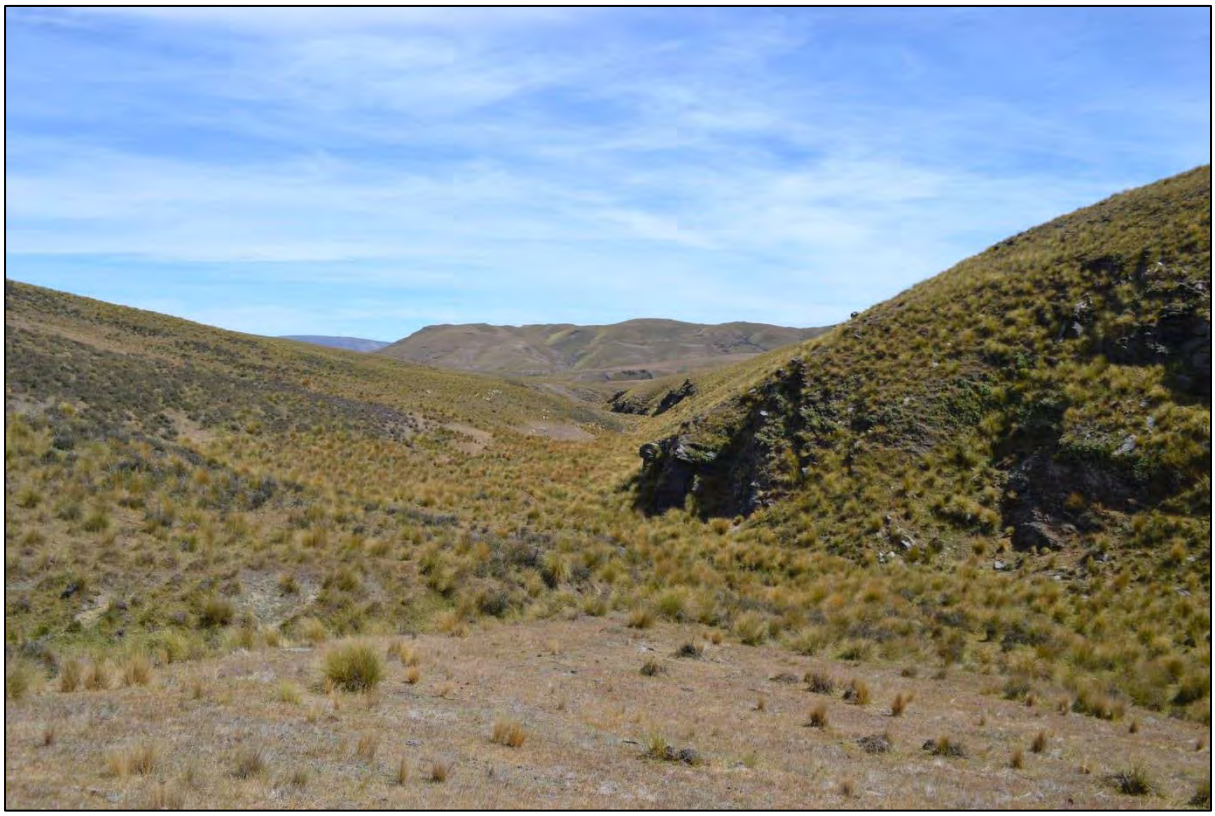


Figure 46. View looking southwest down the upper tributary of Trimbells Gully.

South and East of the Existing Coronation Pit

This area was inspected and no evidence of archaeological sites were found in the area proposed to form the southern and eastern extension of Coronation Pit.

Figure 47. View of hillsides around the upper reaches of Trimbells Gully.

Figure 48. Looking east with Highlay Hill on left edge of photograph.

Figure 49. Possible rock shelter identified in upper reaches of Trimbells Gully (Photo No. 23).

Archaeological and Other Values

Archaeological Values

Six main criteria have been used for assessing the archaeological values of the Coronation North site. These are:

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

Site	Value	Assessment
Coronation North, Macraes, Otago **Legal description:** **Coronation North Pit – Part Section 2, Block V, Highlay SD** **Coronation North Waste Rock Stack - Part Section 2 Block V, Highlay SD** **Coronation Stage 5 - Part Section 2, Block V, Highlay SD, Lot 1 DP 465577, Part Section 2 Block VII, Highlay SD & Part Section 11 Block VII Highlay SD.**	*Condition*	The current condition of the *surviving* archaeology of the site is high. As noted in the results of the survey, extensive areas of the assessment area have been subject to extensive modification from pastoral activities. This has resulted in a preservation bias where sites have been protected by terrain, particularly in gullies, and has led to a significant degree of protection. The alluvial workings along the tributaries of the Mareburn are in remarkably good condition, with only minor stock damage in a small number of areas. Additionally, the water-races in the northern part of the assessment area have been well preserved, even where they extend beyond the protection of the gullies. This is possibly due to their value in relation to irrigation purposes, or alternatively those that have survived are a result of the preservation bias of areas of difficult terrain. The hard-rock mining in the area is again in remarkably good condition, with the extensive features that form these sites relatively unmodified. Construction of farm roads has removed small sections of long linear features, such as water races and tramways, but the overall condition of these features remains high. Stone revetments associated with these linear features are also in good condition, with only some slumping occurring along parts, particularly the water-races located in the southern tributaries of Trimbells Gully. **Assessment – high**
	Rarity/ Uniqueness	The archaeological rarity of the site is moderate. Alluvial workings are relatively common in the Macraes area. However, recent developments in the area have put greater pressure on these sites, and the surrounding landscape has been significantly altered. Water races that are associated with ground sluicing of these alluvial claims are also relatively

Site	Value	Assessment
		common in the larger area around Macraes. However, the relatively good condition and interconnectedness of these features increases their rarity value. Hard-rock mining sites are concentrated around Mount Highlay, with several different sites in the immediate survey area. The tramway and water race system recorded as part of the New Zealand Gold and Tungsten mine can also be seen at the Mt Highlay mine site to the north. **Assessment – moderate**
	Contextual Value	The contextual value of the site is considered to be very high in the northern part of the assessment area. The extent and range of surviving features associated with both alluvial and hard-rock mining provide a very clear context of use. The wider area contains a network of mining operations spanning a period from the 1860s through into the present day. The geographical extent and location of linear features such as water races, provides a good contextual understanding of how and where alluvial sites in the area were worked. Additionally, the numerous features associated with hard-rock mining sites can provide a better understanding of how the sites operated over an area. **Assessment – very high**
	Information Potential	There is a variable amount of information potential to be gained from the various forms of archaeological sites recorded. Alluvial mining practices are already relatively well understood. In this instance the location and extent of the features provides the most significant information on alluvial workings in the area. The preservation of the hard-rock mining features allows a better understanding of how the mines operated, although these were generally covered better in historical documentation than the smaller scale alluvial operations. **Assessment – moderate**
	Amenity Value	The site has a moderate amenity value due to the preservation of numerous features within the gully systems. This value is reduced due to the presence of modern mining operations to the south and through difficulty of site access. The area has also been part of a working farm. Vegetation cover across the assessment site is diverse, with the gullies containing scrub, pastoral grasses on the flats, small areas of timber plantations, and extensive areas of tussock. **Assessment – moderate**

Site	Value	Assessment
	Cultural Associations	European – Most of the northern site's cultural associations are with the European prospectors, miners and mining companies who worked the area around Mount Highlay. However, alluvial workings were known to be undertaken by Chinese miners. **Assessment – European**
	Other Values	Māori cultural values have not been addressed in this assessment. No Māori sites have been recorded within the assessed site. However, the area was known to be used by Māori (see Historical Background), and there is the possibility of cultural values and sites not known to the author. The wider Māori cultural landscape has been covered under a separate assessment by Brian Allingham on behalf of Ngāi Tahu, and should be referred to regarding Māori cultural values. **Assessment – see Allingham's 2016 report**

Assessment of Effects

Proposed Site Development Works

The proposed works by OceanaGold have been designated as the Coronation North Project. The project will be focused on the ridgeline to the north of Horse Flat Road, along the Shag River and the Taieri River catchment divided. These works are situated between Sister Peaks and Highlay Hill. The development will continue to be within the upper reaches of Camp Creek, Maori Hen Creek and Trimbells Gully. The existing Coronation Pit will be extended on the southern end, about 400 metres from the currently consented edge of the pit and on the eastern edge by approximately 300m. The Coronation pit will be opportunistically backfilled and closed as a pit lake. The existing consented waste rock stack will be mined, with a new open pit being developed (Coronation North Pit). The Coronation North Pit will be backfilled where practicable. In addition a new waste rock stack will be created (Coronation North WRS). All water from the new Coronation North Pit will flow into the Mareburn catchment. Overflow from the Coronation Pit is likely to also flow into the Mareburn catchment. Surface water runoff around the pits, waste rock stacks, and haul road will be managed with diversion drains and silt control dams located in gullies downstream of disturbed areas. Sediment control will be installed within each catchment area. Temporary buildings may be installed beside the Coronation North Pit. The existing haul road will be extended approximately two kilometres to reach the location of the Coronation North Pit. Ore will be hauled from the pits via the existing haul road across Horse Flat Road, and then along Golden Point Road to the processing plant.

The Effects of the Proposed Works

The Coronation North Project will have significant effects on the archaeological sites focused around the upper tributaries of Coal Creek, Maori Hen Creek and Trimbells Gully. Archaeological sites related to the existing Coronation Mine have been dealt with under previous authorities, and are not addressed in this report.

The creation of the Coronation North Pit will not have any direct impacts on known archaeological sites. The pit's northern boundary as currently proposed will approach the

eastern edge of the alluvial and hard-rock mining features associated with Coal Creek. However, based on current plans, all extraction of ore will be undertaken to the south, so the edge of the mine pit marks the furthermost edge of disturbance. The expansion of the existing Coronation pit to the south and east will not impact any known archaeological sites.

The creation of a freshwater dam in Coal Creek to control run-off will have a significant impact on both early alluvial mining features in the base of the gully and later hard-rock mining operations associated with the New Zealand Gold and Tungsten Mine. An earthen dam will be built across the creek in an area where several mining features converge. These include stone revetting which provided a platform for a tramway system and water race to cross the creek. Additionally, significant parts of the creek will be flooded by the creation of the dam, submerging early alluvial gold mining features and portions of the early 20th century hard-rock mining operations. Part of the significance of the sites in the area is the relative interconnectedness of linear features and more discrete features such as adits and platforms. The New Zealand Gold and Tungsten Mine is almost completely unmodified at present, with only a few farm tracks cutting through some linear features. Creation of the dam will damage or destroy a significant proportion of the mines workings in Coal Creek. It will however not impact on the main area of workings to the north.

The creation of the Coronation North Waste Rock Stack will have a significant impact on the known water-race features within Maori Hen Creek. The current proposed boundary of the rock stack area projects significantly over the recorded extent of the archaeological features. In addition, the defined features in the upper reaches of Trimbells Gully, including two water races and what appear to be foundations associated with a small building and a possible rock shelter, will be located just inside the proposed stack. Both these gully systems are connected to the larger alluvial workings recorded in the lower part of Trimbells Gully (I42/84-I42/86). The rock stack also approaches the areas of further alluvial workings to the east, I42/73 and I42/76. These will not be directly impacted by the current proposed works, but the negative impact on the larger archaeological landscape values should be considered.

Alternative Options

The location of mining operations is constrained by the location of gold bearing deposits. Based on the size and scale of operations, it is not possible to avoid negatively impacting archaeological features within the assessment area.

The proposed footprint of the Coronation North Waste Rock Stack will impact the "possible" rock shelter and some identified workings within Trimbells Gully and have a negative impact on alluvial workings further down the gully. In response to this OceanaGold has advised that they will modify the boundary of the proposed waste rock stack to avoid these features and to provide a suitable buffer zone to the downstream alluvial workings.

Due to the extent of the archaeological features within Maori Hen Creek it was not possible to modify the waste rock stack design to avoid impact.

The location of the Coal Creek Water Reservoir is situated in the only available gully system adjacent to the project suitable for providing the volume of water and continuity of flow to provide a dilution source for water quality within the Mareburn. There is currently no alternative site for the water reservoir.

To mitigate the impact on the Coal Creek and Maori Hen workings OceanaGold will enter into discussions with HNZPT to formulate a suitable mitigation package to offset the impact on these sites.

Site Management

The key site management issue identified at this point is avoidance of any known archaeological sites, where possible, based on clear demarcation on a map. Post-work rehabilitation of the landscape will alleviate some negative impact on the archaeological landscape values. However, due to the scale of works, and the significant landscape alterations that occur in open pit mining, reinstatement of these values will naturally be limited. A significant part of the archaeological landscape values lies in the sites' extents and form, as well as their placement in a relatively unmodified landscape within the gullies. Based on the extent of the project works, features within the upper portions of Coal Creek, Maori Hen Creek and Trimbells Gully should be mapped and recorded before the commencement of any operations in the area.

Conclusion and Recommendations

Assessment summary

This report provides an assessment of the impact of the proposed Coronation North Project. Due to the scale of the assessment area, works will have a variable impact on recorded archaeological sites dependent on their location.

In the northern area, the current proposed boundaries of the Coronation North Pit will not have a direct impact on any known archaeological sites. The creation of a fresh water dam in Coal Creek will have a significant negative impact on extensive remains of both alluvial and hard-rock mining features. The alluvial features likely date to the early workings of the Mt Highlay gold field, around the mid-1860s. As such, the Coal Creek alluvial workings have been recorded as an archaeological site within the site record scheme (I42/221). It appears that while this area was part of the larger alluvial workings that were formed following the rush, early documented references to mining at Coal Creek almost certainly refer to the larger Coal Creek that is located farther to the east and is a tributary of the Shag River. Prospecting of quartz reefs was recorded as being undertaken at the same time mining claims were being worked in the area using alluvial methods. However, there is no recorded evidence that early hard-rock mining operations were undertaken in Coal Creek. Following a resurgence of working quartz reefs from around 1888, the New Zealand Gold and Tungsten Company was formed at the beginning of the 20th century. A stamper battery was built next to the creek (I42/98) and a mine was opened up-hill and to the southeast (I42/97). Another branch of the mine workings were recorded during the site survey, which extend a considerable length upstream of the battery site.

The creation of the Coronation North Waste Rock Stack will damage archaeological sites in Maori Hen Creek and the upper tributaries of Trimbells Gully. Based on the proposed boundaries for the rock stack, parts of the Upper Mareburn water-race will be destroyed that runs along both sides of Maori Hen Creek. This water-race is in good condition, with stone revetting that has survived until the present day. As water-races are generally extensive linear features, they can continue a significant distance. This race is connected to the larger alluvial workings in Trimbells Gully (I42/84 to I42/86). The race continues outside the survey area towards Coal Creek. The mix of alluvial and hard-rock mining features in the northern area is typical of the Mareburn catchment area, due to the number of accessible quartz reefs and the concentration of gold within the gullies. Hamel noted that the linear tailings in Trimbells Gully (and this should be expanded to include the water-races that form part of this larger system), are worth protecting as intact, whole-valley systems (Hamel, 2000). In addition, a possible rock shelter was identified on the northern boundary area of the rock stack. Based on observational evidence, it is unlikely that this is an archaeological site. A possible building site demarcated by earthworks and an upright stone slab was recorded in the upper reaches of Trimbells Gully. The age and use of the site is uncertain. OceanaGold has advised they will modify the initially proposed Coronation North Waste Rock Stack boundary to avoid features within Trimbells Gully including the possible rock shelter and possible building site with upright stone slab and to provide additional buffer area to those features that were located just outside the waste rock stack boundary. No further sites were recorded in the area of the proposed rock stack around Sister Peaks that had not already been the subject of previous archaeological assessments and authorities.

Recommendations:

Based on the proposed plans by OceanaGold to extend the existing Coronation Pit to the south and to open a new Coronation North Pit, and create the Coronation North Waste Rock Stack, the following recommendations are made based on the findings of this report:

- Under the Heritage New Zealand Pouhere Taonga Act 2014 an archaeological site is defined as one associated with human activity that occurred before 1900 and which may be able through archaeological investigation by archaeological methods to provide evidence relating to the history of New Zealand. Within this context, the alluvial workings in the gullies, including possible dwelling sites, and the water races are classified as archaeological sites, and therefore any work that directly or potentially impacts these sites will require an Archaeological Authority under the act.
- If the proposed boundaries cannot be altered, then those sites recorded in areas where they will be damaged or destroyed should be recorded in full archaeological investigations.
- The hard-rock mining features that have been recorded in Coal Creek likely date to the early part of the 20th century. Both the sites connected to the New Zealand Gold and Tungsten Mine are therefore not technically archaeological sites under the HNZPT 2014 Act. However, they are important historic sites, and their heritage significance should be considered. The site is most historically significant in its totality, and ideally should be retained as such. Unless the creation of a fresh water dam in Coal Creek is the only viable option, alternatives should be considered. It is recommended that OceanaGold enter into discussions with HNZPT about possible mitigation measures.
- As a first principle, every practical effort should be made to avoid damage to any archaeological site if discovered. In this instance, works within gullies may encounter unrecorded sites. In the event that unexpected archaeological features are encountered during works, any features should be cordoned off and the archaeologist notified immediately so that the feature can be investigated and recorded, as appropriate, prior to any more disturbance. OceanaGold already has an "Accidental Discovery Protocol" procedure in place in relation to potential archaeological sites.
- Due to the scale and number of features within the survey area it is not considered practicable to mark out each individual feature within the assessment area. As a substitute, when operations are underway all OceanaGold staff should be familiar with the archaeological site surveys undertaken and take copies of any archaeological authority issued by HNZPT in order to understand what can and cannot be modified or destroyed. If in doubt, any features are to be avoided or temporarily marked off with tape to avoid disturbing them. All archaeological and heritage sites not affected by the proposed mining works should be highlighted on the OceanaGold site management plan in order to raise awareness of their location and nature to OceanaGold staff and Contractors. Such sites will be excluded from machine tracking and site operations and their position/identification marked on the ground so that they are visible if encountered. All machine operations around areas identified as containing archaeological sites are to be undertaken with the utmost care and with attention given to avoiding the damaging of archaeological features.
- The 'blanket' approach to recommending archaeological recording and investigation of all the sites affected by the proposed mining development should be avoided, and the site specific approach to the site investigation of the archaeological sites as outlined in the table below adopted for the project.
- Due to the possibility that Māori material cultural or sites of cultural significance might be impacted by the proposed works, it is recommendation that iwi consultation be undertaken as early as possible.
- If at any stage during site works pre-European (Māori) material is discovered, Heritage New Zealand Pouhere Taonga should be consulted in the first instance and an Accidental Discovery Protocol followed. This states that if pre-European material is

encountered in the area that is undergoing work, then all work is to cease immediately with a 20m exclusion zone established around the find with damage to any material minimised or avoided. Once the Regional Archaeologist has been contacted, they will advise on the best way to proceed. They will also liaise with iwi as appropriate. Any pre-European artefacts will be, prima facie, property of the Crown and will be submitted to the appropriate institutions.

- OceanaGold are to provide a plan showing the modified Coronation North Waste Rock Stack boundary that will avoid the possible rock shelter and earthwork foundations.

NZAA Site No.	Effect and Extent of Impact on the Archaeological Site	Recommended Site Investigation
I42/73	Site comprises alluvial workings in the main branch of Trimbells Gully. The tailings extended around 400 metres along the gully. Rest of the gully floor was worked with irregular tail races and amorphous tailings. Alluvial workings continue downstream. The site will not be affected by currently proposed works.	No investigation is recommended for this site. However, Trimbells Gully should be identified as an area containing significant archaeological remains related to alluvial and hard-rock gold mining.
I42/76	Site is similar to I42/73, and is comprised of alluvial workings located in a bend at the main branch of Trimbells Gully. The site will not be affected by currently proposed works.	No investigation is recommended for this site but see above.
I42/84	Site is another complex of sluicings in Trimbells Gully. The area was worked with a water-race which connects to the Mareburn Race. The site will not be affected by currently proposed works.	No investigation is recommended for this site but see above.
I42/85	Another site within the complex of alluvial workings in Trimbells Gully. The site will not be affected by currently proposed works.	No investigation is recommended for this site but see above.
I42/86	The Upper Mareburn Race. This site is defined as the race beginning at the northern tributary branch of Trimbells Gully, and continues through the southern branch, and into Maori Hen Creek, before contouring along the true left of Trimbells Gully towards Fullarton's. The creation of the new rock stack will destroy segments of this race in Maori Hen Creek and the southern tributary of Trimbells Gully, including stone revetments and abutments where the race crosses the gullies.	The extent of the race should be fully GPS located and mapped, as well as photographed (with scale). All stone work that will be destroyed should be recorded in full, including revetments and abutments. Targeted sampling should section parts of the race that will be destroyed.

NZAA Site No.	Effect and Extent of Impact on the Archaeological Site	Recommended Site Investigation
I42/87	This site is comprised of a gold battery used for the mine identified as Maori Hen Claim A. Features included a light tram line, mullock heap, trenching, and revetted structures. The site will not be affected by currently proposed works.	No investigation is recommended for this site. However, the site forms part of the cluster of features within Trimbells Gully and should be identified as an area containing significant archaeological remains related to alluvial and hard-rock gold mining.
I42/97	Site is identified as the main mine for the New Zealand Gold and Tungsten mine. Features are located above the battery site (I42/98) 300 metres uphill. More features within Coal Creek connected to the operation of the mine and battery site were recorded and identified in this report. The features within Coal Creek upstream of the battery site will be significantly impacted by the construction of a fresh water dam. The creation of the earthen dam will destroy stone revetting and associated features. Subsequent flooding of the creek will submerge a significant portion of a tramline, water race, and other discrete features.	Before any works commence on the dam, the site should be accurately surveyed and recorded using archaeological methods. This could include, but not limited to, photographs, maps, and excavations of features that will be destroyed by works. A report of these findings could be included in a report documenting the history of the site.
I42/98	This site is the remains of the battery for New Zealand Gold and Tungsten Mine, and is located within Coal Creek. The site is characterised by a 3 metre high stone platform, above a 15 metre wide cut in the rock, with a concrete-walled pit below. The water supply came from an earth dam across a small tributary. This site should be considered part of the larger mine complex (I42/97) and will not be impacted by the proposed works.	See above.

NZAA Site No.	Effect and Extent of Impact on the Archaeological Site	Recommended Site Investigation
I42/221	This site is comprised of the early Coal Creek alluvial workings scattered along the creek. These alluvial workings extend along a considerable length of both sides of the creek, and part way up some of the smaller tributaries. These features will be extensively submerged by the creation of an earthen dam in Coal Creek. They should be fully recorded as they form part of the wider mining landscape of Coal Creek, and could be incorporated into a report documenting its mining history.	See recommendations for I42/97.
I42/222	This site is probably the remains of a miner's house with associated alluvial workings in the nearby creek. A single upright stone slab has been placed in the centre of a platform demarcated by rectangular earthworks. The stone slab may be a boundary marker or may mark the location of a grave. The boundary of the proposed Coronation North WRS will be modified to avoid negatively impacting this site.	If the site will be damaged by works, then it should be fully recorded using appropriate archaeological techniques. The possibility that the stone slab marks a grave should be considered, however, without excavation this is difficult to confirm.

References

Allingham, B. J. (2011). *OceanaGold: Macraes Phase III. Iwi Archaeological Assessment*.

Allingham, B. J. (2013). *Coronation Area Archaeological Survey unpublished report for Oceana Gold (NZ) Ltd*.

Appendix to the Journals of the House of Representatives. (1907). The Goldfields of New Zealand. Session I, C-03 Page 36.

Barr, C. (2010). *Archaeological Survey - Macraes Phase III*.

Barr, C. (2011). *Archaeological assessment – Macraes Phase III unpublished report for Oceana Gold (NZ) Ltd*.

Barr, C., & O'Connell, T. J. (2013). *Archaeological Assessment Proposed Coronation Mine unpublished report for Oceana Gold (NZ) Ltd*.

Evening Star. (1889). Nenthorn Jottings. Issue 8003, 4 September 1889, Page 4.

Farminer, A., Miller, R., & Teele, B. (2015). *Coronation Mine, Macraes, Otago - Archaeological Investigation Report*.

Hamel, J. (1991). *Changes in gold mining at Macraes - unpublished report to Macraes Mining Company*.

Hamel, J. (1994). *Mining with cyanide at Horse Flat*.

Hamel, J. (2000). *East of the Taieri River - The Archaeology of the Macraes Ecological District*.

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

Keith, S. (2012). *Archaeological Survey – Coronation Mine unpublished report for Oceana Gold (NZ) Ltd*.

Lyttelton Times. (1862). Commercial. Volume XVII, Issue 1005, 28 June 1862, Page 4.

Otago Daily Times. (1862a). From Dunedin to Highlay. Issue 172, 4 June 1862, Page 5.

Otago Daily Times. (1862b). The Gold Fields Manual for New Arrivals. Issue 243, 30 September 1862, Page 5.

Otago Daily Times. (1862c). The New Gold Field in the North. Issue 155, 15 May 1862, Page 4.

Otago Daily Times. (1863). Fullarton's Rush. Issue 632, 26 December 1863, Page 4.

Otago Daily Times. (1904). *Mining*. Issue 13157, 15 December 1904, Page 9.

Otago Witness. (1862). The Highlay Diggings. Issue 547, 24 May 1862, Page 5.

Otago Witness. (1866). The Hamilton District. Issue 757, 2 June 1866, Page 8.

Otago Witness. (1889). The Deep Dell Discovery. Issue 1976, 10 October 1889, Page 11.

Otago Witness. (1904). The Week's Mining News. Issue 2649, 21 December 1904, Page 32.

Otago Witness. (1905). Mining Summary. Issue 2651, 4 January 1905, Page 24.

Petchey, P. (1996a). *Duke of Edinburgh Mine & Tipperary Gully Macraes Flat Archaeological Survey unpublished report to Macraes Mining Company*.

Petchey, P. (1996b). *Home Reef Resource Consent Area Macraes Gold Project Archaeological Survey unpublished report to Macraes Mining Company*.

Petchey, P. (1996c). *Sections 8, 16 & part 10 Block II Highlay S.D. Archaeological Survey unpublished report to Macraes Mining Company*.

Petchey, P. (1997). *Macraes Mining Company, Expansion Project, Archaeological Report, unpublished report for Macraes mining Company Ltd.*

Petchey, P. (1998). *Coronation Macraes Mining Company – Preliminary Archaeological Survey unpublished report for Macraes mining Company Ltd*.

Petchey, P. (2003). *New Zealand Gold & Tungsten Mine & Battery, Nunn's Mount Highlay Mine*.

Petchey, P. (2004). *OceanaGold Fraser's West Waste Rock Stack Proposed Enlargement unpublished report for Oceana Gold (NZ) Ltd*.

Thompson, H. (1949). *East of the Rock and Pillar*. Dunedin: Whitcombe & Tombs Limited.

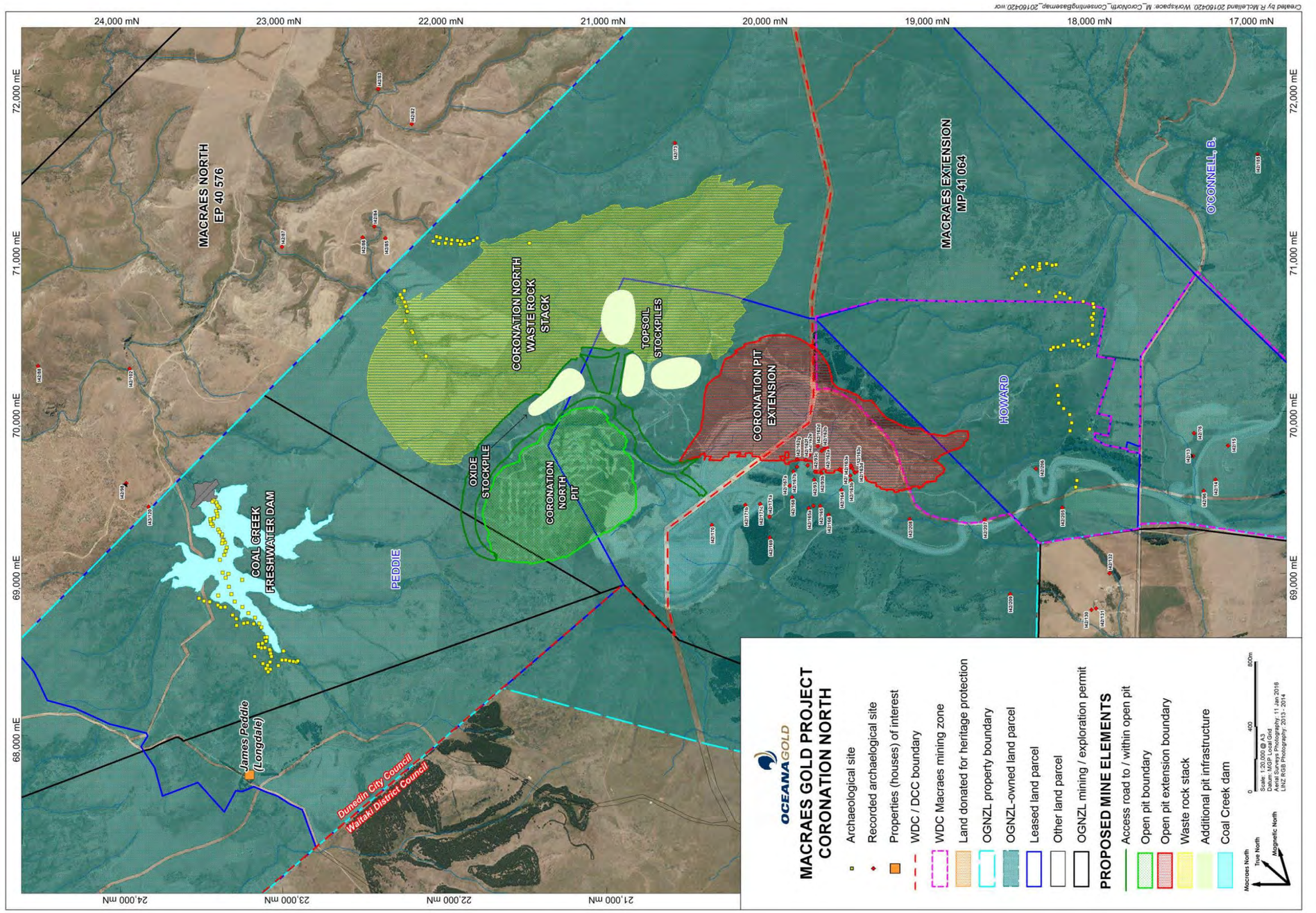
Wellington Independent. (1862). The Goldfields. Volume XVII, Issue 1769, 20 September 1862, Page 5.

Williamson, J. H. (1939). *The Geology of the Naseby Subdivision*. Geological Survey Branch.

Wilmshurst, J. M., Anderson, A. J., Higham, T. F. G., & Worthy, T. H. (2008). Dating the late prehistoric dispersal of Polynesians to New Zealand using the commensal Pacific rat. *Proceedings of the National Academy of Sciences , 105* (22), 7676–7680. http://doi.org/10.1073/pnas.0801507105

Wood, J. A. (1970). *Gold Trails of Otago*. Wellington: A.H. & A.W. Reed Ltd.

Appendix A – Client Plans



Appendix B – NZAA Site Record Form

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: I42/86

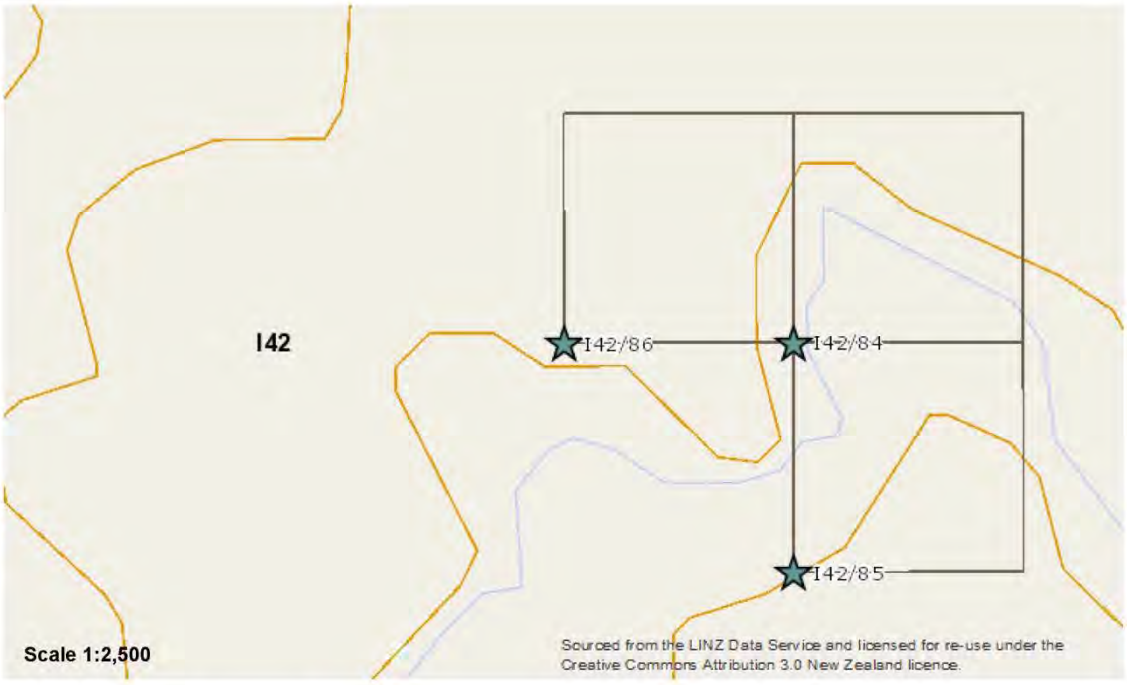
SITE TYPE: Industrial

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1394627 **Northing:** 4980041 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** I42/86



Finding aids to the location of the site

Brief description
RACE

Recorded features
Water race

Other sites associated with this site

Printed by: benteele 10/03/2016

1 of 3

SITE RECORD HISTORY	NZAA SITE NUMBER: I42/86
Site description	
Condition of the site	
Statement of condition	
Current land use:	
Threats:	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (METRIC)

Metric map number I42
Metric map name Dunback
Metric map edition 1st

NZAA METRIC SITE NUMBER I42/86
DATE VISITED March 1995
SITE TYPE Upper Mareburn race
SITE NAME: MAORI Trimbells Gully
OTHER

YY

Grid Reference Easting 2 13 04 50 10 Northing 5 15 41 70 10

1. Aids to relocation of site (attach a sketch map)

The grid reference applies to where the Mareburn race crossed the middle section of the branch of Trimbells Gully which runs due west from Highlay Hill. The site itself is about 250 m upstream from the confluence with Maori Hen Gully.

2. State of site and possible future damage

In good condition and under no threat.

3. Description of site *(Supply full details, history, local environment, references, sketches etc. If extra sheets are attached, include a summary here)*

Two major tributaries of Trimbells Gully were tapped for the Upper Mareburn race to Fullartons. The race from the northern branch contours round the hill into the southern branch of Trimbells Gully and crosses the latter about 250 m upstream from the confluence with Maori Hen Gully. The race probably crossed in a siphon of which the stone buttresses are still visible. There are two sets of buttresses on the south side of the creek, suggesting that the race builders had to try twice or rebuild the southern end. The race had to be revetted up Maori Gully and crossed on a small pipe crossing with a stone abutment about 400 m up from the confluence. The race then runs down the true left of Trimbells Gully. Below a farm track near the confluence of the Mareburn and Trimbells Gully, it runs through an earth walled reservoir about 50 m long and 9 m wide with a wall up to 1.8 m high. Since there are no sluicings in the gully below, this may have been a solution to carry the race across slumping ground. The race continues down the true left of the Mareburn at about the 500 m contour, dropping to 460 m where it enters Fullartons.

Refer to Hamel, J. East of the Taieri River. Field Number TG6

See I42/84

4 Owner Address Graham Peddie, Longdale, Hyde.

Tenant/Manager Address

5. Nature of information *(hearsay, brief or extended visit, etc)* Brief visit

Photographs *(reference numbers and where they are held)*

Aerial photographs *(reference numbers and clarity of site)*

6. Reported by Address G. Hamel, 42 Ann Street, Dunedin

Filekeeper Date G. Hamel 9/97

7. New Zealand Historic Places Trust *(for office use)*

EU Type of Site
Local environment today
AC Land classification

AA Present condition and future danger of destruction
TC Local body

5145

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: I42/97

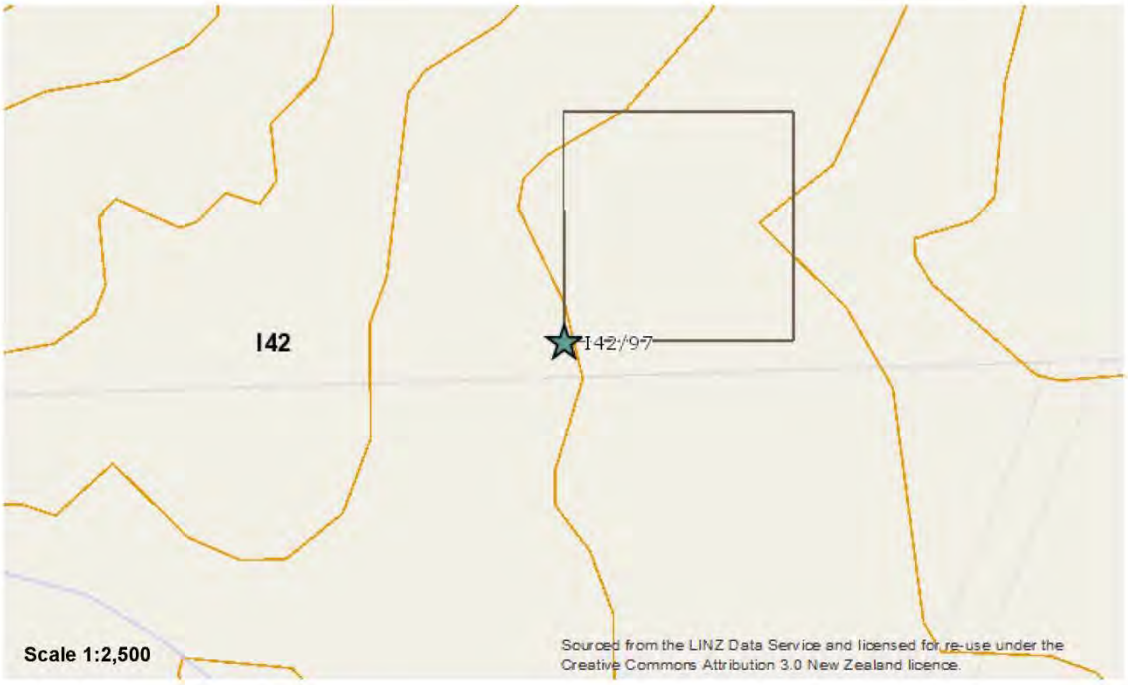
SITE TYPE: Mining - gold

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1392527 **Northing:** 4979738 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** I42/97



Finding aids to the location of the site

Brief description

QUARTZ MINING

Recorded features

Other sites associated with this site

Printed by: benteele 10/03/2016

1 of 3

SITE RECORD HISTORY	NZAA SITE NUMBER: I42/97
Site description	
Condition of the site	
Statement of condition	
Current land use:	
Threats:	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (METRIC)

Metric map number I42
Metric map name Dunback
Metric map edition 1st

NZAA METRIC SITE NUMBER I42/97
DATE VISITED Mar 1995
SITE TYPE Quartz mining
SITE NAME: MAORI
OTHER NZ Gold and Tungsten Y4

Grid Reference Easting 2 3 0 2 4 0 0 Northing 5 5 4 1 4 0 0

1. Aids to relocation of site (attach a sketch map)

Follow Longdale Road to the yards between Highlay Station and Longdale. Turn east for about 2 k down the farm track down Coal Creek. The mine is 300 m uphill of the battery site which is visible between the track and the creek.

2. State of site and possible future damage

Only pits and shafts visible and the tramline to the battery.

3. Description of site *(Supply full details, history, local environment, references, sketches etc. If extra sheets are attached, include a summary here)*

The main mine for N Z Gold and Tungsten is now a set of sluice faces, trenches, a large shaft and collapsed adits on a fairly steep hillside. The faces are up to 10 metres high and some of the races leading into them are in cuttings 6 metres deep. A shaft, 6 metres square, lies at the top of a tramline which starts in a cutting 2 metres deep but emerges down hill on to a ridge 2 metres high on its way down to a battery site. This is presumably the three-line incline mentioned by the warden in 1907. Where it crosses a farm road it is 4 metres high and 3 metres wide across the top.

See I42/98

4 Owner
Address

Tenant/Manager
Address

5. Nature of information *(hearsay, brief or extended visit, etc)* Brief visit

Photographs *(reference numbers and where they are held)*

Aerial photographs *(reference numbers and clarity of site)*

6. Reported by
Address & Jill Hamel,
42 Ann Street, Dunedin.

Filekeeper
Date J. Hamel May 2000

7. New Zealand Historic Places Trust *(for office use)*

A L Type of Site
Local environment today
Land classification

B D Present condition and future danger of destruction
T L Local body

S145

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: I42/98

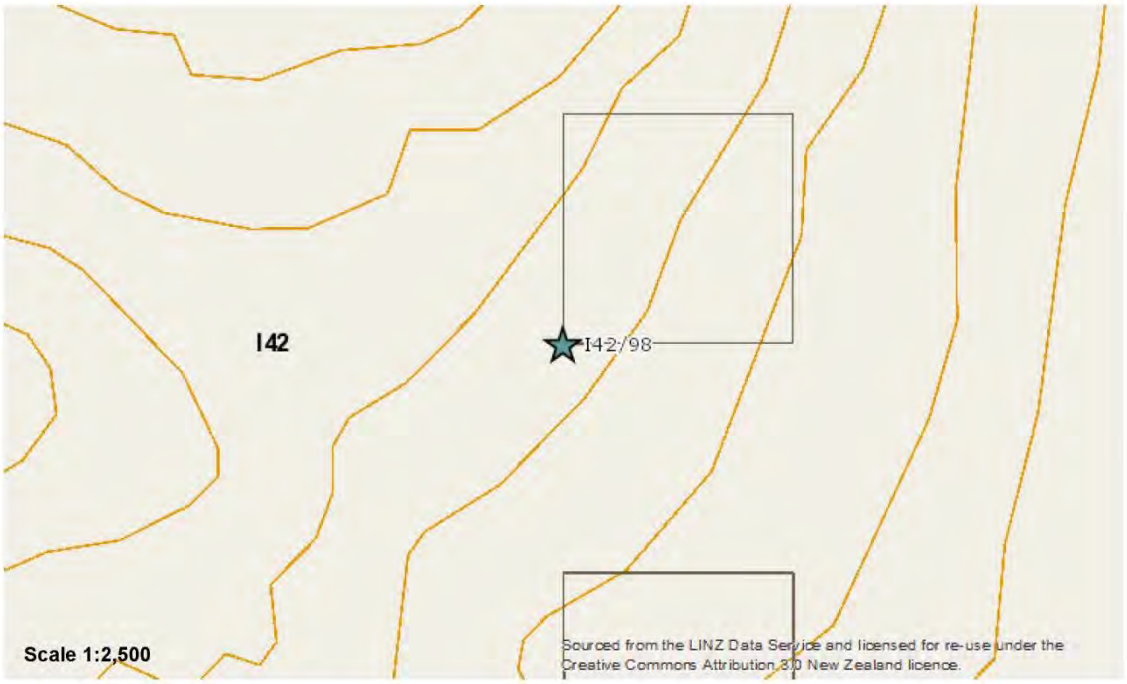
SITE TYPE: Mining - gold

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1392527 **Northing:** 4979939 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** I42/98



Finding aids to the location of the site

Brief description

BATTERY

Recorded features

Stamper battery

Other sites associated with this site

Printed by: benteele 10/03/2016

1 of 4

SITE RECORD HISTORY	NZAA SITE NUMBER: I42/98
Site description	
Condition of the site	
Statement of condition	
Current land use:	
Threats:	

SITE RECORD INVENTORY	NZAA SITE NUMBER: I42/98

Supporting documentation held in ArchSite

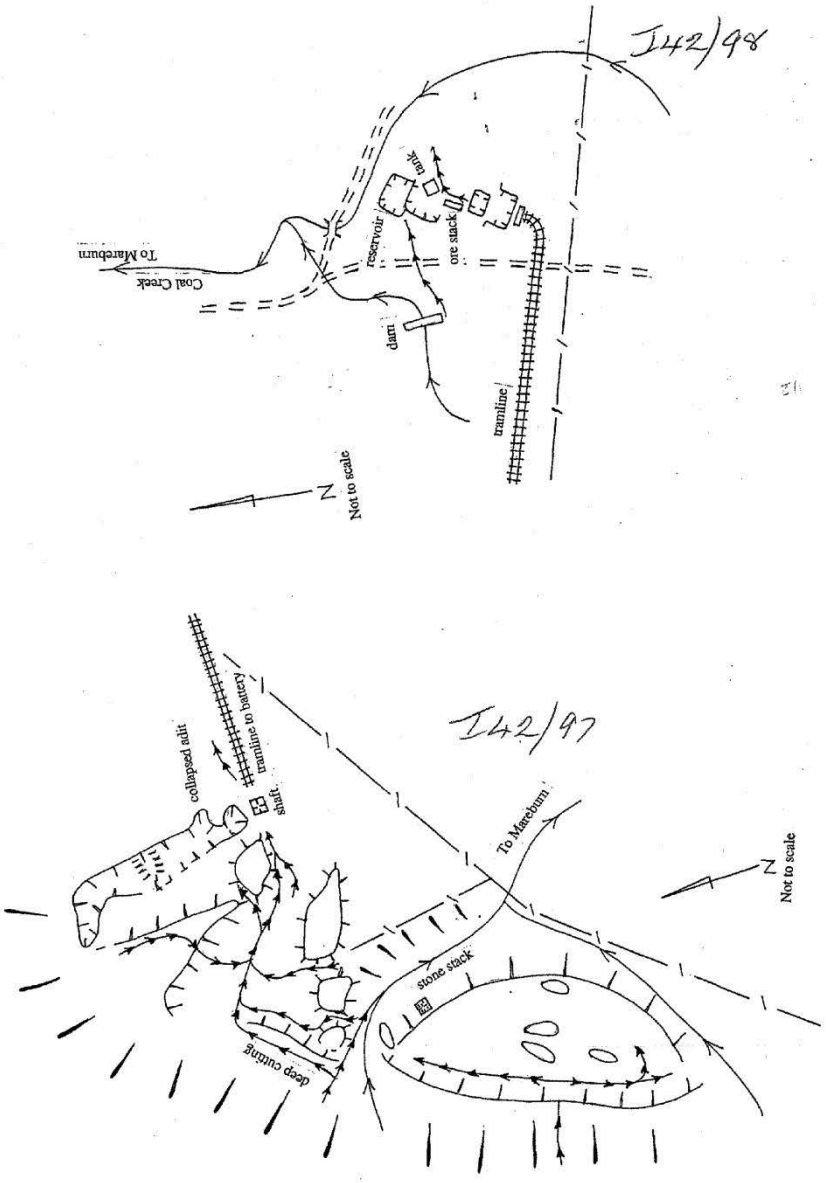


Figure 57. New Zealand Gold and Tungsten mine high on the hillside above the Mareburn.

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (METRIC)

Metric map number I42
Metric map name Dunback
Metric map edition 1st

NZAA METRIC SITE NUMBER I42/98
DATE VISITED Mar 1995
SITE TYPE Quartz battery
SITE NAME: MAORI
OTHER NZ Gold and Tungsten

YY

Grid Reference Easting 1 2 1 3 0 2 4 0 1 0 Northing 1 5 1 5 4 1 6 0 1 0

1. Aids to relocation of site (attach a sketch map)

Follow Longdale Road to the yards between Highlay Station and Longdale. Turn east for about 2 k down the farm track down Coal Creek. The battery site is visible between the track and the creek.

2. State of site and possible future damage

Only pits and concrete pads remain.

3. Description of site *(Supply full details, history, local environment, references, sketches etc. If extra sheets are attached, include a summary here)*

The battery lay beside Coal Creek with the tramline offset so that escaping trucks could not "bomb" the buildings. The water supply came from an earth dam (18 metres long, 2—3 metres high and 2 metres across the top) across a small tributary. The battery site now consists of a 3 metres high stone platform, above a 15 metres wide cut in the rock for the crushing machinery, with a concrete-walled pit (7 x 6 metres and 1—2 metres deep) below it, now filled with timber and rubbish. A race runs away from the pit , with a stack of rock 3 metres high beside it. It looks as if cyanide processing was used for gold recovery at the end, since there is concrete tank 5 x 6 metres below the stack and a reservoir 10 x 20 metres below the tank. The other levels at some stage carried the a steam powered stationary engine, two rock breakers, the Huntingdon mill, a ten stamp battery after 1912, copper plated tables for gold recovery and a Wilfley concentrator for scheelite recovery.

4 Owner
Address

Tenant/Manager
Address

5. Nature of information *(hearsay, brief or extended visit, etc)* Brief visit

Photographs *(reference numbers and where they are held)*

Aerial photographs *(reference numbers and clarity of site)*

6. Reported by
Address Joss Debreceny & Jill Hamel, 42 Ann Street, Dunedin.

Filekeeper
Date Nov 2000

7. New Zealand Historic Places Trust *(for office use)*

A L Type of Site
Local environment today
Land classification

B L Present condition and future danger of destruction
T L Local body

S145

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: I42/221

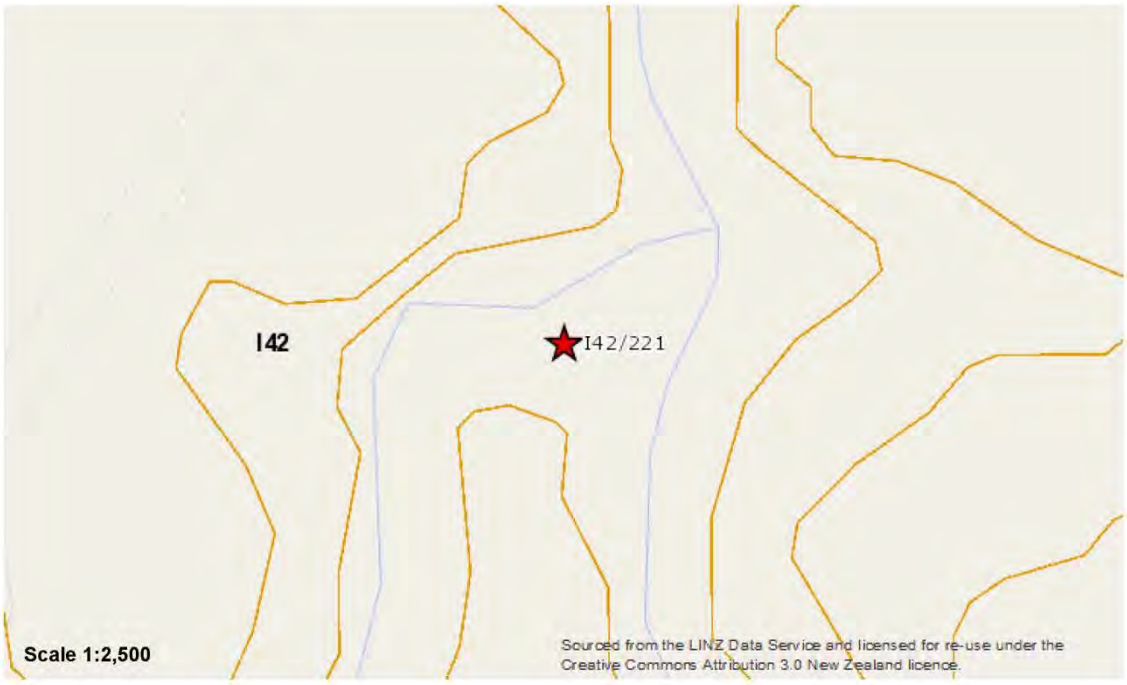
SITE TYPE: Mining - gold

SITE NAME(s): Coal Creek Alluvial Workings

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1392812 **Northing:** 4979424 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** I42/221



Finding aids to the location of the site

Site is located along Coal Creek, to the northeast of Longvale Station. Site is located due east of current farm track road within the Coal Creek gully.

Brief description

Recorded features

Tailings

Other sites associated with this site

Printed by: benteele 30/03/2016

1 of 3

SITE RECORD HISTORY	NZAA SITE NUMBER: I42/221

Site description

Updated 29/03/2016 (Field visit), submitted by benteele , visited 22/03/2016 by Teele, Benjamin
Grid reference (E1392812 / N4979424)

Site is a concentration of alluvial gold workings within the gully of Coal Creek. Workings in the area were undertaken in the form of paddocking, producing numerous small mounds. Ground sluicing, while undertaken in the area, does not appear to have been used in this gully. The alluvial workings extend a sizable length along the Coal Creek Gully, from the north of the NZ Gold and Tungsten stamper battery I42/98 to the upper reaches of the creek. The site is in the immediate vicinity of a tramline and other features associated with the hard-rock mining that was undertaken for the NZ Gold and Tungsten mine beginning in 1905. A water-race constructed at an unknown date is located on the southern portion of the western bank of the gully, and it has partly been mapped in the archaeological assessment produced for OceanaGold on the Coronation Mine North project.

Condition of the site

Updated 29/03/2016 (Field visit), submitted by benteele , visited 22/03/2016 by Teele, Benjamin

Condition of most of the site is good, with only minor stock damage in some places. Extensive parts of the site are now covered by vegetation, limiting a full condition assessment of the alluvial workings.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: I42/222

SITE TYPE: Mining

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1395147 **Northing:** 4979485 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** I42/222

Finding aids to the location of the site

Site is located at bottom of gully, immediately to the south of where the farm track crosses the creek. The gully is part of the upper tributary of Trimbells Gully.

Brief description

Recorded features

Boundary marker/ peg, Building, Grave with headstone

Other sites associated with this site

Printed by: benteele 22/04/2016

1 of 3

SITE RECORD HISTORY	NZAA SITE NUMBER: I42/222

Site description

Updated 22/04/2016 (Field visit), submitted by benteele , visited 18/04/2016 by Teele, Benjamin
Grid reference (E1395147 / N4979485)

The site is characterised by rectangular earthworks with an upright stone slab placed in the centre. The site appears to be located adjacent to a small area of alluvial workings, likely the result of paddocking for gold. based on the size and shape of the earthworks, the site may have been where a house was constructed. The presence of the upright stone slab may indicate a boundary or other form of mark. Alternatively, it has been suggested that it could possibly be a grave stone.

Condition of the site

Updated 22/04/2016 (Field visit), submitted by benteele , visited 18/04/2016 by Teele, Benjamin

Earthworks appear to be undisturbed, suggesting an subsurface material may be in good condition. Any structure that may have once been present has been removed. The alluvial tailings in the area are also in good condition.

Statement of condition

Current land use:

Threats: