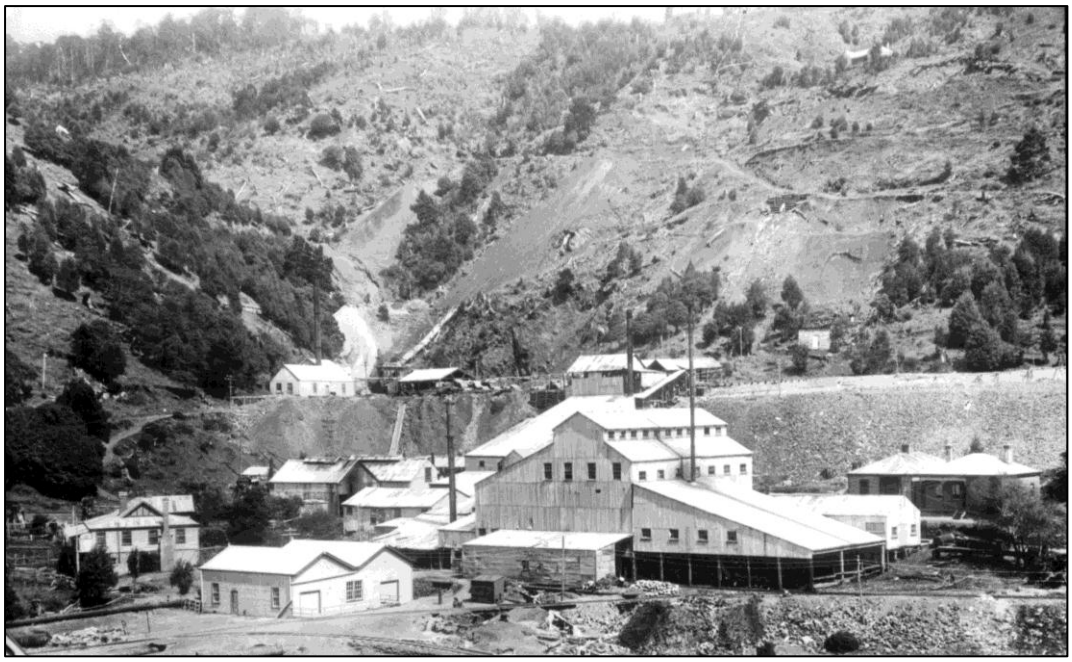
ASR2013_02

An Archaeological Survey & Assessment of the Magnet Mine, Waratah Area, Northwest Tasmania



Prepared for Mineral Resources Tasmania

BY

Anne McConnell
[with Nic Haygarth]

August 2013

Anne D. McConnell - Principal
Consultant - Cultural Heritage Management, Archaeology & Quaternary Geoscience
GPO Box 234, Hobart, Tasmania, 7001

Cover Image: *Top: C.1918-20 view of the main mine area, Magnet Mine [S. Spurling, provided by N. Haygarth]*
Bottom: Similar view today [image – A. McConnell, May2013]

Acknowledgement & Disclaimer

The consultant has taken all reasonable measures to identify and review the available information on the historical heritage of the Magnet Mine, Northwest Tasmania, and other relevant background information within the scope of the project requirements, and to provide sound advice in relation to this place within the scope of the project requirements. However there will be sources of information which were not identified, management arrangements may change, and management issues may arise which were not known or foreshadowed during this study. The consultant therefore takes no liability in the event that additional heritage or relevant background information in relation to the project is identified, or where new management arrangements or issues arise. The consultant also takes no responsibility for any shortcomings of the project report that derive from subsequent stakeholder input or changes of view in relation to the valuing, use and management of the Magnet Mine. Identified study limitations are outlined in Section 1.5 of this report.

Report history -

- draft report sent out for client review – 17/7/2013;
- client comment received back – 7/8/2013;
- final report completed – 16/8/2013.

ACKNOWLEDGMENTS

This project has depended heavily on the assistance provided by three people – Nic Haygarth, Greg Dickens and Jen Parnell – and I am extremely grateful to them for their contributions to the project –

- Nic Haygarth downed tools to act as field assistant for the project. He was a fabulous field assistant, never complaining and happy to walk wherever directed regardless of the terrain. With his personal connections to the historic Magnet Mine and his long term interest in, and research on, the historical mining of the West Coast of Tasmania, he was also a wealth of useful information, and his knowledge of the site allowed the project to gain a rapid general appreciation of the site. Nic has also generously contributed to the project copies of relevant historic images and documents from his own research collection.
- Greg Dickens undertook the historical background research for the project for Mineral Resources Tasmania. With his comprehensive knowledge of the historical resources of Mineral Resources Tasmania he was able to provide a wealth of useful primary historical material to the project that has been invaluable in interpreting the Magnet Mine and its evolution.
- Jen Parnell, Mineral Resources Tasmania, acted as project manager. She provided extremely valuable assistance in that capacity and also in reproducing plans and documents for the project's use.

The project has also benefitted significantly from the heritage survey and assessment work undertaken at the Magnet Mine by Tony Webster and Greg Dickens in 2007.

I would also like to acknowledge the assistance provided to the project by a number of others, including –

- Kim Simpson, for providing a number of invaluable historical images,
- Ester Guerzoni, Heritage Tasmania, for access to documents.
- Graham Walsh, Waratah, for providing a call in service during the fieldwork,
- Ron Gregory, for his hospitality and local knowledge during the fieldwork,
- the staff of the Bischoff Hotel, Waratah, for their friendly service during the fieldwork,
- staff at Ricoh, Fuji Xerox, and Officeworks, for rescaling, scanning and printing plans and report reproduction, and
- staff of the Tasmanian Archives and Heritage Office, for access to documents.

Anne McConnell, 12/8/2013

ABBREVIATIONS

CHL	Commonwealth Heritage List
DIER	Department of Infrastructure, Energy & Resources
DPIPWE	Department of Primary Industry, Parks, Water & Environment
MRT	Mineral Resources Tasmania
NHL	National Heritage List
RNE	Register of the National Estate
TAHO	Tasmanian Archives & Heritage Office
THR	Tasmanian Heritage Register
THRA	Tasmanian Historical Research Association
VHR	Victorian Heritage Register
WC	Weekly Courier
MME	Magnet Mine East
MMN	Magnet Mine North
MMS	Magnet Mine South
MMSW	Magnet Mine Southwest
MMV	Magnet Mine Valley
MTE	Magnet Townsite East
MTW	Magnet Townsite West
F	feature
T	track
atov	at time of visit
gci	galvanised corrugated iron
pot	potential

CONTENTS

FIGURES, etc

ENDNOTES

1 INTRODUCTION

1.1 Background to Report

This heritage survey and assessment has been prepared for Mineral Resources Tasmania (MRT) to assist them in making sound management decisions in relation to the conservation and rehabilitation of the Magnet Mine, an historic mine site in the Waratah area, northwest Tasmania (refer Figures 1 and 2).

The Magnet Mine operated from about 1891 to 1940, at which point much of the mine equipment and facilities, including the town buildings and the railway that connected the mine to Waratah, were sold and removed. The mine produced a significant amount of silver and lead over its life. Although the very early mining was an open cut, the main workings were underground. Access was via seven adits connected by a shaft (internal) which was sunk to over 1,200' (on 17 levels) and the mine comprised a network of underground drives, cross cuts and rises. The mine, which covered an area of over 600m by 600m, had an associated concentrating mill, water races, a hydro-electric power scheme, extensive tailings, a railway (and former tramway), and a township that at its peak housed over 600 people. After the mine closed there was little subsequent development in the Magnet Mine area, although much of the tailings was removed in the 1970s for zinc recovery (not previously recovered). Consequently the Magnet Mine has an extremely well preserved and diverse range of mining related heritage.

The heritage survey and assessment was commissioned by Mineral Resources Tasmania (MRT) to inform planning for rehabilitation work on the mine, part of a larger remediation program for historic mine sites in the State. Where remediation work is planned on an historic mine site, MRT policy is to survey and document the mine site and to assess the historic heritage significance of the site prior to remediation works (if this work has not already been undertaken) to identify key features that have significant heritage values. This data is used to guide remediation work, so that significant mines and mining heritage can be preserved where possible, and the site's significance retained.

The planned rehabilitation program will involve a range of on-ground activities that have the following objectives:

- make the site safe,
- contain and/or redirect environmental sources of contamination potentially impacting on water sources and landforms,
- preserve mining heritage features for future interpretation,
- promote self-sustaining natural regeneration consistent with the surrounding landscape, and
- maintain access to areas for fossicking and future mineral development (refer Project Brief).

The Magnet Mine heritage survey and assessment has been carried out by the author (AM) on a consultancy basis for MRT. Nic Haygarth was engaged as a sub-consultant to work on the field survey component of the project. The project was managed by Jen Parnell, Mining Lease and Liaison Officer, MRT. The consultancy project was commissioned in early May 2013, and the background research and field survey also undertaken in May 2013. The report has been prepared by A. McConnell.

1.2 Study Area

The Magnet Mine and township is located in inland northwest Tasmania, approximately 7 kms west of Waratah (in a straight line), approximately 30 kms north of the Pieman River and some 50 kms east of the coast. The Mine is located on the southern margin of the Magnet Range in the steep walled,

southwest-northwest trending valley of Magnet Creek. Magnet Creek is a headwater tributary of the Arthur River, which flows north approximately half way between the mine and Waratah (refer Figure 1).

The study area for the survey and assessment was established by the Project Brief as the full area of the Magnet Mine, but specifically excluded the two dams and associated races (to the southeast) that supplied water to the mine, and most of the Magnet Township which is located to the northeast. The study area is shown in Figure 1.

As can be seen, the study area is an irregular, approximately 1.2 km by 0.6 km area that takes in most of the mine site and the western part of the township (termed in this report the Magnet West Townsite). The field survey also included slightly more area on the southern edge of the study area to take in previously unknown mine workings and associated features. The actual survey area is shown in Figure 4.

The Magnet Mine (and Township) is located on State forest.

1.3 Study Aim & Scope

Aim & Objectives

The aim of this heritage survey and assessment is to provide information on the heritage values of the Magnet Mine to inform the planning of proposed rehabilitation work at the mine, thereby allowing MRT to make sound decisions in relation to the preservation of significant historic heritage values during remediation and in relation to the safe presentation of the mine. A secondary aim is to document this historic mine and mine area to help inform its ongoing management, including cultural heritage conservation.

The objectives of the archaeological assessment were, through field survey and assessment, to provide 1. documentation of the historic mine site (an inventory and map); 2. a significance assessment of the historic mine site; 3. advice in relation to likely remediation works and visitor safety; and 4. a report on the findings for use in planning the rehabilitation.

Scope

The general scope of the survey and assessment was that part of the Magnet Mine where rehabilitation works will be potentially carried out. The focus of the study was the mining heritage features (eg, shafts, adits, remnants of buildings and other infrastructure, tailings, water races). Features associated with the township and tramway occurring in the survey area were required to be included in the inventory and mapped, but as these features will not be impacted by rehabilitation works they were not required to be documented in detail or assessed. The two dams and water races that serviced the mine and township were excluded from the study.

The survey and assessment was specifically required to include the following:

- An inventory and description of all mining heritage features and values identified within the area of interest (Figure 1).
- A quality map of all heritage features associated with historic mining activities, also showing topographical features such as contours, creeks, ridgelines & roads.
- An assessment of the cultural significance of identified heritage features.

Because an understanding of the history of sites is essential to assessing historical cultural heritage significance, historical background research was also undertaken, with MRT providing the core historical information. A review of relevant heritage studies was also undertaken to provide comparative material to assist in the assessment of significance.

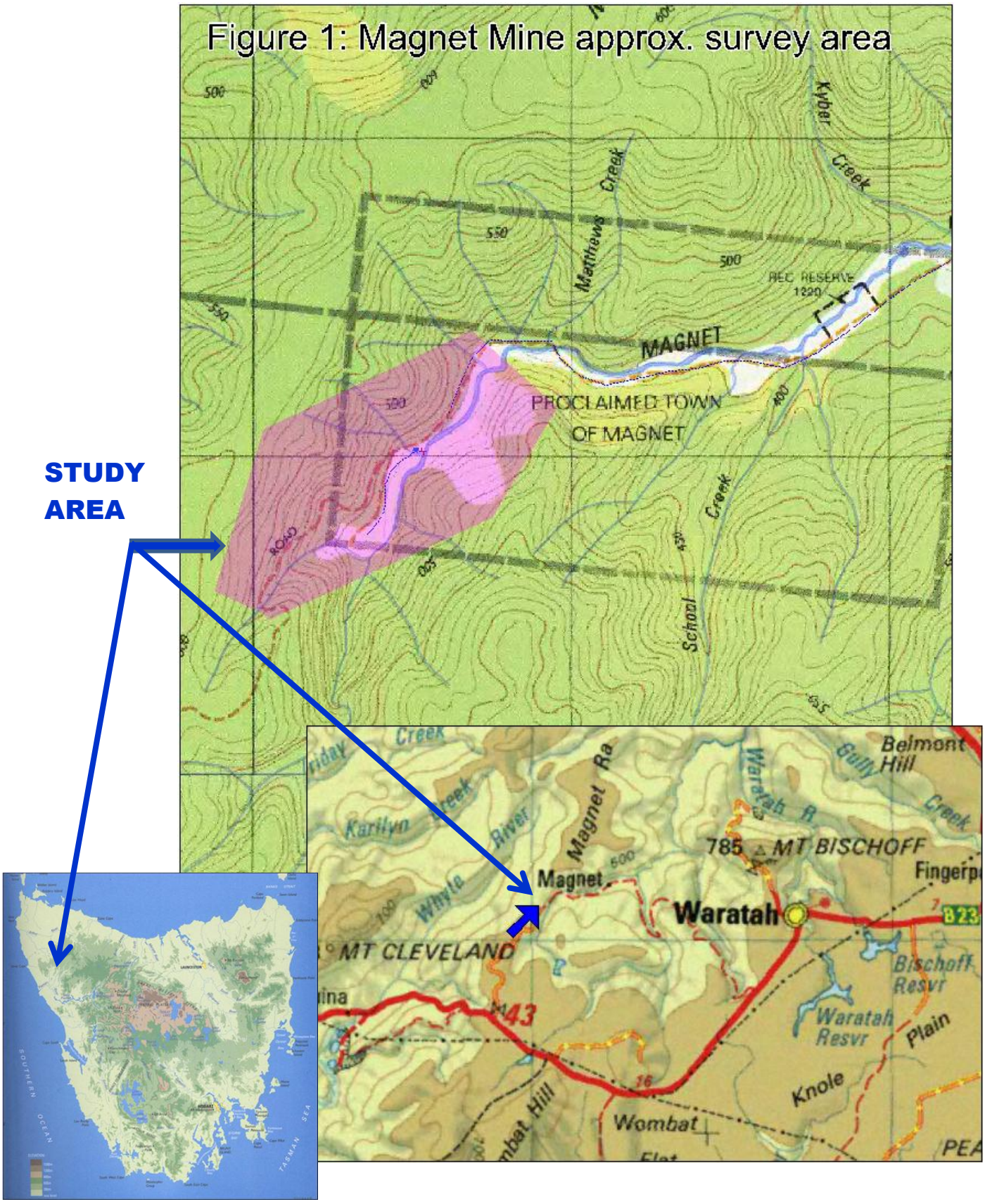


Figure 1 The general location of the Magnet Mine and the project study area.

[Map of Tasmania reproduced from Alexander, A. (ed) 2005, *Companion to Tasmanian History*; the other maps were supplied by MRT (refer Project Brief).

Figure 2 Setting of the Magnet Mine (the mine area is approximately indicated by the yellow line & the township area is approximately indicated by the red line). The mine area is largely under cloud.
[Satellite image taken from Google Earth, May 2013].

1.4 Study Methods

General Methodology

The general study approach reflects the standard approach to heritage assessment and conservation as set out in *The Burra Charter: The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* (Australia ICOMOS 1999). This is generally referred to as the 'Burra Charter Process' (refer Figure 3). As can be seen from Figure 3, this present heritage assessment encompasses steps 2 to 5 of the Burra Charter Process. *The Burra Charter* is currently the main guidelines for cultural heritage practice in Australia.

The work has also been performed to at least the required standards for cultural heritage conservation in Tasmania and in accordance with *The Burra Charter* and other relevant guidelines and policy. Constraints on, and limitations of, the survey and assessment are noted in Section 1.5.

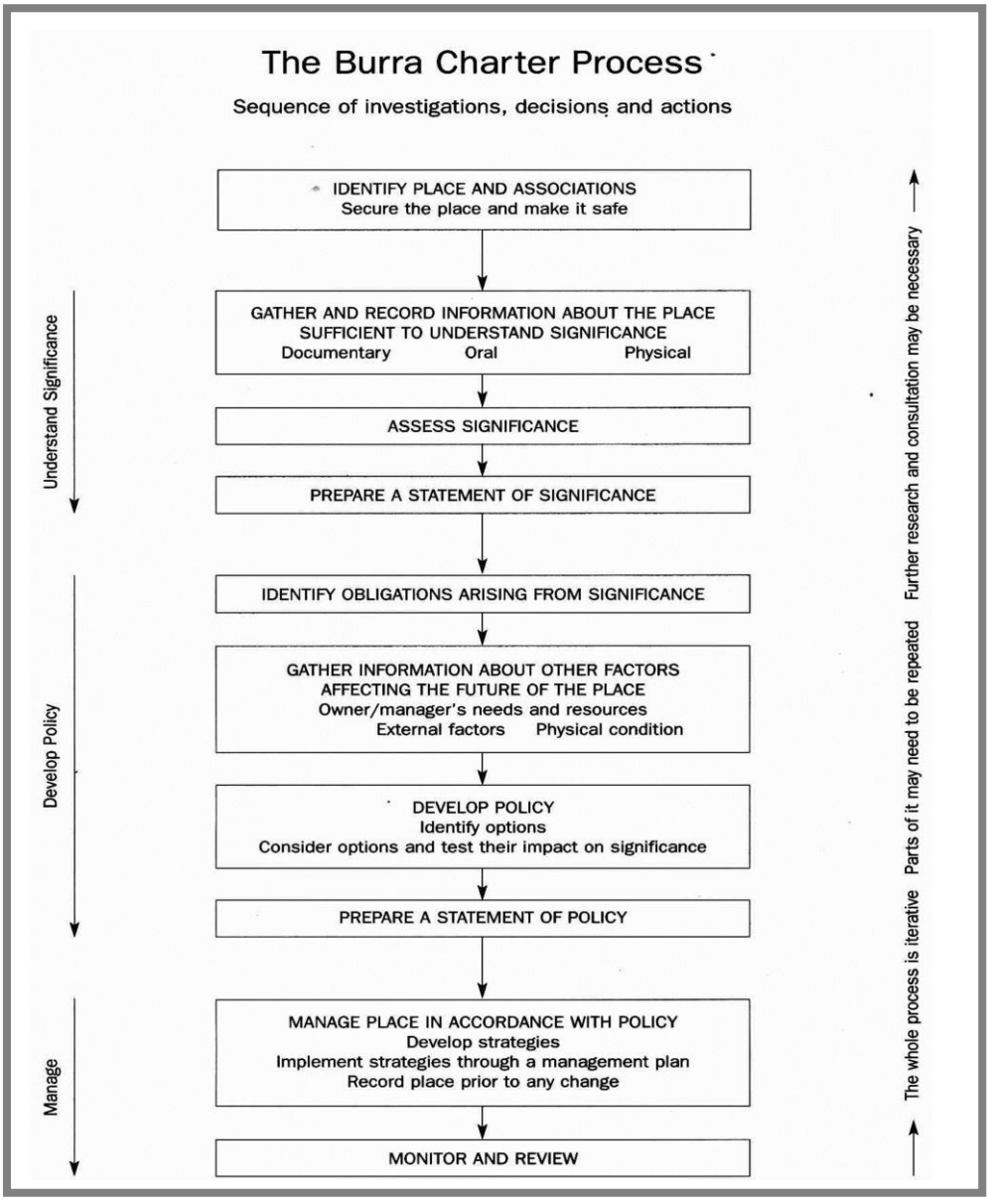


Figure 3 Australia ICOMOS (1999) *Burra Charter Process*.

Task Description

The following outlines the methods used for the different tasks undertaken as part of the survey and assessment.

Historical Background Research

The focus of the historic research was the MRT historical resources. Greg Dickens was engaged by MRT to extract all published and archival MRT material on the Magnet Mine. This material was provided to the project. The primary material provided by MRT included detailed mine reports, plans and sections, and lease plans and survey plans. The relevant sections of most secondary sources relating to the history of the Magnet Mine were also provided to the project by MRT. This material largely provided summary overviews on different aspects of the mine and township's history, including some first hand accounts. The historic background research was undertaken by Greg Dickens in April-May 2013, and provided to the project in May 2013.

A set of historical images, mainly from *The Weekly Courier*, were provided to the project by Nic Haygarth (some of which came from historian Kim Simpson). Although these were not available until the field survey, they were critical in interpreting the identified features and in helping establish the development history of the mine.

Heritage Background Research

Only one previous heritage assessment (not comprehensive and only for part of the mine site) is known to have been undertaken for the Magnet Mine (and was provided to the study by MRT), and there have been very few other mining or other heritage studies undertaken in the region. Background heritage research therefore included a review of known heritage studies for the region, and a review of the various government statutory heritage lists (undertaken on-line) to provide contextual and comparative information for the assessment. This aspect of the background research was undertaken by A. McConnell in May and July 2013.

Field Survey & Site Documentation

The equivalent of four full days was spent in the field surveying and documenting the Magnet Mine, mainly in the study area. The field work, undertaken from the 16th May 2013 to the 19th May 2013, was undertaken by Anne McConnell and Nic Haygarth.

The field survey was undertaken on foot and, apart from adit entrances that were accessible and deemed safe, the underground workings were not investigated.

The approach to the field survey was to survey and document the mining heritage and related features one section of the study area at a time. The different areas surveyed included 1. the mill area, valley and township as far east as the first railway crossing of Magnet Creek; 2. the lower part the west slope (mine face); 3. the upper part of the west slope (mine face) (to just west of the water race); 4. the southwest edge of the western slope (immediately north of the forestry road); 5. the spur to the south of the mill and main mine area up to the flat topped spur that the access road comes down; and 6. the North Magnet Mine area.

Because of the size of the area and the steep, heavily vegetated terrain it was not possible to carry out a systematic, 100% survey. The general approach was to broadly cover the study area focusing on areas of highest potential (based on historical information and Webster (2007)) and to locate the key historical features noted in the historical literature (eg, the Open Cut, adits, water races, tracks, railways, the mill and the power station). The survey approach in any one area was to work progressively in one direction, moving from one visible heritage feature to the next and following linear heritage features to the extent possible. This has meant that some areas within the surveyed area were not covered. It has also meant that some parts of the study area (ie, those deemed to have low potential for heritage) were not surveyed, and that the survey area was expanded slightly on the south and east edges to take in newly identified heritage features. The areas coved by the on-ground survey are shown in Figure 4.

Field documentation included 1. taking GPS locations of identified heritage features[1]; 2. making brief written descriptions of individual heritage features; 3. taking photographs of most individual heritage features; 4. measuring (tape measured or paced) and taking bearings of key individual features; and 5. making a rough progressive sketch plan of the site.

This documentation has been used to prepare the heritage feature inventory and a scaled sketch plan of the site showing major identified historic mining features, as well as key other historical and modern features (refer Endnotes).

Stakeholder Consultation

The only stakeholder consultation carried out as part of this project was with the client, MRT. This consultation mainly comprised an initial pre-field survey meeting with the Project Manager. This also included a handover of the historical data. Given the purpose of the project and the consequent restricted scope of the study no formal stakeholder consultation was deemed necessary.

Analysis – Cultural Significance & Management Obligations

The assessment of significance has used the standard criteria for cultural significance assessment (generally termed cultural heritage values) as per the Australia ICOMOS (1999) *Burra Charter*.[2]

It has been difficult however to include a comparative assessment as to date there has been minimal assessment of other historic mine sites of the same type and scale in the region, or in Tasmania more broadly. To the extent possible without good comparative data, the mines have however been assessed against the 'regional' level of significance (ie, whether of local, regional, state or higher level significance).

The information used in the assessment of significance is primarily the historical and fabric information generated by the project. The mine history and documents such as Godfrey (1984) indicate that the Magnet Mine has social significance, but this was not formally assessed as this was beyond the scope of the project.

A review of the heritage management context was also undertaken to assist in the assessment, and has also been used to provide overview advice about heritage management obligations for the mine. This review and advice has mainly considered –

1. the Australia ICOMOS (1999) *Burra Charter* guidelines for the conservation of places of cultural heritage significance; and
2. a review of the relevant legislative and other statutory instruments that apply to historic heritage and considered to apply, or to potentially apply.

Reporting

This report constitutes the full project report. The report, including the site sketch plan (available also as 2 separate PDFs), has been prepared by Anne McConnell. Jen Parnell and Nic Haygarth reviewed an initial draft of the report, and their comment has been included in this final report.

Sources consulted in the compilation of this report are listed in the References (Section 6).

[1] *Hand held Etrex GPS were used for this purpose. The in-field survey and post-field mapping suggests that the GPS points are accurate to within c.10-15m, with accuracy most commonly within c.2-5m. The poorer accuracy is due to the dense tree cover across much of the survey area, and areas of steep satellite shielded slope. These results are comparable with the result obtained by Webster (2007) in his survey of part of the mine site.*

[2] *The key heritage values that are considered are historical, scientific, social, aesthetic and spiritual value.*

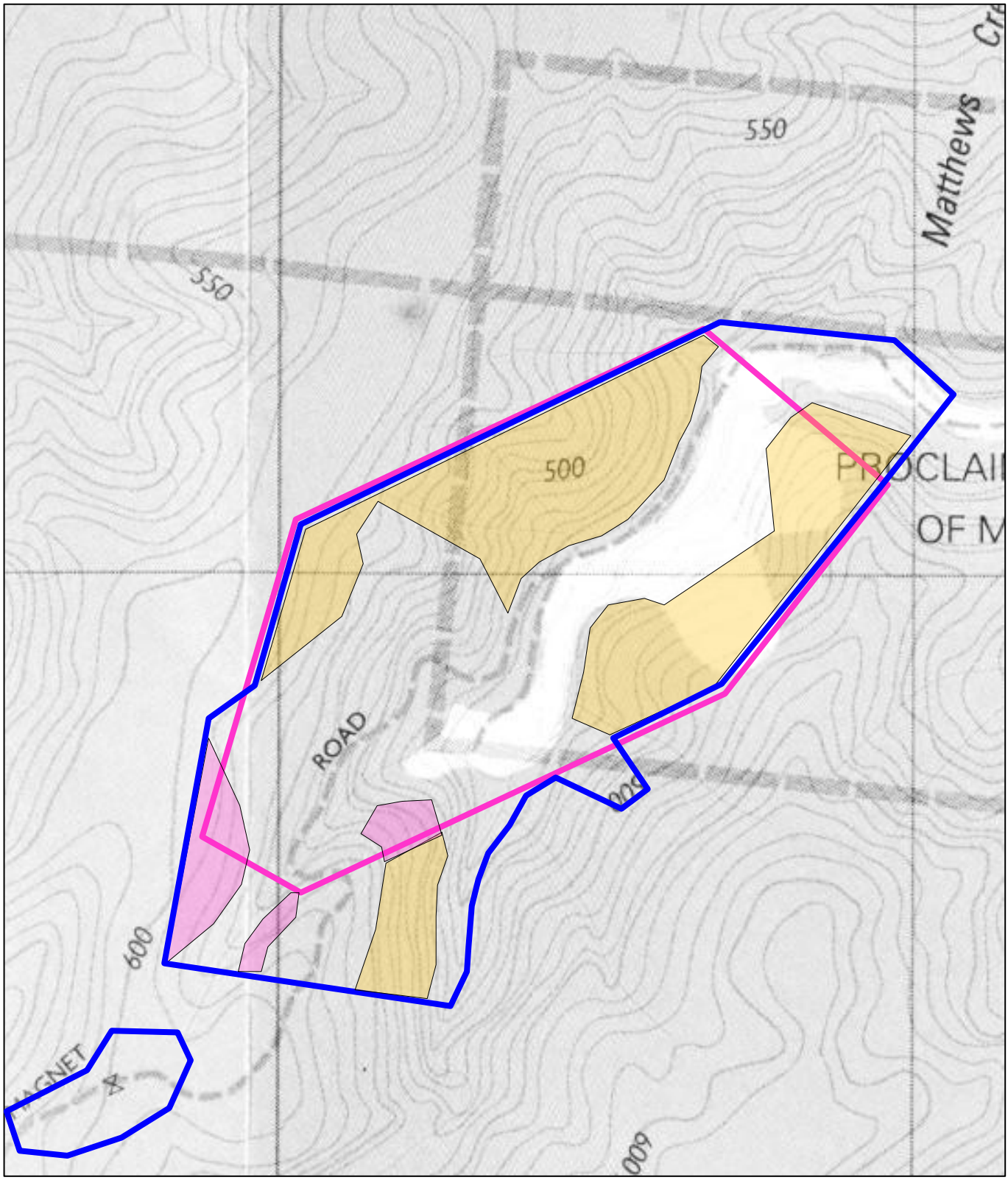


Figure 4 The Magnet Mine & Townsite, showing on-ground survey coverage by the present survey.
The pink outline is the Project Brief study area; the blue outline is the general survey area of the present study; the orange zones are those areas not surveyed due to time constraints (and which had low assessed heritage potential); and the pink zones are those areas not surveyed due to time constraints (but which were considered to have some heritage potential).

1.5 Study Limitations

The key limitation of this survey and assessment, which must be acknowledged, is that it is not a comprehensive heritage assessment of the Magnet Mine or Township. As required by the client, the survey and assessment has focussed on the mine site, and did not include the eastern part of the township, most of the railway, or the main water supply system. The underground workings were also not investigated. This has implications for the interpretation of the mine and its history, the assessment of significance of the mine, and for broader management.

In relation to the specific objective of the project of informing rehabilitation works, the main limitation is that it is unlikely that all heritage features in the study area have been located by the project. This is not considered likely to be a significant constraint as the survey is believed to have located the majority of heritage features associated with the Mine and, while heritage features may occur in the unsurveyed areas, these areas are considered to have low potential (ie, to have few heritage features) with the heritage unlikely to be of high significance or to have major safety or environmental issues attached. To assist with planning the remediation, the discussion of survey findings (Section 3) includes a list of historical features known to have been missed by the survey and their likely general location and significance (if extant) for each zone discussed.

It should also be noted that the limited amount of identification and assessment of other mining heritage in the region, in particular of other silver lead mines, and in Tasmania more broadly, has made it difficult to compare this mine with other historic mines, hence has constrained the assessment of significance against comparative criteria such as rarity and representativeness.

Other, logistical constraints are noted above in this section (refer *Task Description*).

2 BACKGROUND CONTEXT

2.1 Physical Setting

General

The Magnet Mine is located 7 kms directly west of Waratah, although it is approximately 15 km by road. The mine lies on the southeast edge of the Magnet Range[3] in the Magnet Creek Valley where the valley first opens out. Magnet Creek is a headwater tributary of the Arthur River, which from the mine runs northeast then east to its junction with the Arthur River.

The Magnet Range is part of the divide between north then westerly flowing rivers to the northeast, and the south flowing rivers to the west and south. The Whyte River and Heazlewood River lie c.3 km and 8 km, respectively, to the west. The rivers in the region flow in deeply entrenched valleys with long, broad flat ridge crests in between. The ridge crests sit at c.600-650m, dropping off to 350-400m asl to the west, with isolated peaks of up to about 850m asl in this area (eg, Mt Cleveland and Mt Bischoff). The valley floors of the major rivers sit at between about 350m asl and 250m. This results in very steep profile valley slopes in most areas, with grades of around 35-50% over 200m of altitude not uncommon.

The region has a high rainfall with rain throughout the year, although the main rain is winter rain. Light snow falls can occur in winter in the higher areas (generally over c.700-800m).

The slopes and valley floors of the region are heavily vegetated with native vegetation, largely mixed forest with rainforest pockets in gullies and valleys, much of which is remnant native vegetation. The broad ridge crests are flat to undulating and carry eucalypt forest and woodland in the better drained areas and buttongrass moorland in more poorly drained areas.

The local relief in the Magnet Mine area is approximately 250m. The valley floor is c.430-440 m asl at the mine and c.380-400m asl in the township, and the broad ridge crests are at c.600-630m asl. The intermediate (valley) slopes are very steep. The ridge crests range from about 100m wide to over 500m across, while the valley floor from the mine down to the confluence with the Arthur River is c.50m wide to c.300m wide.

Historically, the mine alone covered an area of c.600m by 600m, with the mine workings located up the west slope of the Magnet Creek valley from the base of slope almost up onto the broad flat crest of the Magnet Range, and with the concentrating mill (mill), power station, and railway located on the lower western slope (toeslope) of the valley, and the tailings in the valley floor below the mill. The dams and water races which supplied the bulk of the water to the mine were located on the broad ridge crest to the south, with the races running north just below the edge of the ridge crests to the upper east slope of the Magnet Creek valley opposite (east of) the mine. The Magnet Township was mainly located on the valley floor and lower valley slopes, and stretched from the north end of the mine down the Magnet Valley almost to the junction of the Arthur River, a distance of c.2.5 km.

Charles Whitham (2013, 65) in the 1920s described the Magnet Mine as being "at the end of a deep narrow valley, through which a creek swirls its ungainly course, just barely leaving enough room for the huts and cottages that clutch the slopes".

Like other mines in the area, the Magnet Mine was isolated from the other mines and settlements of the area by the rugged, undisturbed and heavily vegetated terrain of inland northwest Tasmania.

The general setting of the Magnet Mine is shown in Figures 5 to 7.

[3] *The Magnet Range was named by the Van Diemen's Land Company surveyor Henry Hellyer, and was named such as the area affected the operation of his compass (Haygarth, N., Oresome Times, http://waratah.vpweb.com.au/WR-BELL-S--MAGNET.html).*

Figure 5 General setting – view southwest to the Pieman from the lookout south of the Magnet Mine off the Waratah – Corinna Road (Image – A. McConnell, 2013).

Figure 6 Present day setting of the Magnet Mine, Top – General view of mine site from upper valley tailings across power station and mill site to the main west face and North Magnet Mine beyond (view NW). Bottom – view down valley in the Magnet Townsite area (view NE) (Images – A. McConnell, 2013).

Figure 7 Present day typical vegetation on the Magnet Mine. Top – general slope vegetation. Centre – valley floor and riparian vegetation. Bottom – regrowth along the Magnet Track on main west face. (Images – A. McConnell, 2013).

Geological Context

The Magnet Mine occurs in an area of Early Cambrian allochthonous series rocks, primarily altered volcaniclastics, lavas, mudstones and cherts, that predate (and appear to lie to the north of) the Mount Read Volcanics, the most significant zone of mineralisation on the West Coast. This Early Cambrian suite of rocks lies between Lower Carboniferous and Cretaceous granites to the south and Proterozoic quartzites to the north. To the east, beyond Waratah, these older rocks are covered by Tertiary basalts (MRT 2005).

The local geology, which is complex, is succinctly summarised by Cottle (1953, 1161-1162) as follows –

> *"The Magnet orebody is associated with a series of branching shear zones within a large composite basic dyke [mafic volcanics]. ... The dyke occupies one of the major faults of the area ... This faulting occurred prior to the intrusion of the dyke, and caused the downthrow of a large block of the Bischoff sedimentary series into the older sediments of the Dundas Series."*

As noted by Glasson & Cox (1968, 3), there have been a number of reports on the geology of the ore deposits of the Magnet Mine which provide considerable detail on the geology of the Magnet Mine, with the most significant being Nye's 1923 report.

According to Nye (1923, 165) the "silver-lead ores of the district have been formed by deposition from solutions derived from the final phase of the Devonian igneous intrusions". Nye (1923 describes these intrusions as occurring in a dolerite dyke that is c.5 miles long and generally 110m-220m wide, and in the Magnet Mine area c.440m wide and dipping to the northwest. Nye (1923, 159) describes the local geology as follows –

> "*This dyke, or dykes, is intrusive into the slates, cherts and breccias of the Dundas series, which occur on the east and west of the dyke. Included within the dyke there are two bodies of slates and sandstones of the Bischoff series. One of these occurs between the websterite-porphyrite on the east of the dyke and the diabase porphyrite to the south of the open-cut. The other body is included in the websterite porphyrite on the east of the dyke. ... The relationship of the lode and the websterite porphyrite changes laterally and with depth, making it more difficult to predict the lode location from the country rock*."

According to Glasson & Cox (1968, 3), Nye believed that "the dyke intrusion was controlled by major faults and the mineralisation was also controlled by this fault pattern", and Cottle (1953) was also of the same opinion based on his detailed review (see above).

Ward (1911) saw the Magnet lode and associated mineralisation as part of a well defined ENE trending zone which included "the Heazlewood River and upper reaches of the Castray and Whyte Rivers through Magnet to Mt Bischoff" with the Long Tunnel, Heazlewood, Whyte River, Silver, Godkin, Godkin Extended, Bell's Reward, Confidence and Washington Hay Mines lying within this belt on its western border, a view that is corroborated by later mapping (MRT 2005). Ward (1911) saw this belt related to the general trend of granitic intrusions that include the Meredith Range, Heazlewood Range, Mt Bischoff area and Hampshire Hills. Ward (1911, 7) also commented on the correspondence of the West Coast tin belt and silver-lead belt.

Nye (1923) describes the ore of the Magnet Mine as consisting of galena, sphalerite (marmatite) and pyrite and various gangue minerals (mangano-siderite and ankerite), and was of the view that the ankerite was a later replacement mineral (of the other economic minerals). Galena is noted as the most common mineral in the Magnet lode. Cottle (1953, 1163) generally supported Nye's assessment, noting that "in all the rock types the minerals are more or less completely converted to serpentines and chloritic minerals. The alteration is more severe in the vicinity of the lode channel where the rocks have suffered carbonatization from the introduction of ankerite".

Nye (1923, 186) also notes that tin was prospected on the Magnet Range 'about 35 years ago' (ie, in c.1888) and that "Several adits are reported to have been driven in the Tertiary beds under the basalt, but cannot now be located".

2.2 Historical Overview

Regional Overview

There was little interest in the West Coast area and little visitation by the European colonists prior to the mineral finds of the 1870s onwards, with only the Van Diemen's Land Company, with holdings in the Surrey Hills and Hampshire Hills area to the northeast and the far northwest corner from the 1820s, having had an interest in the region (other than in coastal areas) up to this point (Scripps 1990).

The first mineral discovery in Tasmania was on the West Coast. This was the discovery of tin at Mt Bischoff in 1871. In 1872 gold was discovered to the north on the Hellyer River, but this find did not develop a major rush as predicted in the *Mercury* at the time, and further mineral discoveries were relatively slow until the discovery of tin in the Heemskirk area in 1876 and gold in the Pieman soon after (1879) (Binks 1988, Scripps 1990). In contrast to the later mining in the area which was underground mining, these finds both initially produced alluvial mining fields.[4]

By 1881 prospectors "had probed every part of the west, established major tracks from Lake St Clair and Circular Head and opened the mining fields of Bischoff, the Pieman River, Mt Heemskirk and the King River" (Binks 1988, 198). Ongoing prospecting in the Zeehan area led to the discovery of silver-lead deposits in the Zeehan town area in 1882 and the rapid development of the Zeehan Mineral Field, in essence a silver, lead and tin mineral field.

The area to the southwest of the Magnet Mine and situated on the west side of the Magnet Range from the Magnet Mine, was also a mineralised area, and developed into what was known as the Heazlewood Field from about 1885 when the first mineral find in the area was discovered by was by William Robert (W.R.) Bell on Heazlewood Hill, at what became the Heazlewood Mine. Bell discovered a second area of mineralisation in this area in 1887 and was granted a second reward claim. Further mines followed in this area, including the Bells Reward, Discoverer, Godkin and Washington Hay mines (Binks 1988). Although the Magnet Mine is not considered part of this field, it produced the same minerals, and appears to be related geologically.[5]

W.R. Bell also located and pegged the initial Magnet Mine. In 1879, some years before his discovery of the Heazlewood Mine orebody, Bell located a gossanous outcrop, which was the surface expression of what became the Magnet Mine, although he did not return to peg this and establish the Magnet Mine until c.1891, well after the Heazlewood Field was established (Binks 1988, Haygarth 2010). Bell located the Magnet lode while cutting the Waratah–Middletons Creek Goldfield (Donaldson) track (Binks 1988, Haygarth 2010).[6]

Although the Magnet Mine, also established by W.R. Bell, was not in the forefront of the initial phase of mine establishment on the West Coast, it is part of the key years of the early development of the West

[4] *By the late 1870s, mineral finds (mainly gold at this period) had also been made in northeast Tasmania and by the mid-1880s a number of mines were established, the earliest being the Beaconsfield gold mine (1877) (Townrow 1986).*

[5] *To the east were a number of mines in the Mt Bischoff area, referred to as the 'Mt Bischoff Field' by Townrow (1986). The Magnet Mine however does not appear to be considered as part of either the Mt Bischoff Field or the Heazlewood Field, falling in between both these fields*.

[6] *Bell had also made at least one other, earlier discovery which was that of the lode that was mined by the Mt Bischoff Silver-Lead Mine in 1878 (Haygarth 2010).*

coast mining fields and the establishment of mines (ie, the 1880-90s), particularly in relation to silver lead mining.

The Magnet Mine lies in a northeast-southwest belt of silver lead mines that terminates just south of Zeehan. The Magnet Mine is almost the most northerly of the historic silver lead mines on the West Coast. The only other more northerly mines being the Mt Bischoff Silver Lead Mine and the Hampshire Silver Mine, neither of which were very productive (Townrow 1986, Austral Archaeology 2002).[7]

By the time the Magnet Mine started in c.1891 there was a network of tracks, mainly foot tracks and pack (bridle) tracks, across the area being prospected and mined (ie, from Bischoff to the King River and from the coast inland to the base of the Central Highlands.

Given the level of mining and prospecting in the region, major access routes were of critical importance. This network was largely established by the end of the 1890s. The Waratah–Middleton Creek Goldfield (or Donaldson) track, also known as the Old Pieman Track (Mining Lease Plans), which led to the discovery of the Magnet lode, was cut in 1879 to access the newly discovered Middleton's Creek Goldfield near Corinna on the Pieman River (Binks 1988, Haygarth 2010). The Waratah-Corinna Track (also termed the Waratah-Corinna Cart Track), which ran to the south of the Old Pieman Track, was the longest track on the west coast and was built in 1890-1891[8] with Waratah prospectors and miners entering and exiting by boat on the Pieman River or crossing over and continuing to Trial Harbour or Zeehan along the Corinna Track or Cattle Track to the Heemskirk Field, and later Zeehan (Binks 1988, Haygarth 2010, McConnell & Dickens 2013). There was also a major track known as the Middle Track which ran from the Stanley River Tin Field south to Zeehan, crossing the Pieman River just east of the Heemskirk River (McConnell & Dickens 2013).

The Magnet Mine, which operated continuously from c.1891 to 1940[9], is one of only a small number of historic silver lead mines, or indeed other mines, in Tasmania that operated over such a long historical period, and operated continuously over such a relatively long life. It was also the only silver lead mine that was in continuous production in the Waratah District (Webster 2007). The timing of its closure, related to low silver lead prices from the 1930s and the high additional capital required to continue the mine which had worked out most of the easily available ore (down to 1,200'), was the fate of most of the silver lead mines on the West Coast, and for the same reasons. Like a number of other silver lead mines, the Magnet Mine relied heavily on Government assistance to prospect and keep the mine running in the early-mid 1900s.

Although there was a resurgence of silver-lead mining, at least on the Zeehan Field, from 1947 to 1960, the Magnet Mine did not re-open, and has not re-opened subsequently, in spite of additional prospecting in the area in the 1950s. By the late 1950s however there were very few mines operating on the West Coast other than the very large mines that have continued until recently or which still operate (McConnell & Dickens 2013). It has been reported that by the late 1950s there were only six mining companies in total producing ore on the West Coast (Mount Lyell, Electrolytic Zinc (Rosebery & Williamsford); the Renison Associated Tin companies (Renison Bell); Mount Farell (Tullah); and the Montana and Zeehan Mine companies (Zeehan)), and only a few of the smaller silver lead mines are known to have operated at this period (but were closed by 1960). These were the Montana SL Mine and Oceana Mine near Zeehan (McConnell & Dickens 2013).

The Magnet Mine produced a significant amount of silver and lead in its life, and more recently (1970s), the extensive area of the main tailings were mined for zinc (removed by the Electrolytic Zinc Company)

[7] *This linear spread of the West Coast silver lead mines is related to the mineralisation, which occurs in highly basic volcanics within northeast-southwest trending Lower Palaeozoic beds (Glasson & Cox 1968) (see also Section 2.1 Geological Context, above).*

[8] *The timing of the completion of this track may have played a part in Bell's timing the rediscovery and pegging of the Magnet claim.*

[9] *The Mine did have a few short periods over its life, generally only one to three months, when it was closed down due to a shortage of water to operate the mill (Nye 1923).*

(Webster 2007). The tailings were estimated to contain 1.3% lead, 7.3% zinc and 5.3 oz silver per ton (Cottle 1953) and produced 20,000-30,000 tons of zinc.[10] In relation to the silver and lead, the total production figures for the Magnet Mine over its life are given as 37,395 tons of lead and 7,979,616 ozs of silver from approximately 620,000 tons of ore (Cottle 1953). This production is significant when compared to the total production of the Zeehan Mineral Field to the end of the historical mining period (ie, c.1950), which was estimated to be 194,816 tons of lead and 26,586.00 [sic] oz of silver, or to the Montana No. 1 Mine, one of the largest producing single mines on the Zeehan Field, which produced 66,000 tons of lead (as well as silver[11]) (MRT 89-3014, 593010). The Magnet Mine is understood to have produced more silver than any single mine on the Zeehan Field or in the Tullah area.

The Magnet Mine was the largest silver-lead-zinc mine in the Waratah area.[12] Whitham (2013, 65) has described the Magnet Mine as 'a small Mt Lyell' for the 'variety of its enterprises' and it is regarded by Pink (1984, 155) as having been the third most important mine on the West Coast in the 1920s after the Bischoff and Mt Lyell Mine (with Dundas having been abandoned and Rosebery not yet in production). Others (eg, Godfrey 1984) have commented that the Magnet Mine was the third most important silver lead mine overall on the West Coast. In relation to the Waratah District, Nye in 1923 commented that "The Magnet Mine has been the largest producer, and the only one to reach the dividend paying stage" (Nye 1923, 187).[13]

Hopkins (1997, 41) describes the Magnet Mine as "*a small Mt. Lyell of which there is now only bushland*". He notes that for thirty years "it was proclaimed as a "great little mine" that was wisely and carefully managed".[14]

Historical Overview – Magnet Mine

The following is a brief historical overview of the Magnet Mine as a whole, and is taken largely from Glasson & Cox (1968) and Webster (2007) and various primary reports by Nye and Twelvetrees.

The history of the Magnet Mine falls into four main periods as follows –

1. **1890 – 1901** – initial leases, surface workings and early underground workings (mainly drives), with access via a pack track (replaced by a horse drawn tramway in 1899).
2. **1902 – 1922** - significant progressive development of the mine, including the underground workings (and new adits), ore processing capacity, construction of a railway to Waratah, upgrading of water supply, and construction of a hydro-electric power station and dams, etc.
3. **1923 – 1931** – the mine continues to operate, but does not expand greatly, and the ore reserves diminish.
4. **1931 – 1940** – slow decline to closure – the company is worked on tribute by a number of different parties, then closed with much of the mine sold off in 1940.

The following history is considered in these four stages, and the post-Mine history is also briefly outlined.

1890 – 1901 Initial Leases and Early Workings

The mineral potential of the Magnet area was first recognised by W.R. Bell,[15] who located gossan in dense horizontal scrub while cutting the first Corinna – Waratah track (the Waratah – Middletons Creek

[10] *Magnet Mine, website – http://mindat.org/loc-184.html*.
[11] *No figure is given for total silver production.*
[12] *Magnet Mine, website – http://mindat.org/loc-184.html.*
[13] *Nye (1923, 187) also notes that in 1922 the only other two operating mines in the Waratah District were Mt Jasper Copper Mines NL which was testing the 'Mt Wright lode' and the Godkin Mines where prospecting work was 'still being carried out' by the Magnet SM Co., a Victorian company*.
[14] *A description that Hopkins appears to have taken from a c.1924 description by Charles Whitham (2013, 119).*
[15] *William Robert Bell was highly active in the Pieman – Waratah area from the early 1860s to at least 1907 (when he retired as Director of the Magnet Mine); and is closely associated with the development of the*

Goldfield Track, or Waratah-Donaldson Track or the Old Pieman Track) in 1879 (Nye 1923, Haygarth 2010). This find was not followed up until 1890 when Bell went back to the area, relocated the gossan and pegged a 20 acre lease over it (No.3705-87M, 16/2/1891) as a reward claim (Glasson & Cox 1968).[16]

This area of gossan, which was found to overlie the main Magnet lode, became the core of the first workings of the Magnet Mine (the Open Cut). This initial lease has remained the core of the actively worked Magnet Mine, with additional leases being taken up around it to extend the surface prospecting and limited workings to the north and south, and to accommodate the later mill and associated infrastructure to the east in the valley floor. In December 1893 a 40 acre section to the north, and another to the south, and adjacent were taken up by W.F. Petterd (2074-91M and 2075-91M) (Nye 1923).

In 1895 the Magnet Silver Mining Company NL was formed to work the Magnet lode (both Bell's section and Pettard's southern section (2075-91M)) with a starting capital of £1,024 (Nye 1923, 158). With the formation of the company, developmental and other works were pushed ahead, and in 1898 the capital of the company was increased to £2,500.

The mine was worked initially via a large open cut (termed the Open Cut), then adit levels down to the No.4 level. According to Glasson & Cox (1968) 'The orebody is a steeply plunging shoot and shaft sinking had to be undertaken from below Adit 4 to develop the ore body at depth. An internal underlay [incline] shaft was sunk from the No.4 level on the footwall side of the lode at an angle of 73^{o} to a depth of 950' (289.5m). The angle of the underlay shaft was designed to correspond to the dip of the lode from the surface to the No.4 level, however the lode flattens with depth, so by the time the lowest level (No 16 level) was reached, the distance between the shaft and orebody was 523' (159m)".

The timing of the early work is unclear, but by 1897 work had begun and, according to Harcourt-Smith (1897, 10), –

- the lode had been 'traced by trenches',
- the No1 tunnel (c.30-40' below the outcrop) had been driven nearly due west, with a rise put to the surface from a north crosscut, and stoping above the level, and
- the No 2 tunnel (c.40' below No.1 Adit and 'a little to the north) had been driven about 225m on a bearing of 305^{o}.

Harcourt-Smith (1897, 10) also describes the mine in 1897 as having a track from the Mine to the top of the hill, with the track being 'very steep' to the top of the hill, but having a 'good grade' after this. This appears to be the pack track route, as Harcourt-Smith goes on to note until a graded tramway is constructed "cording of the track to the main road [new Corinna – Waratah Road] is urgently required". Harcourt-Smith (1897, 10) also describes the mine area as falling "rapidly towards a large creek [Magnet Creek] ..., the outcrop [gossan outcrop] being about 250 feet above it".

By 1899, the No.3 and No.4 adits ('tunnels') had been driven onto the orebody, with several underground drives (crosscuts) driven to the south, almost, but not quite, to the No.3 level drive. The access track (labelled 'Old Track') is shown as accessing the No.2 Adit from above, via a spur to the northwest, then heading southwest above the Open Cut (1899 Mine Plan).

Heazlewood Field, having located the first two mines on the field, as well as the Mt Bischoff Silver Lead Mine and the Magnet Mine. He prospected over a period of 50 years and covered more of Tasmania than most other prospectors except for T.B. Moore and George Renison Bell. W.R. Bell was also unusual in that he worked on a number of mines as mine manager as well as prospecting. W.R. Bell was also a long time colleague and prospecting companion of James 'Philosopher' Smith, and at one period worked for Smith. (Haygarth 2010) (Note- W.R. Bell is not related to George Renison Bell).

[16] *W.R. Bell and Frank Elliott, a prospector and Bell's nephew, cut the Waratah – Middleton's Creek Goldfield Track, completing it in 1881. Elliott also accompanied Bell on the trip to peg the first claim at the Magnet Mine, ultimately spending 8 years working at the Magnet Mine as an assistant manager (Binks 1988).*

In 1900, based on his 1899 inspection of the Magnet Mine, Twelvetrees (1900) reports that only the same two leases (Bell's 3705-87M lease and Pettard's southern lease (2075-91M)) were being worked. He notes that the mine works are on the 20 acre block and "are proceeding principally in the direction of the 40 ac block". He however mentions other adjacent workings including –

- the North Magnet Mine which he notes is on the 'North Magnet section' (presumed to be Pettard's north section – 2074-91M) which has a tunnel in the process of being driven (presumed to be the lower of the two drives (tunnels) known at this mine as it is described by Twelvetrees (1900, 27) as 'the deep level from the North Magnet Property'),
- 'Pasch's trench', a high level trench to the west of the of main mine (presumed to be on lease 1827-93M (44ac) which was first leased to F. Paasch sometime prior to 1897) (Twelvetrees 1900, 20), and
- a shaft over 60 feet deep that has been sunk on gossanous outcrop on the Magnet Proprietary section (presumed to be lease 2075-91M, or 1827-93M).

At this time he also notes that at the Magnet Mine, the mine is '225 feet from the surface on the underlay', and that the underground workings are of 400' horizontal length. The underlay (inclined) shaft from the Adit 4 level, was at the time the main shaft, and this shaft remained the main shaft for the rest of the life of the mine.

In 1900, Twelvetrees (1910, 22) describes the Magnet Mine orebody as a 360' "wide dyke of eruptive rock (porphyritic websterite), enclosing the lode or veins of argentiferous galena. This runs through the Magnet ground with a mean bearing of N23^{o}E. It continues into the North Magnet section until it is lost under Silurian strata half a mile north of the North Magnet Mine. ... In the other direction it has been traced southwards as far as the Magnet Proprietary section ...". It appears the Magnet Proprietary Company have done minimal prospecting as he further comments "I do not know why the Propriety people do not prospect their ground". Twelvetrees (1900, 26) notes that in the workings at this time "The ratio of silver to lead in the Magnet is singularly constant being 3 to 4 of silver to 1 unit of lead. This is a higher ratio than in any other mine in the Colony".

Twelvetrees (1900) documents the total output of the Magnet Mine to 1900 as being 1,761 tons silver lead ore, 'all sold to date' for smelting in NSW. He also notes that the Company 'has calculated that there is 60,000 tons of ore plus 40,000 low grade ore. Twelvetrees believes the mine has great potential, and his general enthusiasm for the mine is revealed in the following comment – "Where the No.4 tunnel intersected the lode the ore is beautifully banded with carbonate of iron, affording perhaps, the most striking illustration of this structure to be found in the Colony" (Twelvetrees 1910, 25).

Up to the end of 1900 only first class ore was sent to market and the poorer second class ore was left in the mine.[17] Transport was the limiting factor.

The initial access was by a three mile long pack track along the leading spur between the mine and the Waratah-Corinna Road (Waller 1902), and this is how the first ore was also removed (Mr P. Clark in Godfrey 1984). In 1899 this was 'converted to' a horse drawn wooden tramway (Nye 1923, 158). This was the sole access to the mine at this time. Although the Corinna – Waratah Road was 'macadamised' by 1900 (Twelvetrees 1900), from the end of the tramway the ore had to be 'transhipped' then transported by drays to the Emu Bay Railway (Rae, 1986, 180).[18] The issue was noted in 1900 by Twelvetrees (1900) who commented that the proposed steam tramway direct to Waratah 'will enable company to sell stockpiles of ore, especially gossan' which is 'in favour with the lead smelters'.

[17] *During the historical mining period only lead and silver was recovered, and the low-moderate zinc concentrations were left in the tailings.*

[18] *Rae (1986, 180) describes the route as starting at the No.4 Adit then zig zagging its way up the western side of the valley until it reached the assay office on the top the hill. This route is unlikely to be correct, as there was no direct tramway route from the No.4 Adit, and the assay office was located part way up the hill (between the No.1 and No.2 Adit entrances (pers obsv, this study).*

1902 – 1922 Major Development of the Mine

The railway to Waratah was built (and surveyed) in 1901 under the supervision of R.F. Waller, who had previous experience in the region, and opened in January 1902 (Rae 1986). It was a 9.5 mile steam hauled 2' gauge with 30 lb iron rails imported from America. The line was heavily ballasted and in places the sleepers were laid closer together than usual because of the soft ground (Rae, 1986). The railway ran from the mine (lower, mill area), down the Magnet Creek Valley to the Arthur River, then for 1.5 miles up the Arthur River (ie, to the south) then wound around the north side of a leading spur, up to a siding on the Emu Bay Railway line near Waratah (Rae 1986), thereby connecting the mine to the greater Tasmanian rail network.

At this time a crusher and drying plant were also constructed at the mine, enabling much greater quantities of first class ore and gossan to be transported for sale to companies such as Smelting Company of Australia (NSW) and the Tasmanian Smelting Company (Zeehan), where it was used mainly as a flux. A leaching plant to treat lower grade ores was also being investigated in 1902. By 1903, the railway had enabled a 'regular shipment of 1,000 ton of ore a month' (Twelvetrees 1903, 31). The horse-drawn tramway to the Corinna Road fell out of use once the new railway was completed.

By 1903, further above ground and underground works had been carried out. New works included –

- five 5 lode occurrences having been exposed at the surface in the main mine section through trenching,
- the No.1 S Adit, which was in existence and had been stoped above the level, and
- the No. 2 S Adit, which had been driven 200' (and was in the process of being driven) (Twelvetrees 1903).

Twelvetrees (1903, 35) commented that "The South Workings [No.1S Adit and No.2S Adit) "will open up an altogether new block, which, however, may be hereafter connected back with the central part between the slides, and if so, will add enormously to the resources of the mine". He also noted that at this time the mine was employing about 100 people on a regular basis, and he was also hopeful that the Magnet Mine's success would stimulate the mines on the Whyte River.

By 1904 a concentrating plant was constructed to process the second class ore, which was accumulating. At this point the mill paid its first dividends, but these were not as great as might have been expected given the large expenditure on the railway and milling plant (Nye 1923, 159).

From 1904 to 1908 shaft sinking (from underground drives) was resorted to in order to develop the ore body. This involved pumping and winding appliances. At around this time the mill was also enlarged to handle the larger quantities of ore being mined. A dam was constructed on the Arthur River at this time (1906), as well as water races to bring water to the mine. This additional water was required not only for the milling, but for power purposes, with much more power being required for the operation of the larger mine and increased plant (Nye 1923, 159).

Water supply to the mine had been an ongoing issue, probably from the late 1890s, largely due to unreliable summer water supplies from the local creeks and a progressively expanding mine and concentrating mill. A review of the water supply in Nye (1923), together with historical images, suggests that the development of water supply was as follows –

- Water was supplied to the mine (and/or mill) from before 1904, with the water to 1904 being supplied from Magnet Creek - from immediately above Magnet Falls (c.660m) upstream from the mine and carried via a small tunnel, then fluming and a race to a point above the mine, providing a head of 250'. (This head can only be achieved by bringing the water around the upper eastern slopes, then piping it down into the valley, and across the valley, to the mill. It is possible additional water was supplied via the west slope south of the mine, then piped down the south spur to the mill).
- From 1904, given a still inadequate supply, a short race was cut from Seven Mile Creek to conduct water from this creek into one of the headwaters of the Magnet Creek, which then was picked up and used by the pre-1904 water supply system.

- In 1906 a temporary dam was constructed on the Arthur River (later (1916-18?), then later made into a permanent earth and rock dam with a capacity of 28 million gallons) which fed water into Seven Mile Creek (via a water race?) and then picked up by the 1904 system.

It is likely that construction and production in 1908 was limited, as in 1908 the miners at the Magnet Mine struck for almost a year over the company's refusal to recognise the union (the Amalgamated Miners' Association). This was one of the first big strikes at a west coast mine. The workforce at this rime was about 200 (N. Haygarth, 2010).

From 1908 to 1914, the mine just about paid its way without providing dividends (Nye 1923, 159). From 1914-1916 the war affected the mine's operation and in 1914 the capital was further increased (to £10,000). There was another brief period in 1916-1917 when the mine paid a dividend (Nye 1923, 159).

In 1918, the Magnet Mine is reported as being, 'speaking broadly' "not in too healthy a condition" (Twelvetrees 1918, 138), with the mine "living largely on its capital; that is, it is stoping and treating supplies of ore which have already been opened up, and it is not discovering new supplies (Twelvetrees 1918, 149). Twelvetrees (1918, 138) noted further that "The ends of the levels are not in payable ore, and the orebody at the lower levels has not the dimensions which it had at the upper ones". He does note however that conditions may not be a dire as he predicts, but this will need to be tested by sinking the mine to a greater depth. He further comments that, at least in the workings at the south end of the mine, "It is difficult to believe that the long stretch of payable lode worked at and above No. 1 Level has no downward extension" (Twelvetrees 1918, 138), while ore can 'be confidently expected' to be cut by the crosscut from the bottom level of the main shaft when it is sunk deeper (Twelvetrees 1918, 142). Twelvetrees is still regarding the lode as 'a remarkable ore deposit' (Twelvetrees 1918, 139).

In relation to active workings in 1917-18 Twelvetrees (1918) noted –

- the workings at the upper levels have been abandoned 'for a long time',
- a "new South Adit" was 'driven at time of visit' (1917) "on a beautifully straight west line for a distance of 1039 feet'".

He also noted that the workings have reached 'a good depth' (800 feet) from surface, but that the silver ratio has fallen from 4 ounces per unit of lead in the upper levels to a couple of ounces in the lowest levels, while the zinc proportion has increased twofold.

In 1918, due to the need for yet greater supplies of water and the installation of a large, new, hydro-electric plant, a second dam was built (and the first dam is also likely to have been upgraded at this time). The new dam, of earth and rock construction and with a capacity of 126 million gallons, was constructed at the intake of the water race from Magnet Creek. The water was fed around the upper western valley slope to opposite the mine via the existing water race system, a 'supply tank' was built at the pipeline intake from the race (head of the pipeline down to the valley floor), and a second parallel pipeline (the penstock) put in down to the valley floor to supply the power station.[19]

The hydro-electric plant and the penstock pipes were obtained second hand from the Cassilis Mine, a gold mine, in the North East Highlands of Victoria.[20] The Cassilis power station was Victoria's first significant hydro-electric power station (McCutchan 1995). It was bought by the Magnet Silver Mining Company in 1916, dismantled, taken to the Magnet Mine and re-erected in 1918 (VHR Datasheet 2013, Godfrey 1984).

[19] *Nye (1923) also noted that the water was 'piped to mill in 20" pipes'. It is unclear if this is the penstock pipe, or the pipe that supplied the mill which may have been replaced at this time.*

[20] *The power station was originally constructed near Cassilis in northeastern Victoria in 1907 by the Cassilis Gold Mining Company. It was erected on the Cobungra River just below the Victoria Falls, c.27 kms from the mine. The power station operated until the closure of the mine in 1916, when it was dismantled and taken to be re-built at the Magnet Mine. (VHR Datasheet 2013, op cit, Wikipedia 2013, op cit).*

The costs for installing the new power station were high, and for some time the mine was not profitable. Capital was also increased to £24,000 at this time. There was however a brief period in 1922-23 when the mine again paid a dividend (Webster 2007).

During this time the Magnet township, located in the Magnet Creek valley to the north (& northeast) of the Mine grew to become a "thriving and contented community of around 700 people" (Pink, 1984, 155).

1923 – 1931 Steady Production – Limited Expansion

In 1923, Nye (1923), following from Twelvetrees, reported on the Magnet Mine. Nye commented that by this time the mine was mostly worked out to No.12 level, but had some reserves of first and second class ore from the No.7 level down. In relation to the operation of the mine generally he concluded that "The mine is well equipped, and the hydro-electric plant supplies power very cheaply to all departments", that "the mine is maintaining a weekly output of 60 to 70 tons of crudes ... and 30 tons of concentrates", and "the future of the Magnet Mine depends upon the prices for lead and silver" (good at the time of writing) (Nye 1923, 179-180). Nye (1923) also noted that the mine was still short of water in summer, and the Company was looking to augment the water supply further from the Arthur River.

Work at the mine continued: Nye (1926) reported that work was occurring at that time in the No.8, 9 and 14 levels, including stoping between levels to the south, and mentioned work in the No 15 level. This work possibly included some work at all levels from the No.9 to the No.15 level, as he noted that the 'New lode' (presumably located by the South Adit workings) has been exposed at all levels from No.9 to No.15 levels, except for the No.12 level. Nye (1926, 188) commented that "The New lode, although it cannot be compared in size and importance with the Main lode, represents a decided acquisition to the Magnet Mine".

In 1926, the south Adit is reported as still being worked, and there is mention of the No.3 Adit being worked (although this is reported in 1918 as having been abandoned for a long time). He also noted that the works carried out since 1922 "are of considerable extent, and have been largely devoted to developing the Main lode and also prospecting for any continuation of it outside the known orebody and for the New lode" (Nye 1926, 189). This suggests that there may have been significant surface prospecting carried out in the period 1922 to 1926.

Power generation is reported as issue at this time, with the mine still having up to three months over summer with inadequate water supply for power, meaning, according to Nye (1926, 189), that there is at these times 'a more or less complete cessation of underground working, especially the breaking of ore". At such times he noted that "The hydro-electric power is devoted to pumping purposes and steam is used for all other purposes such as winding, etc." (Nye 1926, 189).

In 1929, Nye (1929) reported that between 1925 and 1929 the main work was in the No.15 and No.16 levels with some further work (mainly from the No. 8 level) undertaken to prove the New Lode (also referred to as the 'Back lode'). By this time the New lode has been found to join with the Magnet lode (the original lode).

A 1931 report by Nye notes that, at the time of his report, the main mine is down to the No.16 level at about 1,200' (c.393m), and the ore in the lode stoped out except between the No.15 and No.16 levels. Nye (1923) noted 'it is difficult at this time to judge the ore reserves because of the irregular shape and grade of the lode, and it is not clear as to how far below the No.16 level the lode continues'. Also in 1931 an auxiliary steam plant was installed as a standby power source.

1931 – 1940 Decline and Final Closure

By 1931 however the mine's future is not looking good. The price of metals is low and this has 'caused a more or less general cessation of operations by silver-lead mining companies'. The cost of operating the Magnet Mine was also high. The government provided £3,500 in assistance to the Company in 1931, but it continued to struggle. The mine was reported in late 1931(?) as having ceased operations in February

1931 due to a shortage of water, but had not resumed operations. From the end of summer to the end of the year the mine was reported as having been operated by a tribute party (Nye 1931).

The mine appears not to have been operated again by the Magnet Silver Mining Company NL after 1931. As well as the tribute operation in 1931, the mine was leased on tribute to a syndicate of employees with R.G. Hales as Manager from 1932 to 1933.[21] The Company may have operated the mine again briefly in 1934, but failed to sink the mine to below the No.16 level, and from 1933 to 1935 the mine was again let on tribute, this time to the Magnet Prospecting Syndicate NL, which was a cooperative (of miners?) with the underground mine manager being Percy Thomas (Godfrey 1984). In 1935 to 1936 the mine was operated by a new syndicate, the New Magnet Prospecting Syndicate NL. This syndicate received an initial £4,185 in government assistance, and a later further grant of £2,600 in 1936, but was also subject to supervision by the Inspector of Mines, J. Williams (Godfrey 1984).

The above tribute parties were all local, but from 1936 to 1940, Adelaide metal buyers Francis Snow Pty Ltd, who had an interest in the mullock dumps, leased the mine. During this period Francis Snow Pty Ltd operated as the Magnet Silver- Lead Mines NL, and the manager was Les Thomas. The mullock dumps were not worked (Webster 2007), but the Company sank the main shaft in the underground workings an additional 100', but without success (Godfrey 1984, 63).

In 1940 the Magnet Mine closed down finally. In 1940, E.L. Egan of Storeys Creek, through his company Spartan Silver-Lead Mines NL, undertook additional exploration work, including some cross cutting at a level 100' below the No.16 level in the main shaft in the underground workings (the shaft having been sunk the additional 100' by the Magnet Silver- Lead Mines Company (Godfrey 1984, 63)). This company organised the final auction of the mine and town (Godfrey 1984). Pink (1984) describes the auction, which was held in November 1940. According to Pink (1984, 156, citing a report in *The Advocate* of the 30th November 1940) "buyers from Victoria, SA, NSW, and many parts of Tasmania attended the auction of pumping plants, 500 tons of rails, locomotive and rolling stock, ball mill, flotation plant, power plant and other machinery and equipment". Pink (1984) notes this three day auction was the biggest of its kind held on the West Coast to that time. The railway line was used for a few more months to remove Magnet, finally pulling up and taking out the railway line itself (Godfrey 1984, 63).

1940 – present Limited Exploration & Resource Extraction

Although there has been no subsequent working of the underground workings, there has been some exploration and removal of the tailings in the Magnet Creek Valley (to recover the zinc). The main operations since 1940 include –

- Exploration by the Electrolytic Zinc Company in the early 1950s which was restricted to a desktop review, surface mapping and 2 drill holes (understood to be the work reported by (Cottle 1953) (Cottle notes that 2 holes were diamond drilled c.700' south of the No 4 adit, and at the time there was 'collapsed ground' (internal?) and the mine was full of water preventing access to the mine).
- Extensive exploration in the 1960s (not specified) (possibly includes the proposed drilling program noted by Glasson & Cox (1968)).
- Removal of most of the zinc bearing tailings from the Magnet Creek tailings in the 1970s (from 1975) by the Electrolytic Zinc Company (Wellington 1975) (which produced 20,000-30,000 tons of zinc)[22].
- Extensive exploration in the 1980s (not specified).

[21] *R.G. Hales was the Company Manager from 1912 to 1931 (Witham 2013, Godfrey 1984), and he is also noted by Godfrey (1984, 55) 'to have stayed on to manage the company's interests. Pink (1984, 155) however states that the syndicate that ran the mine on tribute in 1932-33 comprised about 75 of the Magnet underground miners headed by a Percy Thomas, working to keep the mine open through an agreement with the Company receiver. Godfrey (1984, 55) however notes that Percy Thomas managed the New Magnet Prospecting Company which operated the mine on tribute during 1935-1936.*

[22] *Magnet Mine, website – http://mindat.org/loc-184.html.*

Figure 8 Map showing historic features in the Magnet Mine to Waratah area (Source MRT no date, no reference).

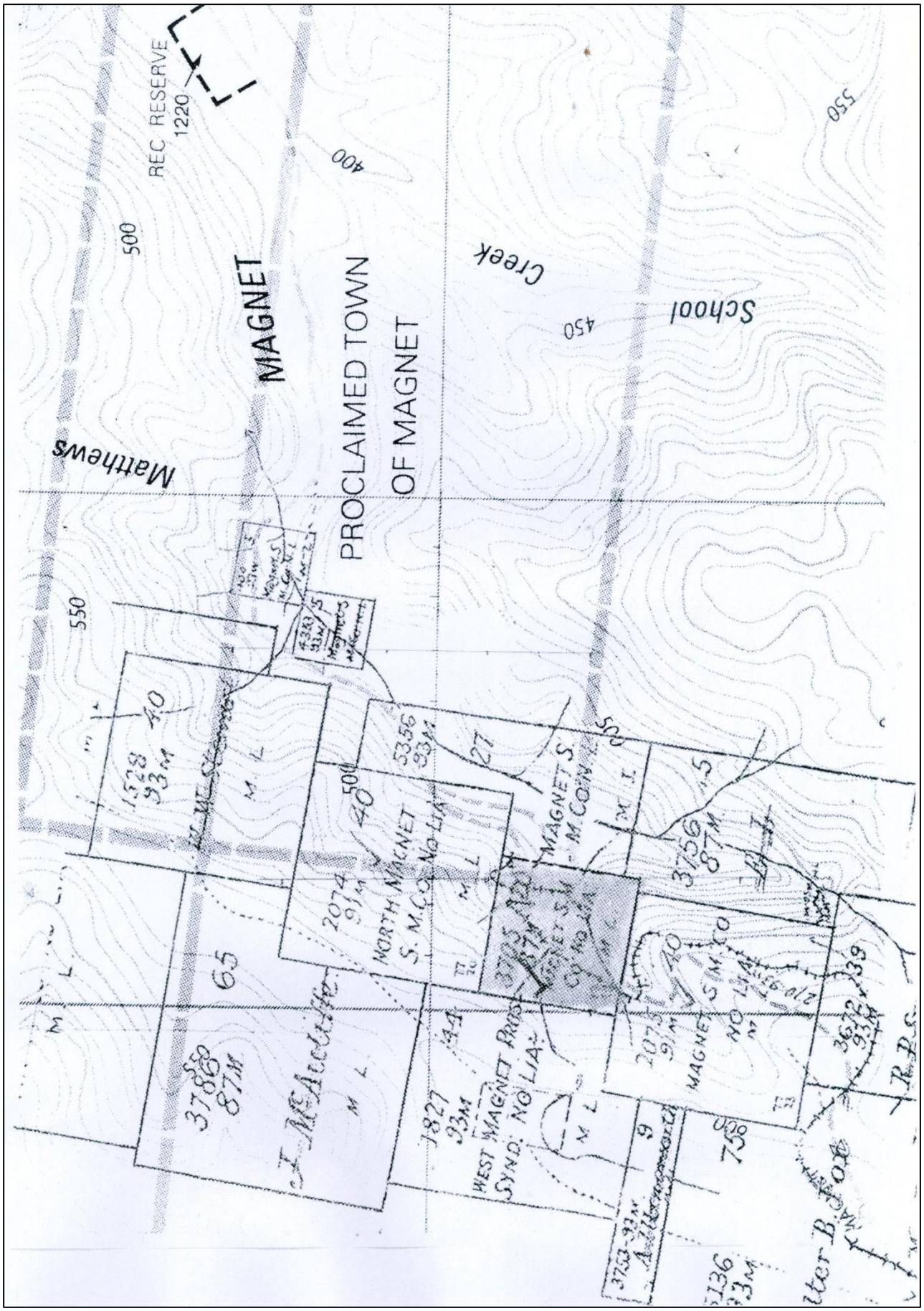


Figure 9 Mining leases of the Magnet Mine and adjacent to 1902 (Source MRT) overlaid on the Waratah 1:25,000 topographic map (Tasmap).

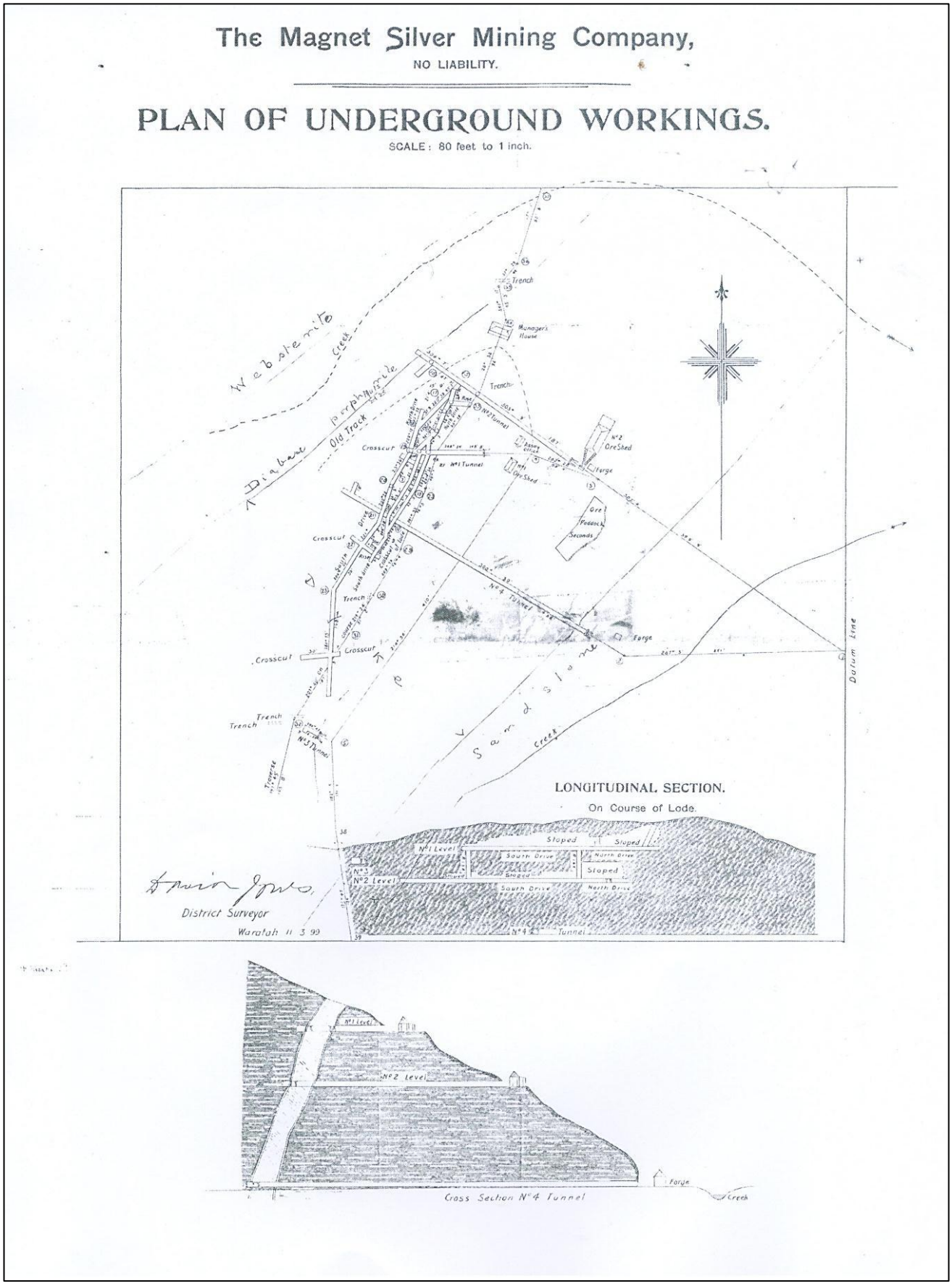


Figure 10 Historic (1899) plan and cross section of the Magnet Mine (Source MRT 415).

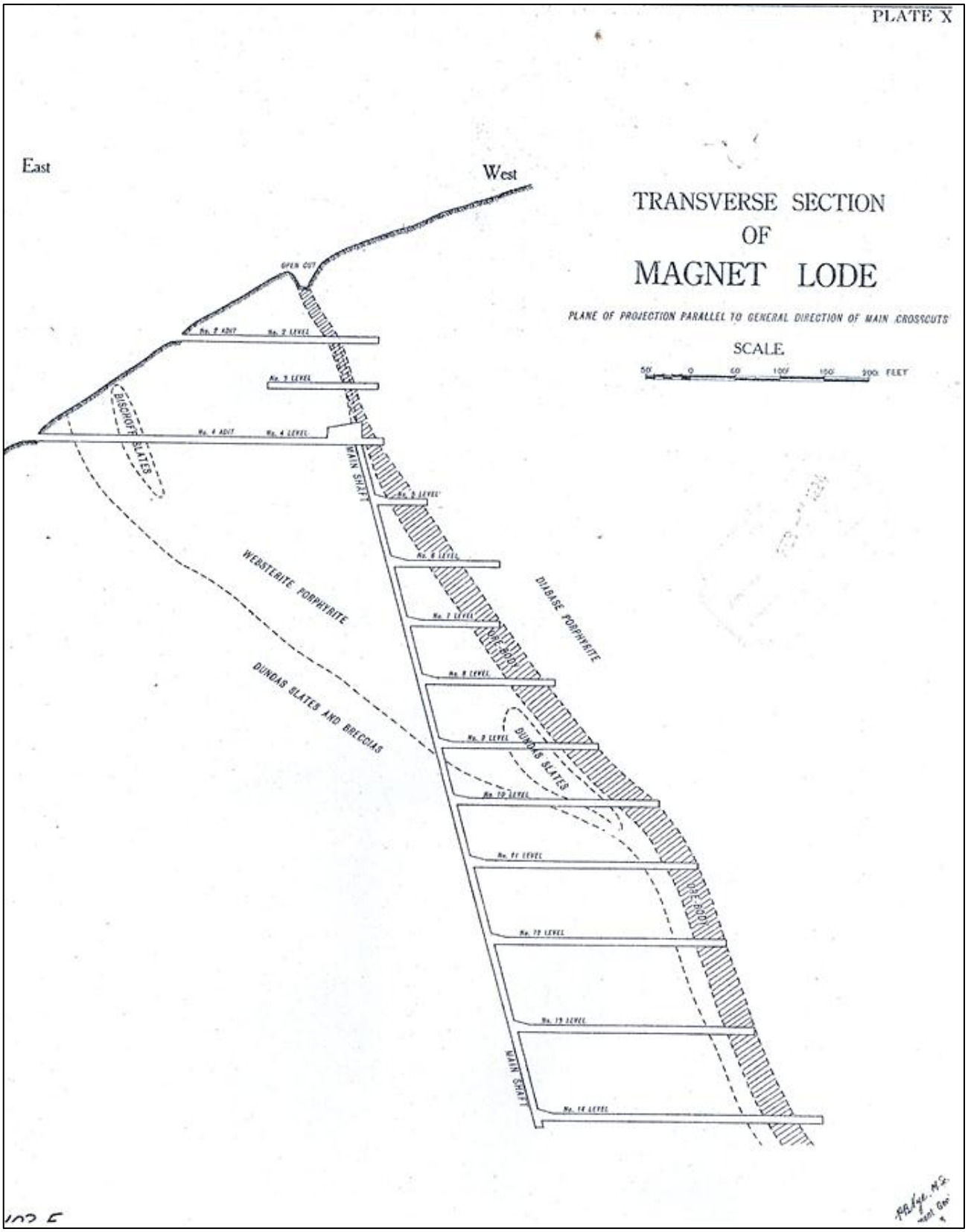
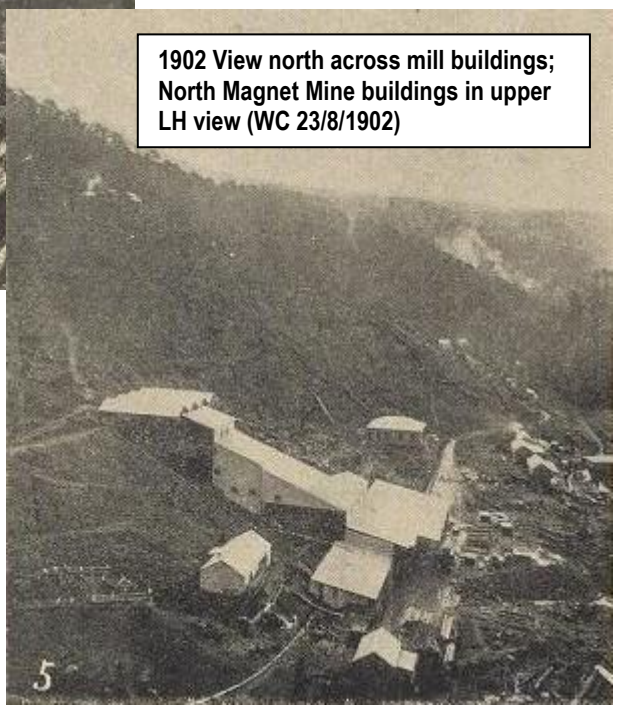


Figure 11 Historic (1923) cross section of the Magnet Mine (Source MRT GSB33).

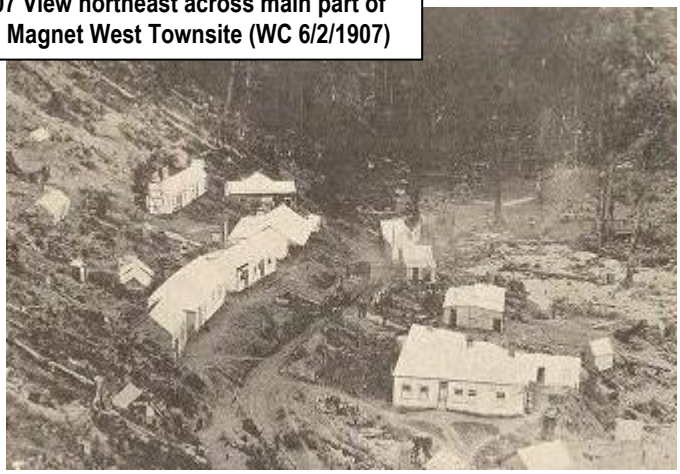
Figure 12 Plan of the main part of the underground workings of the Magnet Mine–1923 plan (MRT GSB 33).

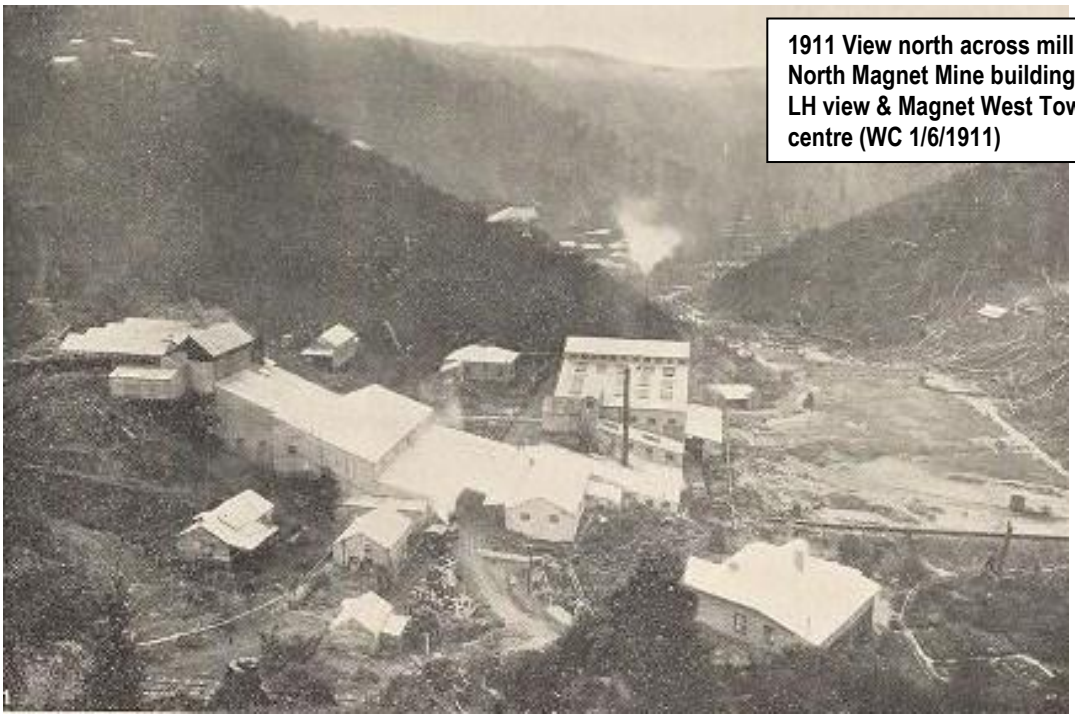
1902 View southwest across upper mill buildings to south spur (WC 2/8/1902)



1902 View north across mill buildings; North Magnet Mine buildings in upper LH view (WC 23/8/1902)

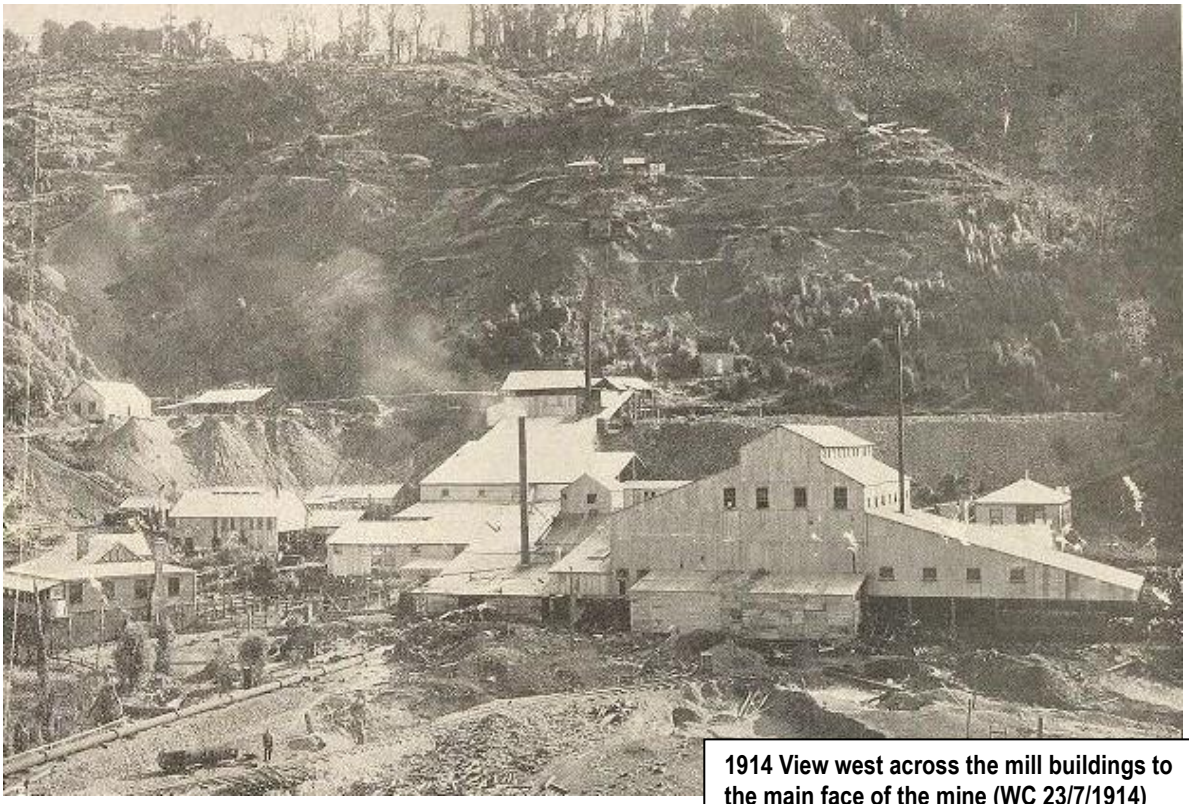
1907 View northeast across main part of the Magnet West Townsite (WC 6/2/1907)



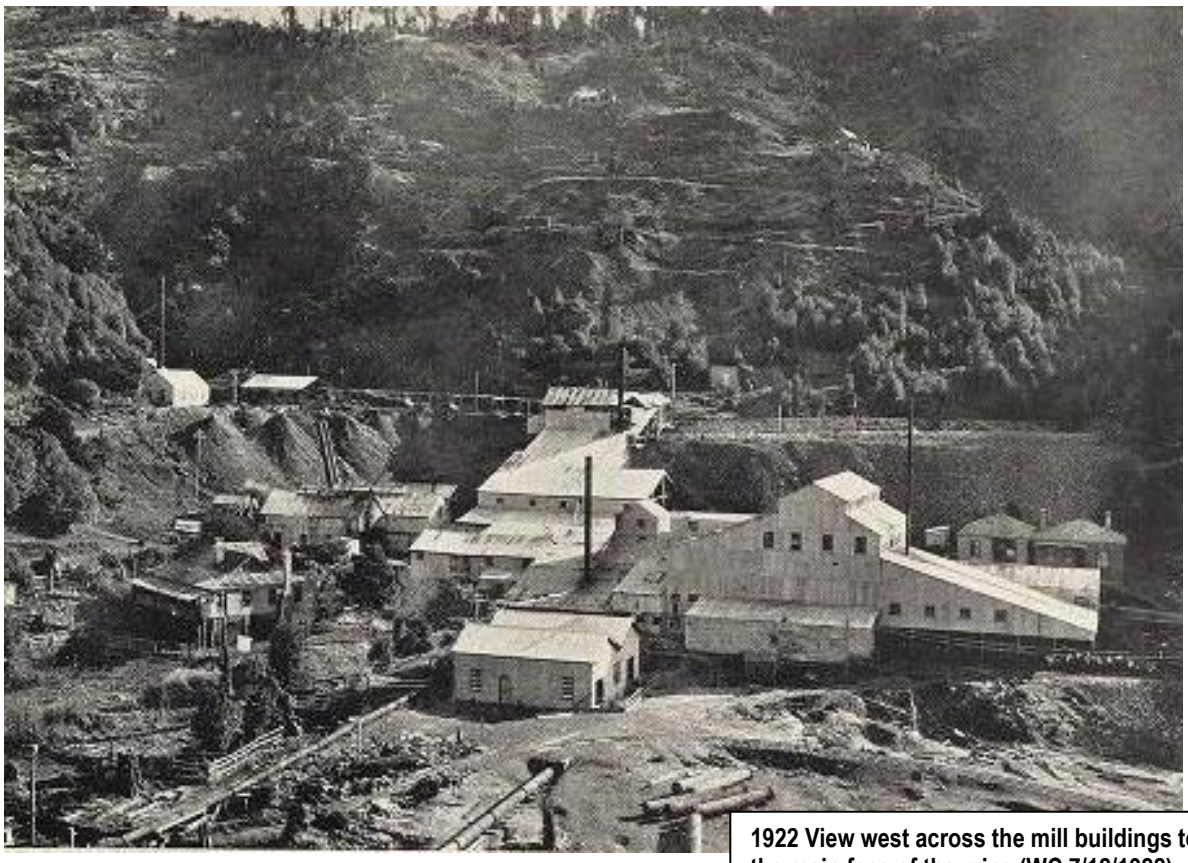


1911 View north across mill buildings; North Magnet Mine buildings in upper LH view & Magnet West Townsite in far centre (WC 1/6/1911)

Figure 13 Select historic images of the Magnet Mine (Source – Weekly Courier).



1914 View west across the mill buildings to the main face of the mine (WC 23/7/1914)



1922 View west across the mill buildings to the main face of the mine (WC 7/12/1922)

Figure 13 continued Select historic images of the Magnet Mine (Source – Weekly Courier).

- Exploration by Bass Metals in c.2007 understood to include a N-S road about 2/3 up the western valley slope and associated drilling (Webster 2007).

The original access track from the Waratah-Corinna Road, which was abandoned as the main access in 1902, has been important in this later exploration and mining as the railway to Waratah was effectively dismantled when the mine closed in 1940. It appears however that the original access track was not useable in the 1960s, given that Glasson and Cox (1968) recommended that it be cleared for drilling access. The original access track is understood to have been significantly upgraded in the 1970s by the Electrolytic Zinc Company in order to remove the tailings which were trucked to a stockpile near the Corinna Road where it was reloaded for transport to Rosebery where it was processed (Wellington 1975). Today this track is the main vehicle access to the mine, although access can also be gained along the old railway line, both connecting at the Magnet Mine.

In the 1990s Mineral Resources Tasmania undertook remediation work on the tailings on floor of the Magnet Creek valley. According to Webster (2007), tailings with possible metal contamination were ripped, agricultural limestone spread to neutralise acidification, and some steep batters on the mullock (locations not specified) were also 'graded out' (possibly destroying some of the tracks/tramways and house sites). This work had limited success and there is evidence of tailings being transported downstream during flood events (refer Project Brief).

Also, at some point prior to 2007, the large cuttings along the upgraded original access track south of, and below, the Open Cut, and which contain exposed gossan, were declared as a formal fossicking zone (the 'Magnet Mine Fossicking Area') under the *Mineral Resources Development Act 1995*. Some 29 minerals are known to occur in the fossicking area, with this area being one of the few accessible locations in the state for crocoite (Tasmania's mineral emblem) and yellow cerussite.[23]

In spite of its decline during the 1930s, the Magnet Mine was a successful mine by a number of measures. It was a relatively large mine for its time, employing a large number of workers, and it was regarded as well managed. Witham (2013, 65) noted that "Dividends to the amount of £39,000 have been paid, most of the profits having been devoted to the development of the property. ... The directors and managers[24] have preserved an admirable continuity of wise administration, foresight, and careful finance, and, at times, when they encountered adversity, the directors have dug into their own pockets to keep the mine going".

2.3 Heritage Context

Previous Heritage Studies

Magnet Mine

The only previous heritage study that has been undertaken for the Magnet Mine is a survey and assessment by Webster (2007) that was undertaken as an environmental impact assessment in relation to a proposed exploration program by Bass Metals Ltd, which included a proposed new road and drilling. The survey undertaken by Webster was focussed on the proposed road location which was a band running north off the existing forestry road and across the upper part of the west slope (ie, across the upper half of the mine workings). Webster however also inspected a number of the key workings (eg, Adit 4 and related features and the mill area). He documented all his finds, relating them to historically known features by historical photograph analysis and matching locations to historic plans.

[23] *Mineral Resources Tasmania website – http://www.mrt.tas.gov.au*.
[24] *The Magnet Mine's managers were T.H. Jones (1897-1901), R. Waller (1901-1904, E. de Latour (1904-1912), and R. G. Hales (1912 –1931) (Godfrey 1984, Witham 2013).*

Webster (2007) identified and mapped two clusters of house/hut sites, a water race, tracks, benching, the original Open Cut workings and a number of other surface mine workings including adit entrances, passes (shafts), open stoping (some collapsed), costeans and other trenching. Webster's plan of identified heritage features is provided in Figure 14.

Webster (2007) recommended that the proposed exploration road location be moved slightly to avoid impacting on the second hut group and, given that it would be difficult to avoid the water race, recommended the roading disturbance in this area be kept to a minimum. Webster also noted that there had been active bottle digging on the site and recommended that access to the area not be increased by the works.

Regional and Other Broader Studies

The Magnet Mine does not appear to have been documented in any other study. The mine and town are mentioned as historically important sites in the two regional studies that cover the Waratah area (Scripps 1990, GHD 2007), but neither study includes the mine or town in their heritage inventory.

Scripps' (1990) study is an inventory of historic heritage in the forested areas of northwest Tasmania which identified 215 historic sites. Scripps (1990) rated the significance of all identified sites based on their ability to demonstrate the historic activity that created them, associational links and aesthetic quality (categories taken from J.S. Kerr). Generally, well preserved historic mines are ranked as being of considerable to exceptional significance, as are the historic mining fields and historic mining towns that she included in her inventory. It is unclear why the Magnet Mine is not included in the inventory, but it appears to be because it is an already recognised significant heritage site.[25]

The second study is a more recent heritage study by GHD (2007) which established an inventory of heritage places for the Waratah Wynyard municipality. This inventory, which includes 399 places[26], however appears to be largely concerned with built heritage in urban locations and includes few, if any archaeological sites. Mining sites are only mentioned in the consultation summary where they have been identified during consultation, and the study notes that no mine sites were included in the inventory on the basis that there will be a future, more detailed, mining heritage assets study. The only obviously directly mining related heritage are a number of miner's cottages in Waratah, and a small number of other town (not mine workings) related places in Waratah.

The Magnet Mine and Town were identified during the study's consultation as having archaeological value. In relation to the mine and town the consultation summary states – "the township exists of ruins and bricks, and is relatively undisturbed. One can see where the roads and streets were. The township, approx. 10 acres in size, is an important archaeological site. A mine building remains." (GHD 2007, 60). The Magnet cemetery and the Magnet – Waratah railway were also both identified, separately, as heritage places during consultation. None of these places, or other heritage places at Magnet, however are included in the inventory.

A state wide mining heritage study was also undertaken in 1986 by Townrow. Townrow (1986) only investigated a sample of four mines – mining fields, but included Mt Bischoff as one example.[27] She did not include the Magnet Mine, and the only silver lead mines she investigated were a small number in the Zeehan area. The study has limited relevance to this assessment as its main purpose was identify the types of archaeological structures and features likely to be found at historic mining sites in the State. She also reviews the general threats to mining sites and makes a number of general recommendations for the management of mining heritage, but these are primarily focussed on future research.

[25] *This is based on few other large historic mines or mines on major mining fields being included in her inventory, and the fact that whole mineral fields tend to be included as a single site or place.*
[26] *The study scope included a range of heritage type places, including built heritage, archaeological sites, streetscapes, precincts and cultural landscapes*.
[27] *The historic mines and mining areas assessed by Townrow (1986) are Mt Bischoff (tin), the Mangana Mine (gold), the Zeehan Field (silver lead zinc), and the Seymour and Denison Coal Mines.*

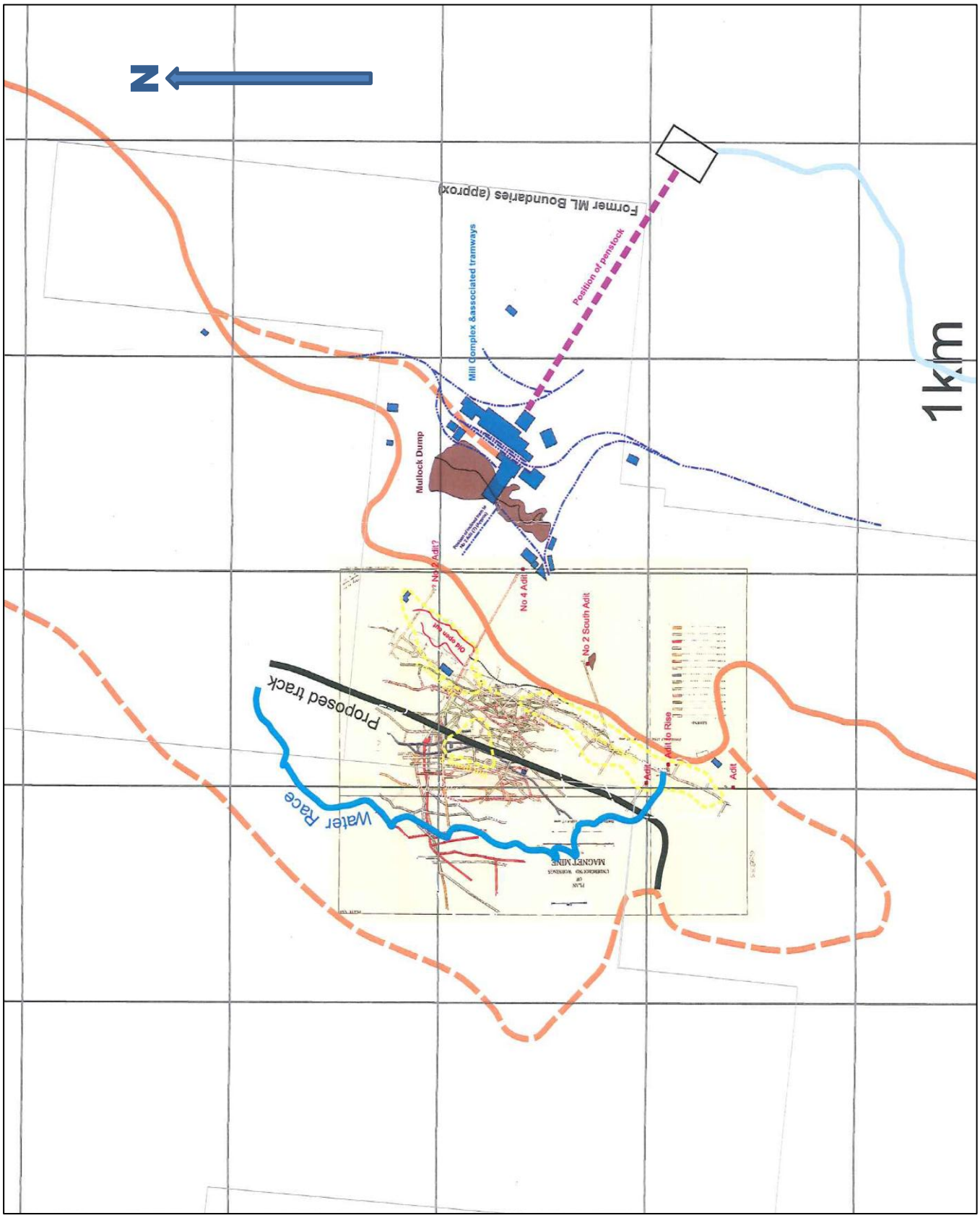


Figure 14 Plan showing the historic heritage features located by Webster (2007) at the Magnet Mine and the extent of the underground workings in c.1923 (Source – Webster 2007).

There are a small number of other known studies of related heritage (eg, an assessment of the Van Diemen's Land Company historic sites including the Hampshire Silver Mine (Austral Archaeology 2002) and the Corinna Track assessment (Snelgrove 1991)), but these were not considered to be relevant given the focus of the survey and assessment. They therefore have not been reviewed.

Heritage Status

The Magnet Mine is not listed on any local, State or national statutory heritage registers (eg, the local planning scheme heritage schedule, the Tasmanian Heritage Register (THR), Register of the National Estate (RNE), National Heritage List (NHL) and Commonwealth Heritage List (CHL)).

A review of the state and national heritage registers indicates that there has been little attention paid to mining heritage in Tasmania to date, with only nine different mining related historic heritage sites being listed on one or more registers. These include the following mines - the Coal Mines Historic Site (Tasman Peninsula) which is listed on the THR RNE and NHL; the Central Mine (Balfour) which is listed on the THR; the Tasmanian Charcoal Iron Company Mine (Beaconsfield) and the No1 and 2 asbestos mines at Beaconsfield which are listed on the RNE. The other sites are mine related buildings only and include the Mt Lyell Co. Offices at Queenstown (THR), the School of Mines at Zeehan (THR), the Mine Managers house at Waratah (THR), and the Beaconsfield Gold Mine buildings ruins (RNE).

Heritage Legislative & Policy Context

The following outlines the main legislative, policy and other statutory and non-statutory (but commonly accepted) frameworks for historic heritage assessment and management likely to apply, or potentially apply, to the Magnet Mine site.

Legislation

The *Historic Cultural Heritage Act 1995* is the primary Act relating to historic cultural heritage in Tasmania and is administered by the Tasmanian Heritage Council and Heritage Tasmania. Under the Act heritage protection is required only for places assessed as being of State level significance (according to set criteria) and listed on the Tasmanian Heritage Register (THR). The Act operates to ensure that the cultural heritage significance of listed places is not diminished through use or works. As the Magnet Mine is not currently listed on the THR, the standard protective provisions of the *Historical Cultural Heritage Act 1995* do not apply.

It should be noted that under the provisions of Part 6 of the Act, a listed, unassessed site can be granted temporary protection by declaring it a 'heritage area'; or under Part 8 of the Act. The Tasmanian Heritage Council can issue a stop work order if it is believed that a development or works (including for example potentially damaging remediation works) would affect an unregistered historic place considered to have State level significance as defined under the *Historical Cultural Heritage Act* 1995.

Protection for historic heritage may also occur at the Federal level through the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999 (& 2003 (Heritage) Amendments)*. In relation to cultural heritage this Act mainly applies in cases where an historic heritage place is listed on the National Heritage List or Commonwealth Heritage List, or is considered to be of national level significance and at risk. This Act does not apply, and is not likely to apply, in relation to the Magnet Mine as the mine site is not considered to have national level heritage significance and is not Commonwealth owned or controlled.

Statutory Planning

The main statutory regulations that apply to cultural heritage in the study area are those contained in the local planning scheme, the *Waratah-Wynyard Planning Scheme 2000*, which provides planning direction and control for the Waratah Wynyard Municipality under the *Land Use Planning and Approval Act 1993*. This scheme has as its primary objective 'to achieve sustainable use and development of resources

in the planning scheme area' (Section 2.1.1). The planning scheme's objectives in relation to sustainable development and to cultural heritage are "to ensure that when use or development of resources occurs:

(a) sites of Aboriginal heritage significance are identified and protected;

(b) the cultural validity of heritage sites is recognised;

(c) evidence of historic themes which are representative of Waratah-Wynyard's development is maintained and, where possible, rehabilitated;

(d) where practicable and feasible, artefacts of cultural or heritage significance are retained in situ; and

(e) items, sites, buildings and features of cultural heritage significance are given adequate protection from inappropriate use or development." (Section 2.1.1 (iii)).

In the *Waratah-Wynyard Planning Scheme 2000* historic heritage protection is provide for in Section 13 (Heritage Schedule). Although the objective of the Heritage Schedule is "To ensure use or development conserves, reveals, enhances and does not detract from those characteristics which contribute to the place's cultural significance" (Waratah-Wynyard Council 2000,140), the schedule only considers places listed on the Tasmanian Heritage Register, requiring change to such places to meet an acceptable solution or set performance criteria.

The planning scheme therefore in effect provides no protection for significant historic heritage that is not listed on the Tasmanian Heritage Register, including at present the Magnet Mine. However, because the *Waratah-Wynyard Planning Scheme 2000* takes its direction for the treatment of cultural heritage from Schedule 1, Part 2 of the *Land Use and Planning Approvals Act 1993* which sets out the objectives of the Act, the Council has an obligation to meet the objectives of Schedule 1, Part 2. In relation to historic heritage, this is specifically objective (g) which is "to conserve those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value" (also reflected in the scheme's own objectives for cultural heritage).

Forestry Heritage Management

Since the Magnet Mine is on State Forest, the *Forest Practices Code* is likely to apply in relation to timber harvesting and other development. In relation to historic cultural heritage the general principles of the *Forest Practices Code* are that –

- "The cultural heritage of all ethnic groups (e.g. Aboriginal and other Australians) will be considered in all stages of forest management. The need for consultation with special interest groups is acknowledged.
- Protection of cultural heritage should be achieved through identification, recording and subsequent management by prescription or reservation.
- Assessment of cultural significance and development of management prescriptions should involve cultural heritage expertise" *(Practices Code* 2000, 70).

For developments other than timber harvesting there is understood to be a development proposal assessment process whereby Forestry Tasmania evaluates and sets requirements for cultural heritage (and other values) protection.

Policy

No state or other major policy that relates to historic cultural heritage management is known to apply to the Magnet Mine or environs.

Guidelines

In Australia, including in Tasmania, the main guideline for cultural heritage that is used is the *Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS 1999). The *Burra Charter* has been in place since the late 1980s and has been adopted broadly by government in Australia as a standard for cultural heritage management.

Most importantly the *Burra Charter* provides a process for considering cultural heritage (refer Figure 3) and a number of important principles.

Key *Burra Charter* principles include -

- 'significant cultural heritage should be conserved' (article 2.1),
- 'the aim of conservation is to retain cultural significance' (article 2.2)
- 'places of cultural significance should be safeguarded and not put at risk or left in a vulnerable state' (article 2.4),
- 'significant associations and meanings of a place (including spiritual values) should be respected (articles 24.1 & 24.2),
- 'the policy for managing a place must be based on an understanding of its cultural significance' (article 6.2), and
- 'conservation should make use of all the knowledge, skills and disciplines which can contribute to the care of the place' (article 4.1).

2.4 Management Context

General Management

The mine is abandoned, although there has been mineral exploration since the 1950s and some mining of the tailings for zinc in the 1970s.

The Magnet Mine is located on State forest. No logging appears to have occurred in the area of the mine, but the presence of a forestry road along the southwest and west sides of the mine area and across the crest of the Magnet Range suggests logging may have been carried out on top of the Magnet Range in this area in the last c.40-50 years. The potential for logging in the mine site area is low given that this area was cleared during the period of operation of the mine and is all poor quality regrowth.

The Magnet Mine falls within the Primary Industries Zone of the *Waratah-Wynyard Planning Scheme 2000*. This zone allows for predominantly primary industry related use or development of significant tracts of land from the coast through to the southern extremities of the planning area. The intent of the Primary Industries Zone is "(a) To protect and allow for the sustainable use and development of the natural and non-natural resources on which agriculture, aquaculture, forestry and mining depend; and (b) To allow a range of other uses in ways and in locations that do not affect the viability of use or development associated with the primary uses of the zone" (Section 9.2).

3 THE HERITAGE OF THE MAGNET MINE

This section summarises the findings of the heritage survey undertaken as part of the project in May 2013. Given the large number of features identified during the survey and the dispersal of these features across the Magnet area, the discussion is by areas of the mine and the down valley township (refer Endnotes - Maps 1 and 2 and the Inventory).

In brief, the survey identified and documented 199 separate historical features. Ninety percent of these features were in the Magnet Mine area and the rest in the Magnet Township area. Features in the mine area (which include the North Magnet Mine workings) date from c.1891 up to the later phases of the mine, but most were in place by c.1922. It is assumed that most identified features in the Magnet Township date to after 1901-2 when the railway was put in, with workers living in the main mine area until that time (which is supported by the large number of huts sites identified in the mine area).

Identified features in the mine area include the following mine workings– the original mine area (the Open Cut), Adit 4, Adit No.2 South, the South Adit, the North Magnet Mine Upper Adit, a number of other smaller adits, a number of small shafts (including underlay shafts), open or collapsed stoping, cuts (open cuts) (possibly including Pasch's Trench) and trenches, as well as numerous mullock heaps which range from the extremely large mullock dumps of Adit 4 and Adit 2 (the Adit 4 mullock being comprised of 3 series of fanning finger dumps) to small mullock platforms and finger dumps outside underground workings, benched platform working areas, and a small number of weirs (sluices?), a tail race, a water race and water diversion channels, and the mine tailings which occupy the full area of the Magnet Creek valley. The locations of, and in some cases features associated with, the No. 1 Adit, No.2 Adit, No.3 Adit and the No.1 South Adit, which appear to have been destroyed (or buried), have also been established or tentatively established.

Other identified features in the mine area include the concentrating mill (on four levels), the power station and line of the penstock, the probable auxiliary steam engine site, two probable magazines, the mine workshop, two mine manager's houses (representing the early and later phases of the mine), the railway station, the main Magnet Waratah railway, the 1800s pack track & later tramway, other tramways, other pack tracks, foot tracks, footpaths to buildings, and a large number of small benched platforms most of which are likely to have been house or hut (or tent) sites.[28] Approximately 31 benched platforms likely to have been huts, houses or other building sites, or which were probable working areas (see above) were identified in the mine area. Seven of these are in the North Magnet Mine area.

Identified features in the township area include - the main Magnet Waratah railway, Low Street and two bridges on this street, one school, the Catholic church, possibly the early hall (also used as a school house), and another eight building sites (presumed to be mainly house sites), drystone walling, a continuation of the tailings from the mine and 2 associated tailings weirs, and the remains of a small ore, mullock or tailings processing works.

The features are all mapped (refer Maps 1 & 2, Endnotes) and have all been listed in the Inventory (refer Endnotes), which includes a brief description, historical information (where known), an assessment of significance, location (GPS - taken in the field) and a photograph (where available) for each feature.

[28] *These include the two house groups sites located and documented by Webster (2007).*

3.1 Magnet Mine Processing & Tailings Area (MMV & MME)

Historical Background

The date at which this area started to be developed has not been established. It appears not to have been established in 1897 when Harcourt-Smith visited the mine and noted that the workings were focussed around the Open Cut half way up the west slope and Adit 2 had only just started to be driven. It is likely that the area started to be developed around 1899 when Adit 2 was well established, Adit 4 had been established and the mine was starting to produce a significant amount of ore, and the pack track was replaced by a tramway (approximately on the same route). The early development in this area appears to have been the first concentrating works at the Adit 4 level.

The main period of development of the mill area is likely to be 1901-2, when the Magnet – Waratah Railway was established with its western termination at the base of the mine in the lower mill area, and with three spurs (& shunting lines?) at this location. The tramway from Adit 4 was connected to this system. The date at which this occurred is not known, but is presumed to have been around this time.

The development of the mill started with "the erection of a crusher and drying plant" in 1902 which enabled "considerable quantities of first class ore and gossan [to be] sent away from the mine" Nye (1923, 158). The historical images and mine history indicate that this plant was erected at the Adit 4 level (see MMW F12)[29].

The mill appears to have been enlarged slowly, with new plant being erected at critical junctures of the mine's history to allow the mine to be more effectively and profitably worked. A leaching plant to treat lower grade ores, which was being investigated in the same year that the crusher and drying plant were erected (Webster 2007), was probably the next plant to be installed. At the end of 1904 another concentrating plant was erected to treat the otherwise unprofitable second-class ore which was accumulating. Other expansion occurred between 1904 and 1908 to enable the mine to "efficiently handle the larger tonnages" (Nye 1923, 159).

The historical images indicate that the full mill, including the lower levels, was largely in place in 1918 when the hydro-electric power station was installed. Nye (1923) provides a detailed description of the mill and how the ore was processed. The following is a summary of this description (and a diagrammatic plan of the processing sequence is provided in Appendix 1).

> The seconds are sieved on a sorting floor – the fines go to a hopper then to the mill bin, and coarser material is picked over on a picking belt. The gangue (gossan) is trucked to the dump and the firsts join the first class ore and the left seconds are crushed by the Blake Crusher, then go to the undersize seconds. All seconds pass through a concentrating mill via an automatic feeder to the No. 1 Shaker. After this the processing includes passing through Jaques Rollers, trommelling, screening, separation into firsts and tailings in a Hartz Jig, followed by further processing by shakers, pans, rollers and screens designed to produce a high argentiferous galena concentrate (with the zinc going to the tailings). The firsts are passed through a Jaques Crusher and are bagged for market.

The mill was driven by steam until the hydro-electric station was constructed in 1918. The hydro-electric plant came from the Cassilis area in Victoria, where the plant, the first mine hydro-electric scheme in Victoria, was established in 1907 to service plant of the Cassilis Gold Mining Company, which it did until 1916. The hydro-electric station was installed at the Magnet Mine in 1916 to 1918, necessitating the construction of a second dam. The water was brought to the mine using existing races, then piped down into the valley to the power station using iron pipes, also from the Cassilis Mine, along an existing water supply pipeline. Nye (1923) noted that in 1922-23 the hydro-electric plant 'consists of a large

[29] *This is an Inventory feature number, refer Endnotes.*

pelton wheel and an alternating current generator, and other necessary equipment". In the same report he also noted the mill was driven by three pelton wheels of different horsepower.[30]

The tailings from the concentrating mill were fed into the Magnet Creek valley below the mill. It is assumed that this occurred from 1899-1902, when the mill was first established, up until the 1930s, and probably to 1940 when the mine and mill closed. One of the historical references mentions that the tailings were fed into 'dams', implying that they were impounded in some way. In the 1970s (prior to 1975) the Electrolytic Zinc Company removed much of the tailings to extract the zinc, and in the late 1990s MRT undertook remediation work on the tailings. This work comprised ripping and the spreading of agricultural limestone to neutralise acidification, and the 'grading out' of some steep batters on the mullock (Webster 2007).

Survey Heritage Findings

The survey identified 12 features in the mill area and broader valley area north to the Magnet Township area.

Within the mill area (MMV), which is located on the west side of the valley below the main mine workings, the features relate mainly to the mill, mine administration and the Magnet-Waratah railway. Located features include –

- The lower level of the concentrating mill which comprises two buildings (MMV F1 & 2).
- A concrete structure (at least the ground floor) (MMV F3), thought to be a magazine.
- Concrete engine beds (MMV F4), understood to be the auxiliary steam engine beds.
- The concrete foundations of the 1918 power station (MMV F5).
- Posts, a line of stones and an artefact scatter (MMV F6) understood to be the remains of the later Mine Managers House.
- Concrete building foundations and an attached small concrete room (MMV F7), understood to be the remains of the Railway Station.
- The Magnet end of the Magnet-Waratah Railway which in the mill area splits into 3 parallel lines – the lower line (MMV T1) which today can be traced to the east edge of the lower level mill building, the middle line (MMV T2) which runs one level above along the upper west edge of the lower level mill building, possibly continuing up valley (as MMS T1), and a third line another level up (MMV T3), which runs along the base of the Adit 4 mullock (MMW 14) at the same level as the railway station.
- What appears to be a drainage channel (MMV F8) from the creek that flows under the Adit 4 mullock (MMW 14), but which appears from the historical literature to instead be the continuation of railway spur line MMV T3.
- A large rectangular vertical walled cut into the hillslope into bedrock at the north end of the mill area which has a two level rock cut floor and internal machinery mountings (MMV F9). The function of this area has not been ascertained.

The valley area (MME) contains very few features. It mainly consists of the valley floor which is infilled with fine sediment which is the mine tailings, with the Magnet Creek flowing along the east edge of the valley floor, presumably pushed to this side by the deposition of the tailings (possibly assisted by excavation of a diversion channel). The bulk of the valley area is levelled and roughly ploughed (ripped?) into long, low parallel mounds. There is only one narrow, long section of tailings along the east side of the valley (MME F3) that appears to be unmodified by the 1970s mining and the 1990s rehabilitation works. This section contains a number of end to end logs running down valley with some associated sandbags along the creek edge, a feature thought to be the remains of one of the 'tailings dams' known to have been constructed. At the north end of the valley next to the power station the

[30] *It is unclear whether all three pelton wheels were housed in the power station or not.*

tailings are at a higher level (c.1-2m above the main valley tailings). This is interpreted as an area of unmined tailings. Immediately below this is an area of very swampy ground across mined tailings. This area appears to be pooling water from the northern creek and possibly the southern creek on the main (west) mine slope (via underground flow and some surface flow).

The only other features identified in the valley area are the water supply pipeline (MME F1) and a possible earth and timber abutment for a bridge (MME F2) on the east side of the creek about half way down the valley. The pipes for the penstock have been removed, but the line is evident as a 2-3m wide excavated channel running down the fall line of the slope to the floor of the valley, with remnant concrete pipe stands (double pipe stands), some of which are in situ and some of which have been moved and are broken. At the bottom of the slope on the west edge of the creek are some timber bedlogs, presumably for the pipeline.

Heritage Condition

The identified features in the mill and valley area are all archaeological sites, with no intact surviving buildings or structures. There is however good preservation of building foundations, many of which were of concrete, which in most cases allows the layout and function of the buildings to be understood. The main mill building (lower level) (F1) is the best preserved building, with the foundations (including a western retaining wall) and most of the lower floor timber structural timbers (posts) still standing, and a small number of artefacts (including a pair of large metal grinding pans) still on-site. The structural timbers however have been burnt and some collapsed timbers are being removed for use in modern fireplaces near the mill. The most poorly preserved building is the Mine Managers House which was a single storey timber building constructed on timber posts over the slope. The only evidence of this building today is two remnant upright posts and a timber edged raised area with an associated stone line (garden bed?).

The railway lines are evident and have been kept open by use, and T1 has some in situ sleepers preserved. T3 is less evident, especially at the north end, and the southern ends of T1 and T2 have been lost, T1 by the tailings mining and T2 by creek sediment burial. The main section of railway line (north) has been bulldozed, presumably in the 1970s for the mining of the tailings, but has maintained its original route. The water supply pipeline to the mill and power station is not evident, although much of it was buried and may survive below the ground. The pipes that ran down the east valley slope have been removed, but the excavated channel is extant and evident, although there has been some collapse of the edges and many of the concrete pipe supports are not in situ and are broken.

As noted above, the tailings have been extensively mined, but the extent of tailings is still evident as the original extent is preserved, the mining appearing to have only stripped the upper levels, and there is also a small area of extant, apparently unmodified tailings on the northeast edge of this part of the valley.

Survey Effectiveness & Gaps

The railway, mill and administrative buildings area has been surveyed in detail. The valley was only walked down, but visibility is good and all major features should have been identified by the survey. The only part of the eastern valley slopes that was inspected however was in the area of the penstock and immediately upstream for c.50m.

A number of additional buildings are known to have occurred in this area, but the survey indicates that most of these have gone, leaving no clear evidence, at least above ground. These buildings include –

- the railway sheds (at the end of T2),
- two building to the south of the railway sheds,
- the caretaker/watchman's cottage (near the Mine Managers house),
- a small number of buildings to the southwest of the railway sheds at the base of the older Adit 4 mullock,

- the second level mill building,
- the mine office (next to/south of) the railway station, and
- a set of buildings which were located on the edge of the lower bench north of the main mill building.

Significant building and other structures known to occur in this area, but which have not been identified and for which there still may be evidence include the following –.

FEATURE	LOCATION (APPROXIMATE)
two hut sites	on the lower eastern slopes south of the penstock (1 shown in 1909 Weekly courier image, and 2 in a c.1910 Robinson image).

3.2 Magnet Mine Workings - Main West Face (MMW & MMSW)

Historical Background

The history of the Magnet Mine is outlined in Section 2.2. The following summarises the evolution of the main areas and key workings of the mine, where available providing detail on actual mine workings. The main areas and workings discussed are the Open Cut, the western mine face adits, the line of shafts, cuts, minor adits and trenches along the line of lode (the Magnet orebody) and miscellaneous, mainly upper slope features. The evolution of transport is also briefly reviewed below.

Open Cut: The Open Cut is the first workings at the Magnet Mine (on the lease pegged by Bell in 1891). These workings are presumed to have started soon after 1891, and at least from 1895 when the Magnet Silver Mining Company was formed. The Open Cut was a surface workings in the area of exposed gossan overlying the main Magnet lode, and was the core of the first workings of the Magnet Mine. It is unclear how long the Open Cut was worked, but it is likely that it was abandoned by 1897 by which time the No.1 and 2 Adits had been driven to work the orebody underground.

Prospecting along the Line of Lode: By 1897 the presence of the orebody had been established by the Open Cut and was being mined in that area. There was also additional prospecting along the line of lode (which ran approximately NE – SW (bearing 23^{o})). In 1897 Harcourt-Smith (1897, 10) noted that "The lode has been traced by trenches", presumably within the main lease, hence largely south from the Open Cut.

In 1900 the adjacent southern lease was being worked as well as the main lease (Twelvetrees 1900). Twelvetrees (1900) noted that by then the lode had been traced southwards as far as the Magnet Proprietary section (ie, the southern lease), indicating that there were exploratory diggings along the line of lode to the southern boundary of the main lease. Twelvetrees (1900, 22) also noted that the Magnet Proprietary Mining Company had sunk a shaft over 60 feet deep on gossanous outcrop on the north edge of their lease, but indicates they have at this time undertaken little other prospecting work. He also noted that there was a large exploratory (?) trench (which he refers to as 'Pasch's trench'**)** on the lease immediately west of the main lease, which was first taken up by a F. Paasch prior to 1897.

Twelvetrees (1903) reported that between 1900 and 1903, 5 new lode occurrences (a knob of rich ore; an outcrop 80' south, an outcrop 250' further, then 2 trenches further south) had been exposed at the surface in the main mine section, indicating that there was additional surface exploration south of the Open Cut along the line of lode after 1897 (and 1900?).

In 1918 Twelvetrees (1918, 148) recommended more careful surface prospecting along the line of lode, indicating that more surface exploration was likely south of the Open Cut and main adits (ie, all adits except the South Adit which did not exist at that time). In 1923 Nye (1923, 176) reported that the main

lode had been ‘prospected southwards at numerous locations and depths ‘ with surface trenches to ‘several hundred feet south of the open cut’, and also noted that there were ‘other trenches still further south’ (which had exposed gossanous material). These presumably include the c.1891 to 1903 exploration works, but possibly include new post-1918 exploration works.

Nye (1923, 177) also referred to “small trenches and adits, near the south boundary of the Magnet Lease No.5637 [the Magnet Silver Mine Co. Consolidated lease that was in place prior to 1930]. He also mentions in his 1923 report an adit at the southwest corner of the original Magnet lease.

The Main Mine – the Adits & Underground Workings: The Open Cut plus exploratory trenches, shafts and adits provided an indication that the orebody continued at depth, dipping steeply to the west and extending for some hundreds of metres to the north and south. This made it worthwhile expending significant capital on the mine to develop it underground. The mine was essentially developed in a series of levels, with the first four levels established between c.1895 and c.1898 (and all being worked in 1900) and was accessed by adits in the western slope (Harcourt-Smith 1897, Twelvetrees 1900). By 1903 the No.1 Adit had fallen out of use, but the other three adits appear to have still been in use.

The other levels were progressively developed down to the No.16 level at 1,200’, and post 1931 down an additional level (another 100’), via the ‘Main shaft’ which was driven from the No.4 level and which was an inclined (underlay) shaft (also referred to as the ‘Magnet Underlay Shaft’ (Paine 1999)) designed to stay within the westerly dipping orebody. Although the angle of the underlay shaft was designed to correspond to the dip of the orebody from the surface, the orebody was found to dip less steeply below the No.4 Adit level. As a consequence, by the time the No.16 level was reached, the distance between the shaft and orebody was 523’ (159m) (Glasson & Cox 1968). The drives from the various levels were mainly north-south-S tunnels designed to exploit the length of the orebody within the Magnet Silver Mining Company Leases, which at one period included the leases on all four sides of the main lease.

Before 1902, when the Company’s railway from Magnet to Waratah was built, ore transport was difficult and only the first class ore was sold. The rest was dumped on-site or used to back fill the extensive underground stoping. The railway allowed the mine to be expanded and much greater amounts of ore to be exported, and from c.1902 the No.4 Adit appears to have become the main mine access. At this time (to c.1908), a period of major mine expansion, a number of buildings were established outside the Adit entrance, and a tramway was laid to the new mill. Up to c.1911, mullock was dumped in finger dumps in front of the No.4 Adit, but by c.1911 material began to be dumped on the north side of the mill buildings, and presumably also material from the No.2 South Adit which was slightly above the No.4 Adit. The deeper shaft based mining operation required pumping and winding equipment, which was largely established between 1904 and 1908 (Nye 1923, 159).

There is little information on the No.1 and No.2 South Adits, both of which are only mentioned in the literature by Twelvetrees (1903) and shown on a small number of historical plans. Based on Twelvetrees (1903) both of these ‘south Adits’ were in existence by 1903, with the No.1 S Adit (60’ higher than the No 2 Adit) having payable ore over 200’ and having been stoped above the level; and with the No.2 South Adit having being driven 200’ at time of writing. Twelvetrees (1903, 35) noted that these ‘south workings’ will “open up an altogether new block, which, however, may be hereafter connected back with the central part between the slides, and if so, will add enormously to the resources of the mine”.

The last Adit to be driven was the South Adit. This was the lowest level Adit of the mine, and was located to the south of the mill, 250-300m up the Magnet Creek valley (refer Section 3.3). It was driven in 1917 to prove the southern continuation of the orebody, and was still being worked in 1926.

It was only in c.1931 that the main mine reached the No.16 level (at 1,200’) (Nye 1931). According to Nye (1931), by this time the ore was stoped out except between the 15 & 16 levels.

The dates of establishment of the main adits are -

- No.1 Adit – between 1895 & 1897, work ongoing to at least 1903, long abandoned by 1918,
- No.2 Adit – between 1895 & 1897, but after the No.1 Adit, work ongoing to at least 1903, long abandoned by 1918,
- No.3 Adit – c.1898, with work ongoing to at least 1903, long abandoned by 1918,
- No.4 Adit – c.1898-99, worked continuously for most of the life of the mine (ie, to c.1931, then worked sporadically to c.1940),
- No.1 South Adit – between 1901 and 1903,
- No.2 South Adit – between 1901 and 1903,
- South Adit – 1917, worked to at least 1926 (refer Section 3.3).

Transport: The initial access to the mine was via a pack track from the Waratah-Corinna Road. This was replaced by a horse drawn tramway in 1899, and this access was replaced entirely by the Magnet-Waratah Railway in 1902.

Historical photos (only 1902 onwards) show the tramway running across the west slope in approximately the same location as the present day Magnet Road, then descending down to the N0.2 Adit level. They also show a spur track heading up and north past the front of the No.1 Adit and around the spur towards the North Magnet Mine, and another track running up from the No.4 Adit north across the slope below the No.2 Adit then across the creek and around the spur to presumably meet up with the main tramway. An access track to the No.4 Adit from the lower mill level (and railway) is also shown sideling across the southern spur (refer Section 3.3). There are other apparent minor sideling tracks criss-crossing the western slope above the main tramway, but these are hard to confidently identify (or map) from the available photographs.

Survey Heritage Findings

This area contains 113 historic features, over 50% of the historic heritage features identified and documented by the present survey. The features are mostly within the original 20 acre mining lease, but there are some that were on the southern lease (most of those labelled MMSW), and possibly some that were on the western lease (at one time held by Paasch).

The identified features include –

- the Open Cut (MMW F31) with 3 deep pits/shafts within the cut at the north end (MMW F32-34) and a probable upper cut (MMW F42),
- the early Mine Managers House (MMW F39) and another building platform (MMW F38) located on the flattened spur nose immediately north of the Open Cut,
- 3 exploration shafts & trenches immediately north of the Open Cut (MMW F35-37),
- the No.2 Adit mullock dump (MMW F18&19) with a collapse feature probably into the No.2 Adit tunnel (MMW F17),
- the probable No.3 Adit entrance (damaged by the present road), finger dump (MMW F21) and mullock dump (MMW F23),
- the No.4 Adit (MMW F1), benched platform with water diversion channel and associated building remains, including a vertical boiler, an engine bed and a large brick chimney (F2-8), and associated tramways (MMW T6 & T4?) (& MMS T2), and mullock dump which comprises two sets of fanned finger dumps near the adit (MMW F9 & 10) and on the north side of the mill the largest dump at the mine (MMW F14),
- the upper concentrating mill levels (F12 & 13) with associated engine beds and tramways, and a nearby brick floored area (function unknown) (MMW F11),
- the No.2 South Adit (MMW F24), benched platform with water diversion channel (MMW F25 & F27), finger dump (MMW F26) and associated tramway (MMS T3),

- a band of exploratory workings –3 adits , 4 large pits/shafts, 2 small open cuts and 8 trenches (MMW F56-74) – following the line of lode in the main lease area (and probably created from c.1891 to c.1908, although some of the high level features may date to up to c.1923),
- a continuing band of exploratory workings –1 adit , 1 short shaft, 3 probable underlay shafts/open stoping, 3 small open cuts, 1 large trench with significant mullock (possible short adit), 2 long trenches, 6 small trenches (costeans), a small stone weir, and fall line cut channel (tailrace?) (MMSW F1-19) – following the line of lode in the south lease area[31] (and probably created from c.1900 to c.1923),
- a large water race (MMW F79) on the upper slopes with a fall line channel at the south end (MMW F80) with a diversion (or sluice) (MMW F81) near the bottom end (this water appears to be being fed into the creek on which the No.4 Adit is located),
- a sluice on a small creek with associated tail race (upper northern area) (MMW F49 & 50),
- a small alluvial working on the upper north part of the slope (MMW F52), possibly Pasch's Trench - a high level trench to the west of the of main mine described by Twelvetrees (1900, 20),
- two large square cut, vertical walled areas (MMW F77 & 78) located near the ridge crest between the water race and forestry road (function unknown),
- various (c.15) benched platforms that are mainly interpreted as house sites, all of which occur in the main lease area, mostly above the main workings (ie, No.4 Adit to the Open Cut), and which include –
    - two small areas benched into the slope on the upper side of T4 (& below the No.2 Adit mullock fan) likely to be house sites (MMW F15 & 16) (although F16 may have been a magazine),
    - two house platforms (MMW F38 & F39) on the bench at the north end of the Open Cut, one of which (F39) is believed to be the original Mine Managers house,
    - a long bench MMW F83) below T1 at the north end of this area believed to have housed several huts,
    - a house site (MMW F40) also on T1 near the north end of this area, with an associated artefact scatter,
    - an excavated platform with drystone walling (MMW F43) on a spur which houses 4 house/hut sites (MMW F44-47), with a small lower hut(?) platform (MMW F48) on the west side (this is Webster's (2007) *Hut Group 1*),
    - a cluster of 3 benched platforms (MMW F53-55) on the upper slopes, one of which has an associated square stone chimney base (this is Webster's (2007) *Hut Group 1*), and
    - a square stone chimney base (MMW F76) assumed to be the remains of a house near the southern end of the water race.
- four larger benched platforms (MMW F20, 28, 67 & 75) which are interpreted as works areas rather than domestic building sites,
- the present Magnet Road which is the remains of the original pack track, later tramway, access (refer MMS T4).
- a major benched track (known to be a tramway) (MMW T1) which runs north and up from the main access tramway via the No.1 Adit, then north to the North Magnet mine, then believed to run north to above the Magnet West Town site,
- a well defined narrow benched track (probable pack track) (MMW T8) that runs from the northern upper slopes (the alluvial workings and House Group 2) down to the original access

[31] *Because of map inaccuracies it has been difficult to establish the exact location of the boundary of the leases (to establish this will require surveying expertise), hence some of the southern exploratory workings may be in the main lease area, possibly to MMSW F11).*

pack track/tramway near the southern boundary of the main lease, passing by some, and above most of, the exploratory workings,

- a small number of other tracks (MMW T2, 3, 5, 7, 9, 10, 11) that connect different parts of this area, generally connecting historic features, and
- a small number of other minor, miscellaneous features such as a small stone weir (MMW F41), a short cut face (MMW F51) and a small ore bucket (MMW F82).

There are also artefacts, usually individual artefacts or sparse scatters, associated with the main mine workings and benched platforms.

The identified features include all the known historical features and a number of additional features not known from the historical records. They also include, at least in part in some cases, all the key historical features of the mine in this area, and most of the key historical features of the mine more broadly.

Heritage Condition

The historic features on the western slope, ie, the main features of the mine proper and the early (pre-1902) mining settlement, appear to be extremely well preserved, although as archaeological sites, with no buildings remaining. Deterioration has been by removal (at the end of the life of the mine, or earlier for re-use elsewhere), but some sites have been destroyed by the later historical mining (eg, the house on the slope above the railway station and below the No.2 Adit, the site of which was buried under the No.4 Adit mullock). The bulk of known historic features however are well preserved, as is their context.

Damage due to post-historical mining activities is limited to three relatively small linked locations – the 1970s bulldozed formation which is the present Magnet road and the two open cut areas (MMW F29 & F30).[32] Although these areas are relatively small compared to the mine area, they have resulted in the destruction or burial of a number of key mine features including possibly part of the Open Cut (probable loss of south end), Adit 1 (entrance destroyed and tunnel blocked) and associated buildings including the No.1 Ore Shed and the Assay House, Adit 2 (entrance buried), Adit 3 (entrance destroyed?) and No.1 South Adit (entrance destroyed and tunnel blocked). Smith's, Jones' and Emmerson's Passes and probably also the 'Second Exit' (a vertical opening to surface from Level 4 at the S end of the Open Cut) (refer Twelvetrees 1918, Nye 1923), all of which appear to have been located in the area of MMW F30, also appear to have been destroyed by this cut. The cuts have also destroyed sections of tramway, in particular the south end of the tramway to the North Magnet Mine (T1). The establishment of the present Magnet road appears to have damaged a small number of exploration shafts and adits along the Magnet road south from MMW F30 to the creek.

The forestry road which runs up the south edge of this area along the western boundary of the mine site does not appear to have damaged any historic mining features (although very little of this road was surveyed), and the recent (c.2007) Bass Metals exploration road also appears to have caused minimal damage to the historic mine site, in part due to historic features being identified prior the roading (Webster 2007), which enabled some house sites to be avoided by the roading and the road crossing of the water race to be sited and built to result in minimal damage.

Survey Effectiveness & Gaps

The survey appears to have located all the key known features plus a number of minor known and unknown features on the western slope in the area of the main Magnet Mine workings, and within the main mine lease area, as well as a small number of features in the northern part of the southern lease and in the eastern part of the western lease. The main mine lease area is considered to have been well surveyed, although there are a few areas, mainly upslope of F30 to Webster's (2007) Hut Group 2 and on

[32] *It is unclear when these areas were excavated, and they may be late historical attempts to increase the mine productivity between c.1931 and 1940, through excavation of near surface gossans*.

the northern edge of the lease north of the Open Cut, which were not inspected and which are believed to potentially contain other features (track sections, hut sites and small exploratory works) (refer Figure 4).

There has been limited survey outside the main lease area, although the adjacent leases were held by the Magnet Silver Mining Company at various stages and potentially contain historic features related to the Magnet Mine, or other historical mining enterprises. The potential for this is considered limited given the historical information. The key areas that may contain additional features, and which were not surveyed by the present project are 1. along the line of lode to the south of the main lease, primarily on the south side of the forestry road south of the identified exploration features (ie, MMSW F13-19) and 2. the southwest corner of the western slope above the c.560m contour. The potential for heritage in these areas is indicated by the historical sources, but is considered to be low. In the south area the historical prospecting appears to have been limited (Twelvetrees 1900, 1918) and the identified features are thought to correspond approximately to the extent of surface exploration works noted by Nye (1923), however there is some confusion as to this extent (related to which lease boundaries are being discussed).[33] In relation to the southwestern area[34], some potential for historic mining features is considered likely as the area has not been surveyed at all, and a 1917 plan (in Webster 2007) indicates there are a small number of features in this area (although these may be the features located further to the north (F76-78)).

Very few significant building and other structures known to occur in this area were not been identified. Those which have been identified in the historical literature, but not identified on the ground have been largely destroyed by later works (see above). The majority of tracks and the water race on the upper slopes of the mine area (MMW F79) are the most poorly surveyed heritage features in this area. Tracing those tracks which have not been traced for any distance and tracing the north end of the water race would contribute significantly to filling the information gaps in this area. The original Pieman Track (Waratah – Middletons Creek Goldfield track), which is shown on the lease maps as running along the east edge of the Magnet Range ridge crest in this area, an area that was not surveyed, may also still be extant.

3.3 Magnet Mine Workings & Associated - Southern Spur (MMS)

Historical Background

The Southern Spur area is part of the main workings of the Magnet Mine. The lower area contains mainly mine workings and the upper area appears to contain features that are mostly related to accommodation and the pre-1902 access to the mine from the Waratah-Corinna Track. The history is therefore largely dealt with in Section 2.2, and to a lesser extent in Section 3.2, above.

The historic heritage in the upper area is likely to date from 1891 to 1902 when access was via the pack track, then horse drawn tramway constructed in 1899, from the Waratah-Corinna Track. The pre-1902 mining lease plan shows the 1899 tramway located slightly below the present day road in this area. The only historical material for the upper area in the vicinity of the track/tramway is a 1913 survey plan and a few historical images. The 1913 survey plan (10/3/13) shows the full nose of the flat bench on the spur above the mill buildings laid out for a town with a N-S/E-W grid layout of streets (6 x 6), with the main street cutting through the grid and approximating the location of the present Magnet road.

A 1902 Weekly Courier image (2/8/1902) of the spur shows it cleared of trees from the mill almost to the flat bench, with a cluster of possibly 6 huts on the west side of the spur nose just below the trees. The

[33] *The main area of potential is near the south boundary of the Magnet Lease No.5637 [the Magnet Silver Mine Co. Consolidated lease that was in place prior to 1930] where Nye (1923, 177) noted there were "small trenches and adits".*

[34] *This area is essentially the unsurveyed southern area between the present Magnet road, and the forestry road above the c.560m contour*.

image is poor quality and it is difficult to pick up the track/tramway. A pipeline is also shown running down the spur nose from c.2/3 up the spur (where there is a possible bench) to the mill area. The tramway from the No.4 Adit is also shown running east from the adit across the slope of the spur. A c.1918-1920 image by Spurling, which is to the west of the 1902 image, shows the slope beginning to revegetate and a single building quite high up on the south side of the creek.

There is also very limited information about the workings in this part of the Mine. The main working was the South Adit. The purpose of this adit, which is considerably further south of the other adits, was to prove the southern continuation of the Magnet lode (orebody). This was eventually achieved by driving the adit west to meet the orebody, then driving south from the No.8 level of the main mine, then via a connecting shaft (Twelvetrees 1918, Nye 1926). The South Adit, the final adit to be driven at the Magnet Mine, was driven in 1917. Twelvetrees, who was visiting at the time, reported on the work at the time of his visit, noting that the 'new south adit' was –

> "*driven into the hill on a beautifully straight west line for a distance of 1039 feet and is designed to intersect the lode below an outcrop of mineral located in one of the south trenches" ... planned to intersect the lode at a point c.300-400' south of the most southerly workings in the old mine*" Twelvetrees (1918, 148).

Work on the South Adit appears to have gone on for some years with Nye (1926) noting that work (a drive to the north) was still continuing in 1926. The adit at that time was connected to the main mine by 'a rise from the No 8 level'

Survey Heritage Findings

The survey located and documented 26 historic features in the southern spur area. Of these, 3 are mine workings (including the South Adit), 1 is part of an open working, quarry or processing area, 3 are mullock(?) dumps, 5 are tracks (possibly only 4 individual tracks), 11 are benched platforms likely to have been building sites, 1 is an artefact, and the other 2 features are large erosion features which were possibly borrow pits. The higher level features are likely to date from c.1891 to 1902, while the lower level features are known to date from c.1898 (when the No.4 Adit was driven) to at least 1926, with most initiated by c.1908.

The tracks include the continuation of the mid level railway line branch of the Magnet-Waratah Railway (MMS T1) which runs up the west side of the valley to the South Adit and was originally built to access the No.4 Adit. T1 is joined a short distance up the valley by the tramway from the No.4 Adit (MMS T2). Further up the slope is the start of the No.2 South Adit access track (MMS T3) which leads east from the adit (but which was not followed). A major line of benching (MMS T4) was located running slightly below the flat bench on the spur and around the spur, possibly crossing the western creek via an earth covered timber culvert style' bridge in the area of MMS T5. Its location and nature suggests it is the original pack track from the Waratah-Corinna Track, and that the later (1899) tramway was built on a slightly different (higher) alignment. The fifth track (MMS T5) is a short section of wide benched track which crosses the western creek, also via a timber bridge, and is likely to be associated with MMS F12. It is clearly later than MMS T4.

On the upper slopes of the spur seven benched platforms (MMS F10, 11, 15-19), of which at least 5 are house/hut sites, were identified. Two of these sit just above the western creek on its east side, one either side of MMS T4. The larger of these two platforms has a scatter of artefacts, including the remains of a brick chimney, part of a metal bed frame and an historic pick head. The other building platforms are located on the nose and west side of the spur between MMS T4 and the present Magnet road (former tramway route?). One of these is a bench on the nose of the spur at the same level as MMS T4. Two of the larger benches are located on the same level as the present Magnet road, and may be work areas associated with the former horse drawn tramway. On the west side of the spur bench a mound of rubble (MMS F20) and a linear mound of mullock like rubble with a road like gap (MMS F21) were noted. It is unclear what these features are, but the survey in this area revealed no other workings. As the spur bench

has been bulldozed it is difficult to interpret the extant remains on and adjacent to it. The lack of features in the undisturbed area however suggests that, although used historically, this area never became a townsite for the mine as appears to have been proposed in 1913.

Just below the present Magnet road and on the east side of the western creek is MMS F12, a long vertical cut face into rock with a sloping flat floor in front (between the face and the creek) which has two short mullock mounds (finger dumps) running off the wall at the north end, and a longer linear mound of mullock (MMS F13) that runs upslope along the north edge, but beyond the cut face. Above the cut on the north side are two in line mounds of earth, one above the other, and below this, and above and on the east side of the vertical cut is an open roughly level area (MMS F14) which may have been a building site. MMS T5 runs from the cut floor west across the creek and curves to the north, but is overprinted by the present Magnet road. It is unclear what this open cut feature is, but it is interpreted as a later open working or an earlier quarry for tramway or railway ballast).

The lower valley slopes include two adits located on the edge of MMS T1 and c.1.5-3m above the creek. These are the South Adit (MMS F1) which has a double finger dump in front which has slightly diverted the course of Magnet Creek, and a northern adit (MMS F3) which has a very short drive then a short cross cut at the end which houses a concrete and rock walled space at each end, and which is considered most likely to be a magazine for the mine. An exploratory trench (MMS F2) was also some noted distance above, and in line with, the South Adit. On the east side of the spur nose above the east end of MMS T4, two building benches were noted (MMS F6 & F7). The larger of these (MMS F7) was a substantial building with a brick chimney and a stone chimney, below floor water pipe evident, and a sloping back yard cut into the natural slope. A pathway with steps and a handrail of iron pipe connects these buildings to MMS T4. There is also a small bench into the hillslope off MMS T2 about half way along (MMS F9), also thought to be a hut or small shed site. Immediately to the south of MMS F7 are two short wide gullies (F 4 & 5) which open onto T1, which are considered to be borrow pits or natural slumps. The only other identified feature in the lower valley area was the remains of an ore bucket attachment for an aerial cableway (MMS F8) which is located at the base of the spur next to the north end of MMS T1.

Heritage Condition

Apart from the heritage features on the spur bench, most of the historic features identified are well preserved, although as archaeological sites since no buildings survive.

None of the tramways appear to have preserved rails or sleepers, but the formations and/or routes have been preserved. The original pack track (MMS T4) is very distinct except in the area of the western creek, particularly on the western side where it and the MMS T5 formation appear to have been overprinted by the bulldozing of the Magnet road, or perhaps the construction of the 1899 tramway. The track bridges over the western creek only survive as timber abutments in the creek bank, presumably having been removed by floods. The tramway from the No.4 Adit (MMS T2) been eroded out on the nose of the spur by a large erosion feature associated with the lower part of the western creek. The hut site in this location (MMS F9) has also been partly destroyed by this erosion.

The poorest preservation is on the spur bench, the crest of which appears to have been bulldozed into a series of relatively flat benches, removing all historic evidence in the bulldozed areas and leaving only remnant evidence on the fringes (eg, MMS F18-21). As this bulldozed area is largely bare, with only sparse shrubby regrowth, the bulldozing is thought to have been done in the 1970s as part of the removal of the tailings from the valley for zinc extraction, or as part of the 1990s rehabilitation works.

Survey Effectiveness & Gaps

The survey in this area focussed on features identified in plans, hence mainly up the western creek on which the No.4 Adit and No.2 South Adit are located. The lower valley slope was also surveyed as this

was considered a high potential area for tracks, and the flat bench on the spur in the area of the earliest access track was also surveyed as it was considered likely, given such a large naturally flat area, that there would be buildings associated with the pack track and tramway – in particular dwellings, stables for the horses and possibly workshops, equipment sheds, stores, and possibly even ore stockpiles.

As a consequence, the middle slopes of the spur have not been surveyed and are considered to have potential for additional historical features (see below). The Magnet Creek valley floor was not surveyed for more than c.25m above the South Adit, and the eastern Magnet Creek valley slope was not surveyed.

It is considered likely that there are additional tracks in this area, probably further up the creek and up the slope to connect the upper and lower features. Specific buildings and other structures known to occur in this area which have not been identified include –

FEATURE	LOCATION (APPROXIMATE)
additional hut sites	c.6 huts form a cluster below the flat bench on the spur west of the spur nose (shown in 1902 Weekly Courier image); only a few of these have been located to date
pipeline with intake bench (& possibly a water race)	the pipeline runs down the nose of the spur from a made bench about ½ to 2/3 of the way up (shown in 1902 Weekly Courier image); also possible water race south east to Magnet Creek
No 2 South Adit access track continuation	presumed to run across the spur nose dropping to connect with the lower track (MMS T1)

3.4 North Magnet Mine Workings & Associated (MMN)

Historical Background

There is very limited information available for the North Magnet Mine. This appears to have been a relatively early, short lived, small mine established on the north continuation of the Magnet lode, largely to prove the northern continuation of the lode (Twelvetrees 1900, Nye 1923). Twelvetrees (1900, 22) noted that the dyke of porphyritic websterite enclosing the lode or veins of argentiferous galena continued into the North Magnet section (on a mean bearing of 23^{o}) 'until it is lost under Silurian strata half a mile north of the North Magnet Mine'. He also commented that in the North Magnet Mine area the dyke is 'marked by a course of gossan several chains in length' (Twelvetrees 1900, 31).

The North Magnet Mine (referred to as such by Twelvetrees 1900) was described as being on lease 2075-91M (40ac), immediately north of the main Magnet lease. The Mine appears to date from 1893-1899, and to have been abandoned by 1908, but with some additional work being undertaken to the north of the earlier workings between 1914 and 1923 (Nye 1923).

The North Magnet Mine may have been established any time after 1893, which was when the mining lease was taken up. Given that the mine is first mentioned Twelvetrees (1900) and not prior, this suggests that the mine was only established in 1900 (or 1899 at the time of Twelvetrees visit to the Magnet Mine). Nye (1923) however indicates that a lower adit was driven in 1900, but with a shaft being sunk (near the southern boundary of the lease, then an upper adit being driven (without disclosing payable ore) before 1900.

By 1900 the North Magnet Mine had –

- an upper tunnel (adit and drive), which was 186' above the lower adit, and driven onto the hill (westerly) for c.360', with a cross cut to the south; and
- a lower tunnel (adit and drive), which was a wide tunnel ('for a double line of rails') 90' below Magnet Mine proper No.4 Adit level, and which was being driven in 1900 towards the Magnet Mine to the south, but which had not yet struck the lode (Twelvetrees 1900).

Nye (1923) noted that if the lower adit had proved the continuation of the Magnet lode, then the Magnet Silver Mining Company had proposed to use it as a haulage way, but that payable ore was not cut, and the south drive to the Magnet Mine was not put in.

In 1903 Twelvetrees (1903) reports the North Magnet Mine as being idle, but notes there is some possibility of work resuming. He recommends that this occur to prove the North Magnet Mine further by more crosscuts. It is possible that no further work on either of the adits occurred. According to Nye (1923) the lease was transferred to the Magnet Silver Mining Company in 1907, but was forfeited in 1908, then taken up again as lease 3838M, and held principally by the New Magnet Silver Mining Company until 1914, when it was declared void. Nye (1923, 181) noted that both adits were blocked up in 1923 (with the lower adit being 'completely blocked up', with the upper adit having had no further work, and with the lower adit having been driven for c.470'.

Nye (1923, 190-191) also described a third adit being driven after 1914 when the lease (6816M) was held by Healy, but that it "disclosed nothing of importance". Nye also noted that this third adit was north of, and c.200' above, the upper adit, and had been driven in a northwest direction for 240' with crosscuts to the north at 200' and 240' in, with gossan, but no ore found.

The earlier upper and lower adits are shown on a section of the Magnet Mine (*Transverse Section of the Magnet Lode*, P.B. Nye, 16/3/1916 (MRT 102F/3)), but other than this there is no information about the North Magnet. Some buildings (huts?) are however shown in the general location of the upper adit in 1902 and 1903Weekly Courier images (23/8/1902 & 3/10/1903), but are not evident in a c.1908 photograph (J.H. Robinson, no date).

Survey Heritage Findings

Twenty four historic features were identified in the North Magnet Mine area that can be confidently related to the North Magnet Mine, and another two features were located further down the slope (below the Magnet Road) which are more likely to relate to the Magnet Mine as they are associated with the tramway from the Waratah-Corinna Road and a pack or foot track from the Magnet Mine No.4 Adit level. All features are located on the nose of the spur immediately north of the main Magnet Mine area (and north of the creek which defines its north edge), with the main track (MMW T1) extending south into main Magnet Mine area and to the north.

The features are a range of exploration and mine workings, building sites and tracks. The main mining related feature identified is the Upper Adit (<1900) (MMN F1), which has an associated mullock dump and deep , square, vertical walled cutting (MMN F2), presumed to have housed mining equipment. Two small well preserved vertical shafts (MMN F6 & 7) occur above and to the west of the Upper Adit, and are likely to be air shafts or passes. Two small trenches (MMN F8 & 9), one of which may be an infilled shaft are located on the same level as the shafts, but a short distance to the north, and there are two large deep trenches c.20m apart (MMN F10 & 11) and connected by a shallow trench, that are located to the southwest of the shafts and run diagonally up the slope.

The majority of other features (some eight features) in this area are benched platforms, presumed mainly to be hut platforms. There are three small platforms (MMN F15, 16 & 17) immediately above the shafts, three (MMN F12, 13 & 14) immediately below the shafts, and two (MMN F3 & 4) lower on the nose of the spur at about the same level as the Upper Adit, one of which has an associated corrugated iron chimney flue and artefact scatter. MMN F12 & F13 are possibly processing areas (for the crushing and sorting of ore?) as they sit below MMN F6, one below the other and have a line of mullock running down one side. MMN F14, which sits below and the south of these, is a large platform above the main track (tramway) with a track leading to it from the west and is thought to be another working platform. MMN F4 is also a large platform and possibly another working platform associated with the Upper Adit entrance. There is also a band of surface artefacts (MMN F5), mainly domestic debris, that runs from the tramway below the shafts and concentration of huts sites, northeast and downslope towards, but above,

the Upper Adit. This area is presumed to have been the dumping area for domestic rubbish during the life of the mine.

Seven tracks were identified in this area. The main track (MMN T1), which was a tramway, extended south into main Magnet Mine area (historically via the No.1 Adit then connecting to the tramway from the Waratah-Corinna Road) and north, presumably to above the Magnet West Town site. A well benched, steep track (pack track?) (MMN T2) leads down the spur from the tramway, with smaller offshoot tracks – three to the north (MMN T3 & T6 and one to the Upper Adit (not numbered)) and two to the south (MMN T4 & T5). These could not be followed for any distance. A third larger track (MMN T7) heads up the spur from the area of shafts, possibly connecting with the Old Pieman Track (Waratah – Middletons Creek Goldfield track) on the crest of the Magnet Range.

The two lowest identified features are a large building platform with a square drystone chimney base (MMN F18) and an artefact scatter below (MMN F19), presumably derived from the MMN F18 building. This corresponds to the location of a single substantial building (with chimney) in a c.1910 J.H. Robinson image.

Heritage Condition

The features identified are all archaeological features, with no extant buildings. The area however appears to have had no post mining disturbance and the archaeology is therefore extremely well preserved. The smaller foot tracks are difficult to trace for any distance, presumably due to natural slope wash, and there has been some edge collapse of the prospecting trenches. The other features however are generally well preserved.

Survey Effectiveness & Gaps

The North Magnet Mine was located through following the MMW T1 tramway formation northwards from the main Magnet Mine area. Once located, the nose of the spur was surveyed down to the valley, but only upslope for another c.50m above the shafts and building sites. As there was no further evidence for mining in this area other than for the track (MMN T7), the spur was not surveyed further upslope.

Significant building and other structures known to occur in this area which have not been identified include –

FEATURE	LOCATION (APPROXIMATE)
Lower Adit (1900)	c.186' below the Upper Adit (but not on the nose of the spur which was surveyed)
Adit 3 (sometime between 1914 & 1923)	to the north of the Upper Adit and c.200' above it.
Additional house sites (possibly 3)	a cluster of 3 huts with another to the north is shown in a c.1908 image (J.H. Robinson, no date) which appear to be in the area of MMN F18, but which may be above this in the area of MMN F3 & F4.

There may also be additional associated features west up the spur ridge in the vicinity of the track (MMN T7) that is presumed to continue up the spur, and north along the tramway (MMN T1) that is believed to continue around the slope at a similar grade to above the Magnet West Townsite.

3.5 Magnet Township (MTW & MTE)

Historical Background

There is very little documentation regarding the development of the Magnet Township in the primary historical documents, which are largely preoccupied with the development of the mine workings. The information that is easily accessible comes mainly a small selection of historic photographs of the township and life at Magnet, and from Godfrey (1984) who has documented the stories of a small number of early Magnet residents and from the recollections of H.R. Paine (Paine 1994, 1999).

Although the historical images show a number of apparent dwellings located in small clusters across the face of the mine workings from the very early days of the mine up to at least the early 1920s (refer Section 2 and Sections 3.1 to 3.4), it is assumed that the Magnet township did not significantly develop until the Waratah to Magnet railway was established in 1902. This is supported by the historical images which only show buildings in the Magnet Township West area from c.1907 onwards, but not in 1903 (Weekly Courier image 3/10/1903), although the view is distant.[35]

In 1907 Mr Green (cited in Godfrey 1984, 57) states that Magnet was "little more than a rough mining camp", and at this time the school was in a small temporary public hall. At around this time there were a few hundred dwellings, mainly of bush timber, and several huts and a few tents, and these were scattered on the hillsides down the length of the Magnet Creek valley. At this time according to Mr Green, there were no proper roads or footpaths and no water supply, with water being collected from the creeks, and most cooking was done in camp ovens. The first shop was run out of the front of a house, and initially goods were also hawked around the town. Milk came from Waratah on the train, but people kept chickens and some kept pigs or goats (Godfrey 1984).

Mr Green's recollections are supported by the historical images, with a 1907 Weekly Courier image (16/2/1907) showing the core of the Magnet West townsite in place – and comprising a row of four buildings along the north (upper) side of the railway line, with two more houses and at least three more smaller buildings scattered on the slope above, and a line of four smaller buildings and a larger building (possibly the hotel) opposite along the south (lower) side of the railway line. A photograph taken in c.1909 (Weekly Courier 11/3/1909) is similar, but shows a two storey building behind and east of the larger building below the railway line in the 1907 image (noted by Godfrey (1984) as the hotel). This 1909 image also shows two small houses just above the railway line and west of hotel, and the road across the creek (immediately W of the hotel), with two small houses on the lower slopes on the south side of Magnet Creek.

The township also appears to be barely established by 1913, with a 1913 Survey Plan (38/2, 29/1/1913) showing the railway ('Tramway no roadway') with a parallel roadway above and a single land block above the roadway in what appears to have been the centre of the western part of the township, as well as the road that runs from this area northeast across the Magnet Creek and then up the south side of the creek, with a number of subdivisions shown along this. The same survey plan also shows a very large proposed grid town layout on the flat nose of the spur south of the mine, suggesting that the location of the main Magnet Township had not been established by this time. The limited development of the Magnet Township by 1913 is supported by Green (in Godfrey 1984, 57) who states that it was not until about 1915 that proper footpaths were constructed and a new school was built. He also notes that when the hydro-electric power station was constructed in 1918, this also provided street lighting and lighting for the public buildings.

[35] *It is possible that some dwellings were established in this area before 1902, as the Magnet Township West area is at approximately the southern extent of the 1899 tramway (at the point where it heads back south along the Magnet Creek to the mill). It is also possibly near the Magnet North mine Lower Adit (refer Section 3.4).*

There is however a 1912 survey plan (MRT, no ref) that shows a detailed layout for the west part of the Magnet township. This shows the whole valley floor as being subdivided for houses. On the north side of the railway line is one row of blocks, with 'High Street' running parallel to the railway line and above it, with six contiguous blocks above the main part of this town area. South of the railway line are two rows of blocks, the two rows being separated by 'Low Street'. No extant buildings are shown.

Information in Godfrey (1984) indicates that, at its peak, Magnet had 600 to 700 inhabitants, making it a sizeable town. The town is also known to have had (Godfrey 1984, Paine 1994 & 1999, and historical images) –

- cricket and football teams,
- a brass band,
- shops (including a mixed business, and a butchers and a bakery (although later bakery goods came from Waratah by train),
- a hotel (Magnet Hotel, operated at least between 1902 and 1929)[36],
- a boarding house (of at least 2 separate buildings of weatherboard with gable roof),
- a hall (which had an all-myrtle floor) (possibly 2 halls over time),
- a school (probably 2 over time),
- a hospital (established some time between 1911-1914, closed c.1914-15, then used as a private residence),[37]
- a Catholic church and a Methodist church[38] (and possibly also an Anglican church), and
- a station.

Positive memories of Magnet include the bush, the weather, glow worms, the music, singsongs and dancing, the pictures, wood-gathering parties, sports, fishing in the dams and creeks, commercial visits to measure the men up for suits, the railway trip (with the scenery being described as 'breathtaking'), and the underground workings. Mr P. Clark remembers vividly his visit to the No.9 level of the mine, termed the 'Bonanza level', which he remembers looking like Aladdin's Cave when lit up, with silver 'in broad seams divided by white quartz' and 'crystals of gemstones of creamy yellow and bright red' (Godfrey 1984, 57). The more sheltered aspect of Magnet compared to Waratah, the wildflowers, and the wildlife are noted as environmental attributes.

Survey Heritage Findings

The present study field survey identified and documented 20 individual features in the Magnet township area. This includes transport related features, public buildings, domestic buildings, tailings features and a small workings.

The Magnet - Waratah railway (F1) runs through the area. In the western half of the area it runs north of the Magnet Creek then crosses over to the south side at the northern most point of the valley. The railway formation has associated cuttings, built up embankments (with ballast/mullock), sleepers, minor creek bridging features, and stone walling (MTW F3). There appears to be a second level of adjacent, parallel railway (MTW F2) line just east of the main Magnet West Townsite area, possibly the remains of an earlier tramway or a siding.

Low Street is still extant, and is unmodified from the Magnet West Townsite centre to the south side of the valley, after which it has been bulldozed over, but on the original alignment. Where it crosses the Magnet Creek in the Magnet West Townsite area, there are the remains of a bridge (MTW F4 – built up stone lined embankment/abutment and collapsed bridging timbers), and where it crosses the Magnet Creek in the Magnet East Townsite area, there are the remains of another bridge (MTE F3 – timber and stone abutments and bridging timbers).

[36] *Haygarth, Oresome Times, http://waratah.vpweb.com.au.*
[37] *Other information suggests the hospital was only opened in 1914.*
[38] *Haygarth, Oresome Times, http://waratah.vpweb.com.au/WR-BELL-S--MAGNET.html.*

The tailings from the Magnet Mine continue downstream to at least the second crossing of Low Street. These tailings appear to have been largely modified – mined (stripped) and/or rehabilitated, and only c.15-20% appears to have been left intact. Two log tailings weirs were noted (MTW F13 & MTE F2).

On the Magnet Creek on the north side of Low Street, and near the bridge is the remains of a small workings (MTW F5). This has a small ore crusher (battery box) and a range of associated fragmented metal, and is likely to have been a small, late period tailings (or mullock or ore) processing site.

There are few visible, easily identifiable remains of the original buildings in this area, most building sites being identifiable by small rectangular benches, and in a small number of cases, stone chimney butts, stone walling on lower embankments and/or introduced plantings. Most of the houses appear to have been located on the north side of Magnet Creek (not surveyed). Identified building sites include –

- three, possibly four or five house sites (MTW F6-9) on the south side of the valley (and on the south side of Low Street) just above the break in slope near the Magnet West Townsite centre. These comprise benched platforms, most of which have associated brick and other artefact (mostly glass and metal) scatters, and in one case introduced plants, and associated foot tracks;
- two building sites (MTW F10 & 11) and an associated track (MTW F12) to the northeast on the valley floor, one of which is a raised rectangular platform with drystone walling (this is possibly the early Magnet Hall which served as a school) and the other evident as a square stone chimney butt;
- an open grassy area on the north side of Magnet Creek (MTW F14);
- a low mound with abundant scattered artefacts and a small timber structure (MTW F15) on the south side of the creek on the valley floor near the north end of the Magnet West Townsite area;
- a small benched platform (MTE F4) just above Low Street at the northernmost point of the valley (interpreted as the Catholic church site);
- one probable house site with a chimney butt and introduced plantings (MTE F5) to the east on the south side of the valley (and on the south side of Low Street) just above the break in slope; and
- a large benched platform (MTE F6) above the railway formation which crosses at this point with associated introduced plantings, concrete structures and drystone walling (interpreted as one of the school sites).

Heritage Condition

All identified features are essentially archaeological sites with no remnant standing structures. Apart from Low Street, which has been bulldozed (but which is still on its original alignment, and the tailings which have been largely (but not entirely) rehabilitated (levelled), the sites are all intact and have not been disturbed since the closure of the Magnet Mine and removal of the structures (and in the case of the railway, the rails). There has been some damage by fire (eg, the burning of bridge timbers), and the native vegetation is reclaiming the slopes of the valley, with some of the building sites now covered by moderately thick shrubs, and in wet areas, thick scrub. There may have been some artefact collection by visitors, but there is no evidence of this, and there appears to have been little significant bottle digging in this area. The most evident visitor impact is fire pits and rubbish from recent (and current?) camping in the Magnet East Townsite area on the south side of the valley (the north appears to be too steep and wet).

Survey Effectiveness & Gaps

The Magnet Township was subject to only limited survey as detailed investigation of the township was specifically outside the scope of the Project Brief. The survey of the township was limited to a reconnaissance survey to establish the size and nature of the full Magnet Mine for orientation and significance assessment purposes, and to ensure the northeast corner of the study area as set out in the Project Brief was investigated in the field.

The survey therefore focussed on the valley floor and the south lower valley slopes. As a consequence the valley on the slopes on the north side have not been surveyed above the railway line, and numerous house and other building sites, as well as tramways and tracks, may occur in this area, but have not as yet been identified and documented.

Significant building and other structures known to occur in this area which have not been identified include the following –

FEATURE	LOCATION (APPROXIMATE)
the hotel	centre of Magnet West town site - on the south side of the railway line
the hospital	*unknown*
several shops	*unknown*
the later main Magnet Hall	*unknown*
a second school	*unknown*
High Street,	Magnet West townsite above the railway line
the possible continuation of upper level tramway from the mine (MMN & W T1)	Magnet West townsite above the railway line on the upper slopes

4 CULTURAL SIGNIFICANCE

The *Burra Charter* (Australia ICOMOS 1999) advocates a 'values based' approach to heritage management. This means that decisions about managing a heritage place, if significant, are based on attempting to preserve the significance of that place. As a consequence the assessment of cultural significance is central to cultural heritage management.

In the following assessment the definitions and aspects of cultural significance as set out in the *Burra Charter* (Australia ICOMOS 1999) are heavily relied upon. The *Burra Charter* defines the cultural significance of a place as the 'aesthetic, historic, scientific, social or spiritual value for past present or future generations', with cultural significance seen as being 'embodied in the place itself, its fabric, setting, use, associations, meanings, related places and related objects' (Australia ICOMOS 1999, 2). Aspects such as the representativeness and rarity of a place, seminal nature of a place, and its authenticity and integrity are also taken into account in assessing cultural significance.

An assessment of significance is based on all these components, but is made without reference to other factors such as owner/manager needs and aspirations, or available resources. These other factors are however crucially important in developing policy and advice for managing a place.

Overall Cultural Significance of the Magnet Mine

In the following assessment, the full Magnet Mine (ie, the full extent of the historic mine workings, townsite and associated features) is considered. Because the historical understanding of the mine and its physical heritage and social values are limited, and because there is limited comparative material, this assessment should be considered more as an indicative assessment.

The Magnet Mine is considered to be of state, regional and local significance as a long lived, continuously operated, well run and productive silver lead mine which operated through the larger part of the historic mining period (ie, c.1890 to 1940). It has significance as a mine complex with initial surface workings, an underground mine, a large concentrating mill, its own hydro-electric scheme, its own town, and its own railway connection to the broader state transport system, and for its ability to demonstrate a mine of this type through its well preserved surviving (archaeological) features and site context. The mine also has social significance and had direct and in some case significant association with key Tasmanian figures such as William Robert Bell, Eric Reece and Roy Fagan. The mine is historically and in terms of its preserved heritage an extremely good representative example of a well managed, medium sized, productive historical Tasmanian mine.

The Magnet Mine has high historical significance. It was the only silver lead mine that was in continuous production in the Mt Bischoff area (Webster 2007) and is one of the few mines in the region and in Tasmania that operated continuously, and for such a long historical period (ie, c.1890 to 1940). Although it was not the first silver lead mine in the area, the mine also represents the earliest silver lead mineralisation find (1879) in the local area, predating the finds which lead to the Heazlewood Field by some six years.

The Magnet Mine appears to be unusual, possibly even in a state context, as an extremely well run mine, that evolved in a well thought out and financially responsible way, using technology and geological expertise to its advantage to maintain an ongoing operation, and with an extremely good safety record and good reputation with its employees, in spite of the 1908 strike to get recognition of the miner's union. In many respects the Magnet Mine could be considered a 'model mine'. This is reflected in the fact that it was run by only one company for most of its life (1895 to c.1931), and in effect longer, since the companies that ran it to c.1936 were in fact company staff and employees.

It is also reflected in the productivity of the mine, which has been regarded as the third most important mine on the West Coast in the 1920s, after the Bischoff and Mt Lyell Mine (with neither Dundas or Rosebery in production at the time) (Pink (1984, 155) and, also at that time, "the largest producer, and the only one to reach the dividend paying stage" in the area (Nye 1923, 187). It is understood over its life to have produced more silver than any other single Zeehan or Tullah historical mine. In terms of its production and longevity it therefore appears to be one of the most significant medium sized mines in Tasmania, certainly of the silver lead mines. This is reflected in the comment by Haygarth (2013) [39] that although "Magnet was no Broken Hill, it was as steady a producer as the best Zeehan Mines".

The well run, productive nature of the Magnet Mine is also reflected in the historical development of the mine from an initial surface working of a gossan outcrop with associated exploration trenches to locate the line of lode, to an underground mine that worked the ore body progressively, initially by high level adits, then via a shaft that accessed and allowed the working out of the full orebody to 1,200', with some later adits to prove the southern extension of the ore body. To support this the mine developed the necessary adjunct facilities progressively as required, without grossly over-extending the mine financially, resulting in a largely self-contained mining enterprise that included the mine, a mill, a hydro-electric power scheme, a township, and reliable access to markets (initially a pack track, later a tramway, and finally a railway).

The remains of the full mine (including the township and transport network) are extremely well preserved, forming a large, largely intact, archaeological complex. Given the lack of more recent significant mining, exploration or other development or use, as well as the variety of historical mining related features and the wide historical period these represent (c.1890-1940), the Magnet Mine is regarded as having high scientific (archaeological) significance overall (as a complex) (see also Webster 2007).[40] This significance is enhanced by the lack of significant later development and the excellent preservation of its setting, which result in the site having high integrity (the only significant more recent disturbance at the site being the two open cuts on the access road, the Electrolytic Zinc Company access road (which partly replaces the original access), the Bass Metals exploration road, and the mining and rehabilitation of the tailings[41]).

The Magnet Mine, as a medium size silver lead mine of the 1890s to 1940, is not a rare type of mine. However, because of its history and good preservation it is considered to be an outstanding representative example of a late 1800s to mid-1900s medium sized, Tasmanian silver-lead-zinc type mine and mine complex. It is considered to have state level significance in this respect.

Although the complex is significant because the range of features and their relationship allows the evolution and working of the mine to be understood, the individual features are important as they provide information on how various historical activities were undertaken at the Magnet Mine, as well as insights into the specific responses to the isolation and steep rugged terrain of the Magnet Mine and the particular nature of its orebody. Some specific features or complexes are particularly important in this respect (and historically) – these include the Open Cut[42], the first workings at the Magnet Mine; the No.4 Adit and associated features (including the associated mullock), which was the longest lived underground mine working and the main entrance to the mine; the hydro-electric scheme; the mill complex, which was an integral part of the mine; and the two main historical access routes (the pack track/tramway and the railway). The hydro-electric scheme, in particular the power station and penstock (and pipes), has additional significance as it was originally the Cassilis Company power station in Victoria, which was the earliest mining hydro-electric scheme and one of the earliest significant hydro-electric schemes in Victoria at the time, with its remains in Victoria assessed as having state

[39] *Oresome Times, http://waratah.vpweb.com.au/WR-BELL-S--MAGNET.html.*
[40] *Each part of the site (ie, the main mine workings and processing, the exploratory workings, the North Magnet Mine workings, the hydro-electric power scheme, the transport routes and the township) can also be regarded as having high scientific significance in its own right.*
[41] *This has however has lowered the tailings but not significantly modified the extent or appearance of the tailings.*
[42] *Webster (2007, 12) regards the Open Cut as "one of the most significant historic features of the Magnet Mine".*

level significance for their historical and scientific (technological and archaeological) value (VHR Datasheet 2013)[43].

Other features of the Magnet Mine that are regarded as having significance as historically important, rare elements and/or as significant complexes (ie, related elements) are the upper alluvial workings (possibly Pasch's Trench); the upper water race and outflow channel; the sluice and tailrace; the band of exploratory workings along the line of lode (although not containing rare individual features this is a dense band of workings which contains an unusually wide range of workings as well as some unusual features, for example the short adits and underlay shafts in the southwestern mine area); the townsite; the Magnet Mine North complex; the other extant mine adits and associated features; the two house clusters recognised by Webster (2007) (as the location and nature of these appear to be a very specific response to the steep terrain in which the in mine occurs); the upper Mine Managers House; the mine railway station; the tramway from the main access via the No.1 Adit to the North Magnet Mine and beyond; and the smaller pack track leading up from the main access to Webster's (2007) House Group 2.

The Magnet Mine also has high local social significance. It is a relatively well known historic mine locally, and is known of as an interesting historic mine more broadly. The mine was held in high regard by those that lived and worked there (Godfrey 1984), and now by locals and those who have historical and family connections to the mine (pers obsv). Its social significance is also reflected in Godfrey's (1984, 54) comment that "among the old-timers its name inspires the same affectionate regard for the past as does that of Waratah". Discussion in Godfrey (1984) indicates that the social values that attach to the Magnet Mine are mainly the historical and personal meanings and associations of the mine, which include the richness of the mine, the good relations between the Magnet Silver Mining company and its employees and their families, the abundance of social activities (singing, band, dances and sport), and the beauty of the natural environment and setting of the Magnet Mine.

The Magnet Mine also has significance for its associations. Its most significant association is with William Robert Bell who discovered the gossan outcrop that lead to the development of the Magnet Mine and who pegged the first mining lease. W.R. Bell was a key figure in the early exploration and development of mining in the Pieman–Waratah area, undertaking much of his exploratory work in this area with James 'Philosopher' Smith, a long time colleague and prospecting companion. W.R. Bell was active in the area from the early 1860s to the early 1900s, and is closely associated with the development of the Heazlewood Field, having located the first two mines on the field, as well as the Magnet Mine and a number of mines in the Mt Bischoff – Hampshire hills area (Haygarth 2010). W.R. Bell has been described as "The name most closely associated with the early days of the Heazlewood field" (Binks 1988, 37). Bell also cut tracks in the area (eg, the early Waratah to the Middleton Creek Goldfield (or Donaldson) Track) (Binks 1988). According to Haygarth (2010, 226) "the culmination of this work [W.R. Bell's work generally on the West Coast] was the discovery and exploitation of the Magnet lode[44] during the difficult economic times of the 1890s". W.R. Bell also has the distinction of being one of the few prospectors in Western Tasmania, and possibly Tasmania more generally, who can be regarded as having been successful in the long term (Haygarth 2010).[45]

The Magnet Mine also has an association with Eric Reece, a former Premier of Tasmania (1958-69 & 1972-75) and the longest serving Premier, whose first job was at the Magnet Mine (Koshin, J, in Alexander 2005).[46] The area has a closer association with politician Roy Fagan, who was MHA for Wilmot from 1946 to 1974 (during

[43] *The power station has been assessed as having historical significance as the first (gold) mining related hydro-electric power station in Victoria, and is of technological importance for the survival of foundations and earthworks that demonstrate 'all aspects of the underlying technology', with no other examples of this period surviving (VHR Datasheet 2013 - Victoria Falls Hydro-Electric Power Station – http://vhd.heritage.vic.gov.au/mobile/result_detail/10997)*

[44] *Bell was a director of the Magnet Mine from its inception until 1907 (Haygarth 2010).*

[45] *W.R. Bell is also credited with the first find of crocoite in Tasmania (in 1887 on the Heazlewood Field) – Tasmania's mineral emblem (Haygarth 2010, 229).*

[46] *According to Koshin, Eric Reece's first job was at the Magnet Mine (c.1923-24) where he worked sorting ore. He moved to Magnet from Mathinna with his family, and returned to Mathinna in 1924, although from 1934 to at least 1946 he was working and living on the West Coast again, and again in the mining industry*.

which period Labor remained in power except during 1969-72), and who also served as Deputy Premier, Attorney General, and Minister for Industrial Development & Forests.[47] Roy Fagan was the son of James Fagan, the longest serving publican at Magnet, and grew up at Magnet.[48]

The aesthetic values of the Magnet Mine are not formally assessed here due to inadequate consultation for this, but the mine can be regarded as having aesthetic value deriving from the mine being essentially a ruin with these ruins being situated in a relatively dramatic, isolated setting in a forested environment in a narrow steep walled valley, typical of forested West Coast environments.

The Magnet Mine is assessed as meeting criteria a, c, d, and e for listing on the Tasmanian Heritage Register (see text box this page) at the State level; and as meeting criteria a, b, c, d, e, f and g for listing at the local level.

The Magnet Mine is considered to be of high-medium state level significance and very high (outstanding) local level significance.

Tasmanian Heritage Register Criteria
[Historical Cultural Heritage Act 1995]

a) Importance in demonstrating the evolution or pattern of Tasmania's history

b) Demonstrates rare, uncommon or endangered aspects of Tasmania's heritage

c) Has potential to yield information that will contribute to an understanding of Tasmania's history.

d) Importance as a representative in demonstrating the characteristics of a broader class of cultural places

e) Importance in demonstrating a high degree of creative or technical achievement.

f) Has strong or special meaning for any group or community because of social, cultural or spiritual associations

g) Has a special association with the life or work of a person, a group or an organisation that was important in Tasmania's history

Significance of the Individual Features of the Magnet Mine

The cultural heritage significance of individual features has also been assessed. This assessment is provided in Table 1, and specific features and feature complexes of high significance are also noted in the overall assessment of significance of the Magnet Mine, above.

In assessing the significance of individual features, the range of Burra Charter values are used, but the assessment has focussed on the importance of that feature as a part of the full site in historical terms, how critical a component of the mine the feature was, and its present day scientific value (ie, ability to help interpret the mine's workings). In a number of cases however feature assessment is either not possible or is an indicative assessment due to insufficient information.

In general terms, essential features such as the adits, early open workings, mill, power station and key access routes are seen as being of very high significance, particularly where well preserved. Preserved early, related and historically unrelated features such as Pash's Trench and the North Magnet Mine, as well as core associated features which help tell the history of the mine, for example the mine buildings, major mullock dumps, tailings and connecting tracks, are also seen as of high significance, again particularly where well preserved. Other activity areas (eg, major exploratory works and the small crushing plant in the township area) or significant feature remains (eg, water races, major cuttings, engine beds, tramways, minor mullock dumps) are in general seen as being of moderate to high significance as, although only archaeological remains, they are important in being able to interpret the working and history of the mine. Smaller features (eg, benched platforms with no or minimal features, non-function specific bed logs, and artefact scatters) are seen as being of low-moderate significance. Minor features such as small open cuts, trenches and costeans and isolated artefacts (not in situ) are seen as being significant as they help interpret the initial prospecting history of the site, but are generally of low significance because they are common features at most mines and have low scientific values.

[47] *Michael Field, 'Fagan, Roy Frederick (1905–1990)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, http://adb.anu.edu.au/biography/fagan-roy-frederick-12473/text22435, accessed 15 August 2013*
[48] *N. Haygarth, Oresome Times, http://waratah.vpweb.com.au*.

5 MANAGEMENT ADVICE

There is no previous heritage management to be taken into account in relation to the Magnet Mine, and as the Magnet Mine is not listed on any statutory heritage register there are no direct statutory obligations in relation to its heritage values.

However, given that the Magnet Mine has been assessed (this study) as having state level significance as well as high local/regional cultural heritage significance (refer Section 4), then there is a general obligation[49] to manage the Magnet Mine site in such a way as to retain the significance of the site (ie, to conserve the Magnet Mine site). This obligation is based on historic heritage being a non-renewable resource. The advice in this section also takes into account the high level of preservation (intactness of the features and intactness and integrity of the mine site as a whole) and the fact that many of the heritage features are very fragile in relation to human intervention, from trampling damage to the use of heavy equipment.

The extent to which the Magnet Mine site can be conserved will depend on a range of factors, such as other important uses, other environmental considerations, and safety and resourcing. Determination of this however is beyond the scope of the present assessment, and the present study primarily deals with providing advice in relation to environmental remediation and safety arising from the existence of the mine (Sections 5.1 and 5.2). Because the assessment of the mine has not been comprehensive and there is no overarching conservation advice provided as yet, the present study also provides some comment on other key heritage management issues noted during the study, including the need for greater recognition of the significance of this mine site and its potential for presentation and interpretation (Section 5.3).

5.1 Remediation

Environmental issues identified through the heritage survey

Environmental risks that have been considered are related to those which arise, or are likely to arise, from the historic mining heritage only, and include risks of degradation to the natural environment through chemical contamination, increased water flow (& erosion/flooding) and feature collapse.

Environmental issues identified through the heritage survey and related to individual historic features are listed in Table 1.

Based on the field survey, the identified environmental hazards are –

- Potential acid mine drainage –from the tailings: The potential for this is considered relatively high as the tailings sit in the valley floor and receive water from valley creeks which flow across and possibly through the tailings directly into Magnet Creek which itself flows longitudinally through the Magnet Mine tailings (note – some previous remediation work has been carried out on much of the tailings area).
- Potential acid mine drainage –from the mine adits: The main adits were connected to the main underground mine workings and today they appear to have variable amounts of flow, with the South Adit having a very high flow (the highest) at the time of the survey. The small number of larger unconnected adits may have some, minor potential (note – the shafts recorded appear to be mainly air shafts or passes and none show evidence of water flow).
- Potential soil contamination– in the concentrating mill area given the large size of the mill and the complex processing. The chemicals used in the processing are not known, but the potential for hazardous contamination should be considered.

[49] *Under generally accepted cultural heritage guidelines such as the Burra Charter (Australia ICOMOS 1999) and given the intent and objectives of legislation such as the Land Use Planning and Approval Act 1993 (Schedule 2) and the Historic Cultural Heritage Act 1995.*

- Potential for ongoing backwasting of slopes and possible resultant slumping – at a few areas where there is significant natural slope erosion occurring by undercutting by major creeks. Significant erosion was only noted on the creek on which No.4 Adit is situated and only at 2 locations (below the No.4 Adit & below the No. 2 South Adit – refer Map 1). This may not be a significant problem, but warrants monitoring.
- Sedimentation into the Magnet Creek valley from the southern creek on the main (west slope) mine face: It is not clear how much sediment is getting into Magnet Creek from this source, but there appears to be a significant build up of sediment at the base of slope that has obscured all or parts of several historic features known to have been located in this area (MMV T2 & T3, the former railway sheds and at least two other buildings), and the flat swampy nature of the valley floor in this area (immediately north of the valley tailings) right to the edge of Magnet Creek suggests that this sediment has partly infilled the valley and is flushing, albeit in probably small amounts, into Magnet Creek. The sediment appears to be coming from two areas of severe natural slope erosion (see item above) and erosion of mullock (relatively small amounts) associated with the No.4 Adit, the No.2 South Adit and the mullock interpreted as being associated with the No.3 Adit (ie, MMW F9, 23 &26).

No other significant potential environmental hazards were noted.

The mullock all appears to be relatively stable and not eroding except for the noticeable erosion on the lower part of the creek on which the No.4 Adit is located (see above). Mullock appears to have covered the entrance to Adit 2, but this is thought to have been deliberately done to block the adit. Although there are several high, vertical to steeply sloping cuttings in various locations around the mine site (mainly on the west slope), these are in all cases into bedrock and appear very stable. Very little collapse generally was noted on the mine site, including at adit entrances, indicating that the landscape generally is relatively stable. A number of adits are blocked internally by rubble, but this is to be expected in mine tunnels once timbering is removed, and in this case is likely to be deliberate blocking of the longer adits, in particular those which access the main underground workings.

It is beyond the scope of the project to comment on the movement of the tailings, however it should be noted that the substantial removal of tailings in the 1970s has significantly reduced the volume of mine tailings, hence potentially the amount available to be flushed down river in normal conditions or in floods. It is also potentially an advantage that the tailings are all located in one area (in the valley bottom) as this limits the spread of tailings.

All areas of the Magnet Mine and Township that were historically disturbed have recovered, or are recovering, a full native vegetation cover, except for some house sites which have remained as grassed areas, some areas of tailings, and those areas that have been more recently disturbed. The recently disturbed areas include the tailings (in the valley), the two open cuts that are fossicking areas, and the Bass Metals exploration road. Much of the area of the stripped and remediated tailings are starting to revegetate since the remediation work in the 1990s, although the small areas of untreated tailings have almost no vegetation. The other two locations (the two open cuts – F29 & 30) are not revegetating, but appear to be essentially stable and not generating significant sediment downslope into creeks, hence unlikely to require revegetation. Revegetating the two open cuts would not be appropriate given that they are formal Fossicking Areas. The Bass Metals road however cross cuts through part of the historic mine site, and if not being used, or likely to be used, could be rehabilitated to repair what constitutes damage to the historic site.

There may be additional issues not identified, which will require assessment by those with expertise in mine environmental remediation.

Remediation and heritage conservation

The potential for impacts to the historic heritage of the Magnet Mine through environmental remediation is limited given that the potential environmental hazards are restricted to a small number of historic features (several adits, the Mill site, and the tailings area), assuming that planned revegetation, including of the tailings, is not required.

There is still potential however for remediation work to impact on the sites and other impacts can potentially occur in the process of accessing the sites to be remediated. This is of concern given that some of the adits in question are highly significant features and given the density of features and the spread of significant features across the mine site.

Key measures to avoid unnecessary impacts, which should be considered in planned remediation works include –

- ensuring that remediation works at a feature are essential,
- generally selecting or developing remediation approaches that are sensitive to the heritage and that will minimise the impacts to it, through
- keeping the remediation works away from the features whenever possible,
- keeping the remediation works as small and spatially limited as possible,
- designing the remediation works to minimise ground disturbance and disturbance to extant features, including through minimising the use of machinery, and where this cannot be avoided,
- placing the remediation works so as to allow the function and general nature of the feature to still be understood and, where possible, to minimise the visual impact,
- restricting associated disturbances (eg, in relation to sampling, the placement of materials, access, not leaving rubbish),
- in relation to access, existing tracks and other recently disturbed areas should be used to the extent possible, and the bulldozing of new tracks should be avoided, and
- rehabilitating unnecessary and temporary disturbance/damage.

It should be noted that less care will be required for remediation works on the mine tailings given that these have already been substantially modified. The remediation works however should aim to not significantly alter the location (horizontal distribution) of the tailings, and intact related features such as the log and sandbag dam feature should be left undisturbed.

5.2 Safety

Safety issues identified through the heritage survey

Safety risks that have been considered are related to those which arise, or are likely to arise, from unsafe historic mining heritage only, and not from the natural environment or inherently unsafe behaviour. The risks are considered primarily in relation to visitor and worker safety. There may be additional issues not identified, which are beyond the expertise of the consultant.

In assessing safety risks, the main hazards that have been recognised are potential tunnel collapse and steep drop offs, including cuttings, shafts, deep vertical (or near vertical) cuttings, vertical openings in adits, high building remnants (mainly foundations). Depth of potential fall and potential for injury, difficulty of exiting, and visibility of the drop are the main risks considered in relation to steep drops. Bad quality air in tunnels is not specifically considered as it is difficult to access the main underground workings as most of the adits which provide access are blocked off, but is noted as it is a potential risk of going into major adits. Safety risks from unsafe materials and chemicals is also considered, but on the basis of the survey findings the only potential risk in this respect appears to be in relation to possible soil contamination in the mill site, with no clearly hazardous

materials (eg, asbestos) or contained chemicals being noted during the survey, except for some small pieces of fibre-cement sheet on the No.4 Adit platform that given the age of the Magnet Mine, is likely to be asbestos.

Safety issues identified through the heritage survey and related to individual historic features are listed in Table 1.

In general, the potential identified safety hazards at the mine site are considered to be related to the following features –

- high vertical cuttings – some potential for injuries with falls (the cuts are generally not difficult to see),
- open, deep vertical shafts – high potential for injuries and being trapped, and difficult to see,
- other shafts (including less deep and inclined shafts and open stoping) – high-moderate potential for injuries and being trapped, and difficult to see,
- blocked or partly infilled shafts (may look like pits) – some potential for falling through & consequent injuries and being trapped,
- adits – variable risks – some potential for becoming trapped or injured by tunnel collapse; if accessible, some potential for falling down vertical/near vertical openings in the tunnels (minimised by tunnels being flooded); some (low) potential risk of bad air,
- buildings (in effect foundations as there are no extant buildings) – some potential for falling, although to fall off these most need to be climbed on and should be a personally recognised risk,
- chemical safety hazards – some potential from soil contamination in and around the mill site (may need assessing) and probable minor asbestos sheet on the No.4 Adit platform (may need assessing).

Small pits and trenches are not considered safety hazards as these are small and shallow (although minor injuries may result from falling into one). The mullock dumps are not considered to be a safety hazard as although some are high, the mullock dumps all appear to be relatively stable and have inclined faces with no steep drop offs below. Artefacts are also not seen as safety hazards although minor injuries such as cuts can occur if artefacts are not carefully handled. None of these features or the other features not assessed as hazardous have inherent safety issues. Any safety issues that arise from their use are likely to be due to a lack of normal care when in an unknown and largely natural environment.

Safety and heritage conservation

Given the potential identified safety risks, the key mechanisms for reducing these at the site are –

- making visitors and workers aware that the area is an historic mine site with potentially unsafe features through appropriate signs,
- putting up signs near potentially unsafe features,
- erecting protective barriers around, across or along potentially unsafe features (eg, shafts, adits, high cuttings, high building foundations), and
- blocking off deep features (shafts & adits).

As with environmental remediation, care needs to be taken to ensure that significant features are not permanently damaged and that impacts to the features in question and the other heritage values of the site are minimised, and that changes can be reversed where possible.

Key measures to avoid unnecessary impacts to make the site safe, which should be considered, include –

- ensuring that works at a feature are essential,
- generally selecting or developing an approach that is sensitive to the heritage and will minimise impacts to it, through
- keeping the works away from the features to the extent possible,
- keeping the works to the minimum necessary,
- keeping the works as visually unobtrusive as possible,
- minimising the impact to actual structures and features (and making changes reversible where possible),

- minimising ground disturbance,
- designing and placing the works so as to allow the function and general nature of the feature to still be understood,
- restricting associated disturbances (eg, in relation to sampling, the placement of materials, access, not leaving rubbish),
- in relation to access, existing tracks and other recently disturbed areas should be used to the extent possible, and the bulldozing of new tracks should be avoided (new tracks must avoid other historic features and be rehabilitated after use).

On this basis, signs are preferable to fencing or blocking structures and should be used in preference to erecting structures (including fences), where they will provide an acceptable level of safety. In general terms, fencing off an adit or shaft will be preferable to blocking it off (using standard approaches such as rubble fill or solid caps). The exception to this is with open or collapsed stoping, which can be filled if needed, as most of the features of this type are already mostly infilled. If open or collapsed stoping is infilled, the surface expression (and opening) should be left unburied so the feature can be re-located and interpreted. If adits need to be blocked then the preferred approach from a heritage perspective is to create the blockage inside the tunnel so that the adit entrance and portal location and nature are still evident and interpretable.

5.3 Other Management

This section briefly explores and provides advice on other management issues identified in this assessment of the Magnet Mine.

Management policy

The existing two heritage studies at the Magnet Mine (Webster 2007, and the present study) are in effect environmental impact assessments, and although the present study has surveyed and assessed a large part of the mine site (ie, mine & township), the assessments to date cannot be considered to constitute a comprehensive assessment of the site, nor do they provide a conservation policy for the site.

As good conservation practice for a historic site as significant as the Magnet Mine and for more efficient decision making, the management of the mine site should be based on a conservation policy or plan. Heritage conservation policies or plans are based on a full assessment of a heritage site (refer Figure 3) and take into account the site's cultural heritage significance as well as other management and contextual factors such as other important uses, other environmental considerations, and resourcing.

Heritage listing

Given that the Magnet Mine site has been assessed as meeting four of the seven criteria for listing on the Tasmanian Heritage Register at the state level and all seven criteria for listing at the local level, the Magnet Mine should be included on the Tasmanian Heritage Register and in the Waratah Wynyard Heritage Inventory.

Further exploration & mining and other development

Webster's (2007) study and the present study have shown that the Magnet Mine is a highly significant site with a rich and dense suite of largely inter-related heritage features that are spread across the mine site area. Given this, most intervention at the site, particularly moderate to large scale exploration, new mining and land or mine remediation, is likely to have a high potential impact on the heritage values of the mine.

Given the lack of a conservation policy or plan for the site, or a comprehensive assessment, then future such works and other developmental works or new uses should continue to be preceded by impact assessment studies to assess the potential impacts and provide impact mitigation or other conservation advice.

Management of the Fossicking Area

Although there is some evidence of fossicking in the two fossicking areas (ie, small pits and excavations back into the slope), there is little evidence of fossicking in other areas, with minimal litter and no obvious damage to nearby historic features. As the fossicking area is two open cuts that post-date the historical mining or relate to the last 10 years of the mine (MMW F29 & 30), and have no identified associated features, hence are not significant heritage features themselves, the fossicking is not directly damaging significant heritage. This suggests that allowing fossicking in the area is not a threat to the historic heritage, at least at the level at which it is currently occurring.

There is however one potential risk from the fossicking, which is the potential for fossickers to break through into openings such as shafts, tunnels and stoping, given that such features are believed to have been located in the areas being fossicked (ie, in MMW F29 & 30) (refer also Table 1). This may result in injury to the fossickers. The risks however are considered low given the amount of rubble on the open cut faces and the limited excavation undertaken by the fossickers (limited to hand excavation).

Bottle hunting & other visitor damage

Although no clear evidence of bottle hunting was noted by the present study, the abundance of surface artefacts in some localities was suggestive of earlier bottle hunting. Webster (2007) however noted active bottle hunting in the area at the time of his survey, and he was of the view that bottle hunting had the potential to be much more damaging to the site than exploration activity. Webster also implies that new roading such as the Bass Metals exploration road is likely to open up the site for bottle hunting (or renewed bottle hunting). It is also possible that exploration and other workers, not just visitors, participate in bottle hunting.

It is also likely that there is other ongoing collection of artefacts and building materials from the site. The present study did note other damage resulting from visitation – the most significant being the use of the main (lower) mill building timbers for firewood in nearby campfires, the digging of pits for campfires (and presumably for toilet pits), and the re-use of building materials from various building sites on the mine for windbreaks, fireplaces, etc, for campsites. The campsites however were restricted to two locations – beside the main (lower) mill building, and on the south flats of Magnet Creek west of the Magnet School. There was fairly ubiquitous litter in the surveyed area, but this was generally sparse and is a cosmetic issue, although it does detract from others' appreciation of the site.

Given the significance of the site and some of the structures/features that are being impacted and could be potentially impacted by these visitor activities, it is desirable to try and prevent, or minimise, such destructive behaviour. Approaches that should be considered are –

- not providing new access to those parts of the mine site that are currently inaccessible (as recommended by Webster (2007)),
- closing off any current access that is not required,
- providing information to visitors that makes them aware they are in an historic mining area, asking them to respect the site, and providing some guidelines on what constitutes good/ inappropriate behaviour,
- providing heritage awareness and good practice information to on-site workers as part of site inductions.

Site presentation and interpretation

The Magnet Mine is considered, on the basis of the present study, to have extremely good potential for visitor presentation and interpretation as –

- it is a significant and historically interesting mine site,
- it tells a complete story of a mine as a well preserved complex with exploratory workings, surface and underground workings, a mill, a hydro-electric power scheme, a township and a transport system,
- it is in a natural setting which evokes the remote and difficult nature of mines of the region,
- it has existing open tracks that can be used for accessing the different parts of the site,

- it is easily accessible by vehicle,
- it is a short drive from Waratah which has visitor facilities and other mining heritage, and
- it is just off the Waratah - Corinna Road and not a great distance from the Murchison Highway.

Given its values, its location and access, it is considered to warrant serious consideration as a visitor destination for visitors interested in the history of the West Coast and/or of mining heritage.

Its presentation to visitors would not require a great deal of work and resources. At minimum some directional signs and one or a few interpretation signs would be sufficient. A more developed presentation would require more signs and possibly the development of signed walks using existing tracks and more detailed interpretation for the walks (eg, to showcase specific features), and possibly some upgrading of the main access track.

Any planned visitation to the site should seek to ensure that impacts to the heritage features, including through trampling, collecting, graffiti, rubbish, wear of features (eg, tracks) and installation of signs and infrastructure are minimised. The installation of visitor infrastructure in particular should be minimised given the archaeological nature of the site and its present integrity. Monitoring would also be required to ensure the level and spread of impacts does not become unacceptable. Safety issues would also need to be taken into account.

Given the significance of the site, any significant proposed increase in visitation and interpretation should be assessed and planned to ensure that it is desired, feasible, will work, and will not impact on the significance of the site.

Table 1 The Magnet Mine - identified environmental and safety issues in relation to individual known features.

Note: *1. 'atov' – at time of visit*
2. 'pot' – potential
3. the presence and absence of fencing is only noted for adits, shafts & probable shafts.

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MINE SITE					
MMSU	F1	shaft **(Magnet Proprietary Shaft?)**			- area appears to have been remediated & possible shaft filled in
MMS	F1	adit & finger dumps **- South Adit**	amd (high pot)	minor	- significant water flow from adit atov; flows directly into Magnet Ck - adit open but water filled; no fencing
MMS	F2	adit/trench			- not inspected but believed to be a trench only
MMS	F3	adit (& magazine?)		minor (pot collapse)	- dry; appears to be no continuation of tunnel
MMS	F4	cutting			
MMS	F5	cutting			
MMS	F6	platform – building			
MMS	F7	platform – building			
MMS	F8	artefact - ore skip			
MMS	F9	platform – building			
MMS	F10	platform – building			
MMS	F11	platform – building			
MMS	F12	workings -quarried area		minor (falls)	- potential for falls over top edge of cutting
MMS	F13	mullock - heap			
MMS	F14	platform – building?			
MMS	F15	platform – building			
MMS	F16	platform – building			
MMS	F17	platform – building?			
MMS	F18	platform – building?			
MMS	F19	platform – building/s?			
MMS	F20	modified area			
MMS	F21	mullock & cutting			
MMS	T1	tramway			
MMS	T2	tramway			
MMS	T3	track/tramway			
MMS	T4	track **– original pack track & tramway to mine**			
MMS	T5	track – with bridge			- bridge not extant therefore not a risk
MMSW	F1	trench			
MMSW	F2	trench			
MMSW	F3	trench			
MMSW	F4	cut			
MMSW	F5	shaft		some	- shaft appears to be dry - shaft is open (but of relatively shallow depth); no fencing
MMSW	F6	trench			
MMSW	F7	cut			
MMSW	F8	shaft & trench		some/high	- shaft appears to be dry - shaft is open; no fencing
MMSW	F9	trench			
MMSW	F10	tree stump - cut			

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MMSW	F11	adit **– Upper Creek Adit**	amd (pot minor)	minor (pot collapse)	- no water in Adit atov; no evidence of flow from adit, but adit tunnel floor wet atov. - there is some sidewall collapse in entrance; but the shaft appears to be blocked by rubble a short distance inside; ***- adit has a fence across entrance***
MMSW	F12	weir			
MMSW	F13	cut & shaft/pit - underlay shaft? **- Magnet Proprietary Shaft?**		some/high	- shaft appears to be dry; no fencing - shaft is open; no fence
MMSW	F14	trench/cut			
MMSW	F15	trench			
MMSW	F16	trenches (2)			
MMSW	F17	trench (possible adit/underlay shaft?)		some/high	- shaft appears to be dry - shaft is open; no fence
MMSW	F18	trench			
MMSW	F19	trench/channel			
MMW	F1 (& F2-10)	adit **– Adit 4**	amd (pot high) asbestos (minor)	some/minor (in adit & fall)	- evidence for regular water flow from adit (into adjacent creek); water flowing out atov - the adit is accessible, but water filled atov - unknown as to whether tunnel blocked inside - also atov the sediment mound in front of the portal (which had made entry difficult) had been cut through for access - a few small pieces of material that is likely to be asbestos sheet were noted in the adit platform area - there is a high vertical cut (portal headwall) with potential fall risks
MMW	F2	cutting – for building/plant?		minor (falls)	- potential for falls over top edge of cutting
MMW	F3	structure – chimney			
MMW	F4	structure – engine bed?			
MMW	F5	structure – boiler (vertical)			
MMW	F6	channel – creek diversion			
MMW	F7	platform – building/house			
MMW	F8	platform – building/house			
MMW	F9	mullock – finger dump set			
MMW	F10	mullock – finger dump set			
MMW	F11	platform – building			
MMW	F12	platform **– Mill Building (upper level)**	pot soil contam-ination (minor)		- potential for some soil contamination given this was part of the ore concentrating mill
MMW	F13	platform **– Mill Building (upper mid level)**	pot soil contam-ination (minor)		- potential for some soil contamination given this was part of the ore concentrating mill
MMW	F14	mullock **– Adit 4 Main Mullock**			
MMW	F15	platform – building (explosives store?/house?)			
MMW	F16	platform – building - explosives store?//house?			
MMW	F17	shaft/adit? (collapse into) **- possibly Adit 2**		minor (falls)	- potential for falls into the opening
MMW	F18	mullock **– Adit 2 Main Mullock**			
MMW	F19	mullock – hollow/depression			
MMW	F20	platform **– mullock from Adit S1 ?**			

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MMW	F21	adit **– Adit 3 ?**	amd (low pot)	minor (falls)	- no evidence of water flow, but the adit is connected to the main mine - potential for falls over top edge of cutting & down shaft
MMW	F22	mullock **– Adit 3? Finger Dump**			
MMW	F23	mullock – fan **- Adit 3? main mullock dump?**			
MMW	F24	adit **– No.2 South Adit**	amd (pot low)	minor/none	- atov the adit was dry, but the floor was damp in areas suggesting it flows after high rainfall events/prolonged rain - adit is blocked (by collapse?) c.30-40m in from portal
MMW	F25	platform **– No.2 South Adit platform**			
MMW	F26	finger dump **– No.2 South Adit Mullock**			
MMW	F27	diversion channel **– No.2 South Adit Diversion**			
MMW	F28	mullock – heap/fan (source unknown)			
MMW	F29	cut – large (recent) ***(contained Adit 1)***		minor (falls)	- potential for falls over top edge of cutting - some pot to excavate into the Adit 1 tunnel - may contain highly significant remains if further excavated
MMW	F30	cut – large (recent) ***(continuation of the Open Cut?)***		some/minor (falls)	- potential for falls over top edge of cutting - some pot to excavate into the S1 A adit tunnel, and several vertical shafts (No.1 South Adit, Smith's, Jones' and Emmerson's Passes, Second Exit) - may contain highly significant remains if further excavated
MMW	F31	cut - large **– 'Open Cut'**		some (falls)	- potential for falls over top edge of cutting & and into the deep trenches and shaft/s (see F32-34)
MMW	F32	shaft/pit		some (falls)	- potential for falls over top edge of cutting & and into the pit/shaft ***- currently has a star picket and barbed wire strand (5-6) fence around the pit/shaft***
MMW	F33	shaft/pit		some (falls)	- potential for falls over top edge of cutting & and into the pit/shaft; no fencing?
MMW	F34	shaft/pit		some (falls)	- potential for falls over top edge of cutting & and into the pit/shaft; no fencing?
MMW	F35	shaft/pit		minimal/none	- very small pit (considered unlikely to be a shaft)
MMW	F36	shaft		minor/none	- small shaft which appears to be blocked (may be potential to fall through); no fencing
MMW	F37	shaft/trench		possibly some	- vertical sided trench/small shaft (depth not established); no fencing
MMW	F38	platform – building/house			
MMW	F39	platform – building/house **- 1899 Mine Managers House**			
MMW	F40	platform – building/house			
MMW	F41	weir			
MMW	F42	cut		minor (falls)	- some potential to falls from upper edge
MMW	F43	platform (for group of houses)			
MMW	F44	platform – building/house			

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MMW	F45	platform – building/house			
MMW	F46	platform – building/house			
MMW	F47	platform – building/house			
MMW	F48	platform – building/house			
MMW	F49	sluice			
MMW	F50	channel – tailrace			
MMW	F51	cut		minimal (falls)	- potential to falls off top edge but cutting low)
MMW	F52	alluvial workings **- possibly Pasch's Trench**			- shallow workings with no deep pits/trenches
MMW	F53	platform – building/house			
MMW	F54	platform – building/house			
MMW	F55	platform – building/house			
MMW	F56	trench			
MMW	F57	trench			
MMW	F58	trench			
MMW	F59	adit?/cut?		minimal (falls)	- some potential to fall off edge (but cut is not high) - if an adit then it is well blocked at the portal
MMW	F60	trench?/short adit?		minimal/none	- if an adit then it is small &well blocked at the portal
MMW	F61	trench			
MMW	F62	pit (with shaft?)		some/minor (falls)	- potential to fall from edge; - possibly a blocked shaft therefore some potential to fall through; no fencing
MMW	F63	pit (shaft?)		some (falls)	- potential to fall in; no fencing
MMW	F64	cut			
MMW	F65	cut - into stoping			
MMW	F66	trench into stoping, & shaft			
MMW	F67	platform – building?			
MMW	F68	cut			
MMW	F69	trench			
MMW	F70	cut			
MMW	F71	adit	amd (some pot)	minor/none	- atov the only water was groundwater percolation on tunnel walls – but this was highly iron enriched (strong orange); there is no evidence of water flow out of the adit - adit tunnels are very short or are blocked near entrances (only the S & NW tunnels appears to have pot to g); no fencing? ***- there is a fence across the adit entrance, but this has been opened (one star picket has been pulled up and moved aside)***
MMW	F72	adit	amd (pot moderate)	minor/none	- atov there is water pooled on the floor of the tunnel and erosion in the entrance suggests there are occasional high flows - adit is blocked by rubble (collapse?) c.30m in from portal; no fencing
MMW	F73	trench (air shaft?)		some/minor (falls)	- if a blocked air shaft there is some potential to fall through; no fencing
MMW	F74	trench			
MMW	F75	platform - building/house?			
MMW	F76	building/house			
MMW	F77	cutting – building/works area?		minor (falls)	- potential for falls over top edge of cutting
MMW	F78	cutting – building/works area?		minor (falls)	- potential for falls over top edge of cutting

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MMW	F79	channel - water race			
MMW	F80	water race outflow channel			
MMW	F81	channel diversion			
MMW	F82	artefact – ore skip			
MMW	F83	platform – building/s			
MMW	T1	tramway **- to North Magnet Mine**			
MMW	T2	track			
MMW	T3	track			
MMW	T4	track			
MMW	T5	track			
MMW	T6	tramway/railway **– Adit 4 to Mill**			
MMW	T7	track			
MMW	T8	track			
MMW	T9	track			
MMW	T10	track			
MMW	T11	track			
MMN	F1	adit **– Upper Adit**	amd (pot mod)	some (falls)	- atov there was c.10-20cm water on the tunnel floor (but not flowing); a channel through sediment at entrance suggests there is flow at wetter times - some potential to fall off cutting edge - adit is open (but this adit is not known to contain shafts/winzes, stoping or other vertical workings; no fencing
MMN	F2	cut platform – plant/building site **- part of Upper Adit**		some/minor (falls)	- some potential to fall off cutting edge
MMN	F3	platform – building/house			
MMN	F4	platform – building/house			
MMN	F5	artefacts - scatter			
MMN	F6	shaft – air shaft?		some (falls)	- shaft is vertical sided and open; no fencing ***- temporary safety tape (1 line of yellow) around shaft area at time of visit***
MMN	F7	shaft – air shaft?		some (falls)	- shaft is vertical sided and open; no fencing ***- temporary safety tape (1 line of yellow) around shaft area at time of visit***
MMN	F8	trench/shaft		some/minor (falls)	- some potential to fall through if a blocked shaft; no fencing
MMN	F9	trench/shaft		some/minor (falls)	- some potential to fall through if a blocked shaft; no fencing
MMN	F10	trench/shaft		some/minor (falls)	- some potential to fall through if a blocked shaft; no fencing
MMN	F11	trench/shaft		some/minor (falls)	- some potential to fall through if a blocked shaft; no fencing
MMN	F12	platform – building/house			
MMN	F13	platform – building/house			
MMN	F14	platform – work area/building			
MMN	F15	platform – building/house			
MMN	F16	platform – building/house			
MMN	F17	platform – building/house?			
MMN	F18	platform – building/house			
MMN	F19	artefact scatter			
MMN	T1	tramway **- North Magnet Mine access**			

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MMN	T2	track			
MMN	T3	track			
MMN	T4	track			
MMN	T5	track			
MMN	T6	track			
MMN	T7	track			
MMV	F1	mill area -lower level **– Main Mill Building**	pot soil contam-ination (minor)	minor (falls)	- potential for some soil contamination given this was part of the ore concentrating mill - some potential to fall off the top of the W wall (but this features is highly visible); the walls are c.1.5-2m high
MMV	F2	mill area – lower level building/s	pot soil contam-ination (minor)		- potential for some soil contamination given this was part of the ore concentrating mill
MMV	F3	building -- magazine?		minor (falls)	- some potential to fall off the raised walls (but this features is highly visible); the walls are c.1.5-2m high
MMV	F4	mill area – boiler & engine beds **- Mill Auxiliary Power Plant**		very minor (falls)	- some potential to fall into the sunken pits (but these are highly visible and not deep (c.1m)
MMV	F5	foundations **- Power Station**		very minor (falls)	- some potential to fall off the raised (but this features is highly visible and the walls are not high (c.1m)
MMV	F6	foundations **- Mine Manager's House**			
MMV	F7	building **- Railway Station**			
MMV	F8	drainage channel/continuation of T3			
MMV	F9	plant/building site		minor (falls)	- potential for falls over top edge of cutting
MMV	T1 & 2	track/tramway/railway **– Magnet – Waratah Railway**			
MMV	T3	track/tramway			
MME	F1	pipeline & penstock **- Power Station**			
MME	F2	bridge?			
MME	F3	upper valley tailings	amd (mod-high pot)		- as these tailings are ore processing remains they have potential to result in amd; this is exacerbated in the case of these tailings by at least 2 drainage lines flowing onto and across them into Magnet Ck, which also flows through the tailings – this also applies to the down valley tailings.
TOWNSITE					
MTE & MTW	F1	railway **- Magnet To Waratah Railway**			
MTE	F2	weir?			
MTE	F3	bridge (part of **Low Street**)		minor (falls)	- the bearers and stringers for the bridge are extant and in situ, therefore there is some risk falls crossings are made by the bridge
MTE	F4	platform **- Magnet Catholic Church**			
MTE	F5	platform – house, & plants			
MTE	F6	platform **– Magnet School**			
MTW	F2	railway			

Mine Area	Key Feature No.	Feature/Feature Type	Environmental Hazard	Safety Hazard	Other Comment
MTW	F3	structure – stone walling			
MTW	F4	road & bridge abutments **- Low Street**			- bridge not extant
MTW	F5	workings			
MTW	F6	platform – building (house) & plants			
MTW	F7	platform – building (house)			
MTW	F8	platform – building (house/s)			
MTW	F9	platform – building?/garden?			
MTW	F10	platform – building (house or hall?)			
MTW	F11	structure - building (house)?			
MTW	F12	track			
MTW	F13	weir?			
MTW	F14	clearing – building (house?):			
MTW	F15	platform – building (house)			

6 REFERENCES

Publications, Reports, etc

Austral Archaeology (with A. McConnell & L. Scripps) 2002 *Van Diemen's Land Company Sites Conservation Management Plan* (2 vols). Report for Gunns Limited, Launceston, Tasmania.

Australia ICOMOS 1999 *The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (The Burra Charter)* (Revised edition).

Binks, C.J. 1988 *Pioneers of Tasmanian's West Coast*. Blubberhead Press, Hobart.

Commonwealth of Australia *Environmental Protection and Biodiversity (EPBC) Act 1999 (& 2003 (Heritage) Amendments).*

Cottle, V.M. 1953 'Magnet Silver Lead Mine'. In the Proceedings of the Fifth Empire Mining & Metallurgical Congress, Australia and New Zealand, Melbourne 1953, Vol 1 *Geology of Australian Ore Deposits* (editor A.B. Edwards).

Forest Practices Board 2000 *Forest Practices Code*. Forest Practices Board, Hobart, Tasmania.

GHD 2007 *Waratah-Wynyard Heritage Inventory Report*. Report for the Waratah Wynyard Council and Heritage Tasmania by GHD Pty Ltd, Hobart, Tasmania.

Godfrey, M. 1984 *Waratah – Pioneer of the West*. Municipality of Waratah in Association with Morvale Investments, Waratah, Tasmania.

Haygarth, N. 2010 'Richness and Prosperity: The Life of WR Bell, Tasmanian Mineral Prospector'. *THRA Papers & Proceedings*, vol 57 (2); 204-236.

Hopkins, D.L. 1997 *How the West Was Won: An Overview of the Exploration and Mineralisation of Western Tasmania*. Taswegia, Devonport, Tasmania.

Koshin, J. 2005 'Eric Elliott Reece', in Alexander, A. (ed) *the companion to Tasmanian History*, Centre for Tasmanian Historical Studies, University of Tasmania, Hobart.

McConnell, A. & Dickens, G. 2013 (Mar) *Montana Silver Lead Mine, North Zeehan, Archaeological Survey & Assessment.* Report for Mineral Resources Tasmania, Rosny Park, Tasmania.

Nye, P.B. 1923 *The Silver–Lead Deposits of the Waratah District*. Geological Survey Report No. 33, Department of Mines, Tasmania.

Paine, H. R. 1994 *Taking You Back Down the Track ... is about Waratah in the Early Days*. The author, Somerset, Tasmania

Paine, H. R. 1999 *Taking You Down More Tracks ... is about the early days on the West Coast of Tasmania*. The author, Somerset, Tasmania

Pearson, M., and Sullivan, S. 1995 *Looking After Heritage Places: The Basics of Planning for Managers, Landowners and Administrators*. Melbourne University Press, Melbourne.

Pink, K. 1984 *The West Coast Story: a history of Western Tasmania and its mining fields*. West Coast Pioneer Memorial Museum, Burnie, Tasmania.

Rae, L. 1986 *A History of Railways and Tramways on Tasmania's West Coast*. The Author, Sandy Bay, Tasmania.

Scripps, L. 1990 *North West Historic Sites Inventory Project Report*. Unpublished report, Forestry Commission, Hobart.

Snelgrove, C. 1991 *Corinna Track Survey Report*. Unpublished report prepared for the Forestry Commission and the Department Parks, Wildlife and Heritage, Tasmania.

Tasmanian Government *Historic Cultural Heritage Act 1995*.

Townrow, K. 1986 *An archaeological Investigation of Early Mining in Tasmania – A preliminary assessment of resources*. Parks and Wildlife Service, Hobart, Tasmania.

Twelvetrees, W.H. 1900 *Report on the Mineral Fields Between Waratah and Corinna*. Department of Mines, Tasmania.

Tasmanian Government *Land Use Planning and Approvals Act 1993*.

Waratah Wynyard Council *Waratah-Wynyard Planning Scheme 2000*.

Ward, L.K. 1911 *The Silver–Lead Lode of the Waratah District*. Geological Survey Report No. 2, Department of Mines, Tasmania.

Webster, A.E. 2007 *A Brief Archaeological Inspection of the Site of Proposed Exploration Drilling at the Magnet Ag-Pb Mine, Tasmania*. Draft Report to Mineral Resources Tasmania.

Witham, C. 2003 *Western Tasmania – A land of riches and beauty.* Municipality of Queenstown, Queenstown, Tasmania [originally published 1924].

Archival & Miscellaneous Documentary

MRT Records

Old Series Reports (Mines Dept)

. OS 128 – Harcourt-Smith, J., 1897 (25/7/1897), *Report on the Mineral District between Corinna and Waratah*.

. OS 158 – Twelvetrees, W.H., 1900 (30/6/1900), *Report on Mineral Fields between Waratah and Corinna*.

. OS 207 – Twelvetrees, W.H., 1903 (28/9/1903), *Report on Mineral Fields Between Waratah & Long Plains*.

Unpublished Reports (Mines Dept)

. UR 1891-1969/101 – Blake, F., 1937, *History of Magnet Mine*.

. UR 1923/27 – Nye, P.B., 1923 (13/12/1923), *Lead* (*Magnet Mine)*.

. UR 1926/182-189 – Nye, P.B., 1926 (17/2/1926), *Report on the Magnet Mine, Magnet*.

. UR 1929/63-68 – Nye, P.B., 1929 (29/4/1929), *Departmental Report on the Magnet Mine*.

. UR 1931/24-28 – Nye, P.B., 1931, *Mining – the year's operations*.

. UR 1931/129 – Nye, P.B., 1931, *Notes on the Magnet Mine*.

. UR 1934/120-121 – Blake, F. & Nye, P.B., 1934, *Mineral Deposits of Tasmania*.

. UR MISCA/137-149 – Twelvetrees, W.H., 1918 (26/7/1918), *Underground workings of the Magnet silver mine*.

Other Documentary

. 68-498 – Glasson, K. and Cox, R., 1968, *Preliminary Report, Magnet Mine, Waratah District, Tasmania*.

. 89-3014, 593010 (a table of mine production figures for the Zeehan Field).

. TR 20/381-384 – Wellington, B.K., 1975 (22/12/1975), *Magnet mine residues after fifty years of weathering (R.710)*.

Maps, Plans & Charts

. Mineral Lease Charts: 1- pre-1902, 2 – 1902-1930, 3 – post-1930.

. Mineral Lease Survey Plans:

Russell County, Vicinity of Magnet, Book 6 plans – 19 (1891), 20 (1891), 23 (1891), 26 (1891),

Russell County, Vicinity of Magnet, Book 14 plans – 1 (1897), 2 (1900),

Russell County, Vicinity of Magnet, Book 20 plans – 14 (1901), 15 (>1902),

Russell County, Vicinity of Magnet, Book 28 plans – 8 (1908), 11 (1909), 12 (1909), 13 (1909), 14 (1909),

Russell County, Vicinity of Magnet, Book 38 plans – 1 (1913), 2 (1913).

. Plan – *The Magnet Silver Mining Company NL, Plan of Underground Workings*, no date (possibly D. Jones, but pre 1899? (earlier than plan 415/35, as there are less workings and surface features)) [MRT ref 416/35].

. Plan – *The Magnet Silver Mining Company NL, Plan of Underground Workings*, D. Jones, 1899 [MRT ref 415/35].

. Plan –*Plan of Underground Workings, The Magnet Silver Mining Co. NL*, D. Jones, 1899 [MRT ref 221/28]. [**This is the same plan as 416/35, but probably an earlier rendition**]

. Plan – layout of the Magnet township, 3/3/1912.

. Plan – *Transverse Section of the Magnet Lode*, P.B. Nye, 16/3/1916 [MRT ref GSB 33, also 102F/35].

. Plan – *Plan Showing Approximate formation of [railways?]*, 3/12/1917 [in Webster 2007 (source not cited?)].

. Plan – *Part of the Under Ground Workings, Magnet Mine*, 16/3/1923 [MRT ref GSB 33].

. Plan – leases in the Magnet – Waratah area, also showing some geological features, and roads, tramways and tracks, (possibly P.B. Nye), no date (probably c.1923) [MRT ref GSB 33].

. Chart – *Flow Sheet of Magnet Mill*, (probably P.B. Nye 1923), no date (probably c.1923) [MRT ref 103P/35].

Other Archival

Film

. McCutchan, J. 1995 The Cassilis hydro scheme and its Waratah connections, DVD.

Images *[supplied by K. Simpson & N. Haygarth]*

. The Weekly Courier, 2/8/1902.

. The Weekly Courier, 23/8/1902.

. The Weekly Courier, 3/10/1903.

. The Weekly Courier, 16/2/1907.

. The Weekly Courier, 20/2/1908.

. The Weekly Courier, 11/3/1909.

. The Weekly Courier, 27/10/1910 (Magnet School, by W. Fairhall).

. The Weekly Courier, 1/6/1911.

. The Weekly Courier, 23/7/1914.

. The Weekly Courier, 17/12/1922.

. J.H. Robinson, no date (probably late 1908-early 1909) [supplied by N. Haygarth].

. J.H. Robinson, no date (probably c.1910 (& pre-1914)) [supplied by N. Haygarth].

. Spurling, no date (probably c.1918-1920 (& post erection of power station in 1918)) [supplied by N. Haygarth].

. Historical image – Magnet Boarding House, no date, no author [supplied by N. Haygarth, originally obtained from Olive Plapp].

. Historical image – Magnet tennis club, no date, no author [supplied by N. Haygarth, original held by the Waratah Museum].

Published & Other Archival Maps & Plans

. Arthur River (7915) 1:100,000 topographic map (land tenure series) (1982) [TASMAP, Hobart].

. Waratah (3641) 1:25,000 topographic map (1987) [TASMAP, Hobart].

. Geology of Tasmania 1:500,000 map (2005) [Mineral Resources Tasmania, Hobart].

. http://maps.thelist.tas.gov.au (planning layer).

Heritage Registers

National Heritage List – online May 2013.

Commonwealth Heritage List – online May 2013.

Register of the National Estate - online May 2013.

Tasmanian Heritage Register - online May 2013.

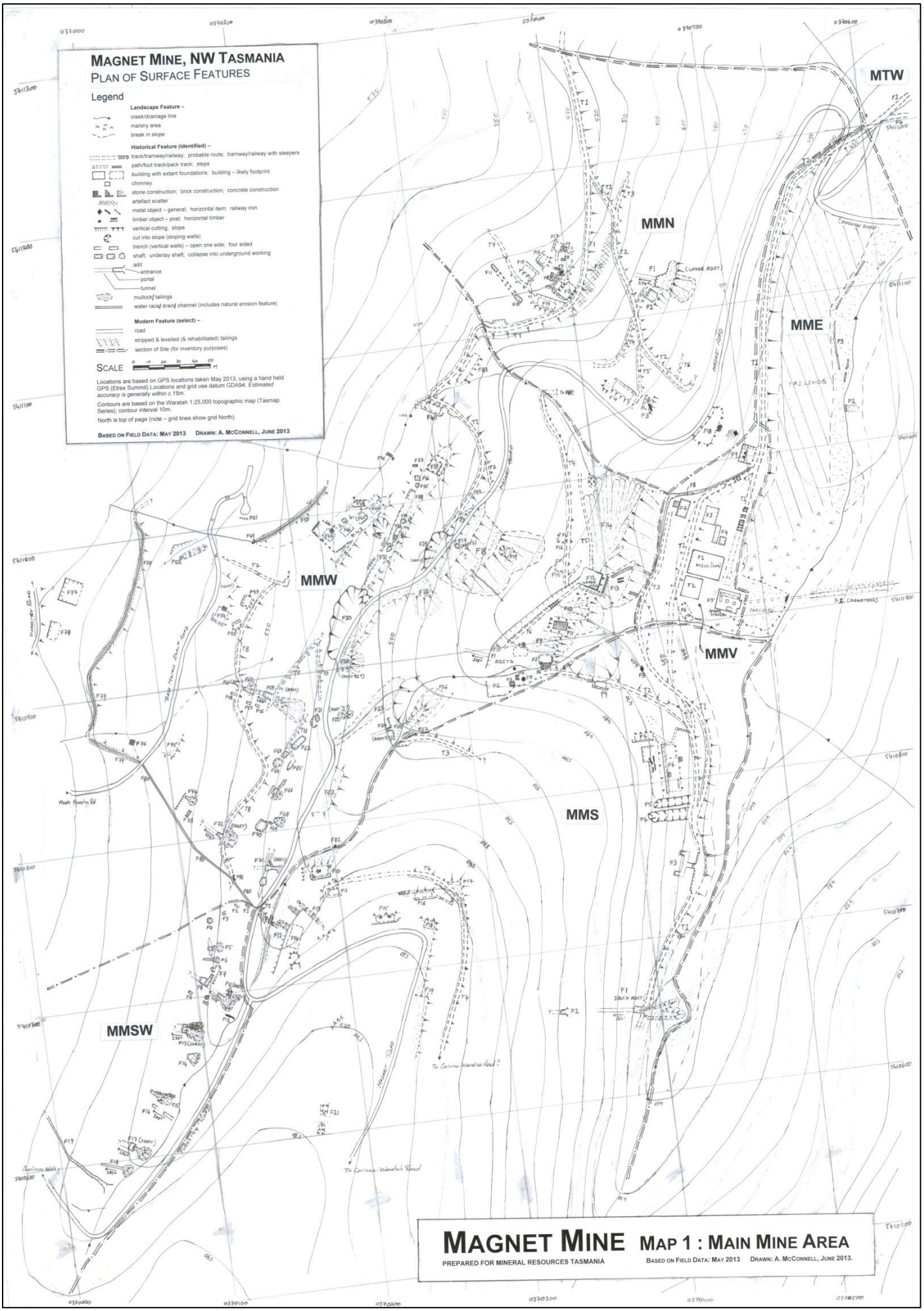
Victorian Heritage Register - online May 2013.

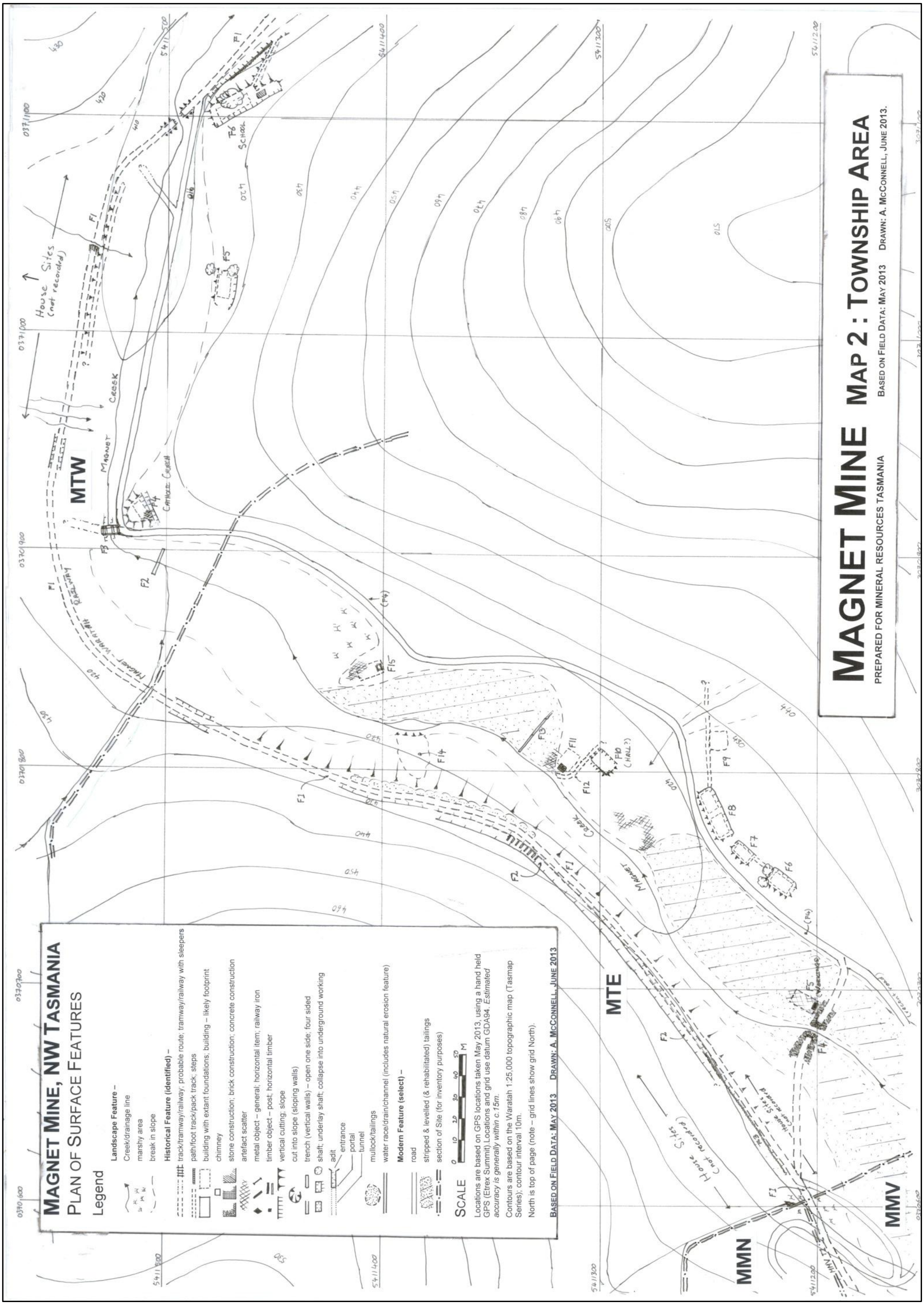
GLOSSARY

associations	—	the special connections that exist between people and a place (and which may include social or spiritual values and cultural responsibilities for a place) (*Burra Charter*, 1999, 3).
authenticity	—	the ability of a place (or object) to provide knowledge and understanding of original and subsequent characteristics of the place from all sources of information (including meanings) (*Nara Document on Authenticity*, cited in Lennon 2002).
community	—	the public in general or in some cases (generally qualified) a particular group of people that have interests in common (*TWWHA Management Plan* 1999, 206). Two types of 'community' are generally recognised: 1. the *local community* – which is the community of a specific geographic locality; and 2. a *defined community* (or community of interest) – which is a community defined by its shared interest (eg, culture, beliefs, ethnicity, activity or experience) (Terry 2002)
compatible (use)	—	respects the cultural significance of a place (a compatible use involves no, or minimal impact on cultural significance) (*Burra Charter*, 1999, 2).
conservation	—	all the processes of looking after a place so as to retain its cultural and natural significance (*Burra Charter*, 1999, 2) (*Australian Natural Heritage Charter* 1996, 8)
conservation management plan	—	a document which details how to look after the values of a place which has natural and/or cultural significance.
cultural significance	—	aesthetic, historic, scientific, social or spiritual value for past, present or future generations; and which is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects (*Burra Charter*, 1999, 2)
fabric	—	all the physical material of a place, including components, fixtures, contents and objects (*Burra Charter*, 1999, 2).
heritage	—	a *value* that derives from the past (ie, is inherited or transmitted from the past), and may include cultural practices and traditions.
historic heritage	—	a *value* that is inherited or transmitted from the non-Aboriginal past; may include cultural practices and traditions.
integrity (cultural)	—	the extent to which the layered historic evidence, meanings and relationships between elements remains intact and can be interpreted (and in relation to cultural landscapes it is also the integrity of the relationship with nature that matters, not the integrity of nature itself) (Lennon 2002, 56).
maintenance (cultural)	—	continuous protective care of the fabric and setting of a place (to be distinguished from repair) (Burra Charter, 1999, 2) or its values.
meanings	—	that which a place signifies, indicates, evokes or expresses (and which generally relate to intangible aspects such as symbolic qualities and memories) (Burra Charter, 1999, 3).

monitoring	—	ongoing review, evaluation and assessment to detect changes in condition, with reference to a baseline condition.
preservation (cultural)	—	maintaining the fabric of a place in its existing state and retarding deterioration (*Burra Charter*, 1999, 2).
protect	—	to keep safe from danger or degradation.
reconstruction	—	returning a place to a known earlier state (and is distinguished from restoration by the introduction of new material into the fabric) (*Burra Charter*, 1999, 2)
related place/object	—	place/object that contributes to the cultural significance of a place/object but is not at the same place (*Burra Charter*, 1999, 3).
repair (cultural)	—	return of fabric or values to closer to its original state; involves restoration or reconstruction.
restoration (cultural)	—	returning the existing fabric of a place to a known earlier state by removing accretions or reassembling existing components without the introduction of new material (*Burra Charter*, 1999, 2).
significance (general)	—	quality of having value (may be intrinsic value or attributed value).
value	—	physical or non-physical attribute of a place that has value or is valued at any level.

Endnotes


MAGNET MINE, NW TASMANIA
PLAN OF SURFACE FEATURES
Legend
Landscape Feature –
creek/drainage line
marshy area
break in slope
Historical Feature (identified) –
track/tramway/railway; probable route; tramway/railway with sleepers
path/foot track/pack track; steps
building with extant foundations; building – likely footprint
chimney
stone construction; brick construction; concrete construction
artefact scatter
metal object – general; horizontal item; railway iron
timber object – post; horizontal timber
vertical cutting; slope
cut into slope (sloping walls)
trench (vertical walls) – open one side; four sided
shaft; underlay shaft; collapse into underground working
adit
entrance
portal
tunnel
mullock/ tailings
water race/ drain/ channel (includes natural erosion feature)
Modern Feature (select) –
road
stripped & levelled (& rehabilitated) tailings
section of Site (for inventory purposes)
SCALE
0 10 20 30 40 50 m
Locations are based on GPS locations taken May 2013, using a hand held GPS (Etrex Summit).Locations and grid use datum GDA94. Estimated accuracy is generally within c.15m.
Contours are based on the Waratah 1:25,000 topographic map (Tasmap Series); contour interval 10m.
North is top of page (note – grid lines show grid North).
BASED ON FIELD DATA: MAY 2013 DRAWN: A. MCCONNELL, JUNE 2013
MTW
MMN
MME
MMW
MMV
MMS
MMSW
To Corinna-Waratah Road
MAGNET MINE MAP 1 : MAIN MINE AREA
PREPARED FOR MINERAL RESOURCES TASMANIA
BASED ON FIELD DATA: MAY 2013 DRAWN: A. MCCONNELL, JUNE 2013.


MAGNET MINE, NW TASMANIA
PLAN OF SURFACE FEATURES
Legend
Landscape Feature –
Creek/drainage line
marshy area
break in slope
Historical Feature (identified) –
track/tramway/railway; probable route; tramway/railway with sleepers
path/foot track/pack track; steps
building with extant foundations, building – likely footprint
chimney
stone construction; brick construction; concrete construction
artefact scatter
metal object – general; horizontal item; railway iron
timber object – post; horizontal timber
vertical cutting; slope
cut into slope (sloping walls)
trench (vertical walls) – open one side; four sided
shaft; underlay shaft; collapse into underground working
adit
entrance
portal
tunnel
mullock/tailings
water race/drain/channel (includes natural erosion feature)
Modern Feature (select) –
road
stripped & levelled (& rehabilitated) tailings
section of Site (for inventory purposes)
SCALE 0 10 20 30 40 50 M
Locations are based on GPS locations taken May 2013, using a hand held GPS (Etrex Summit).Locations and grid use datum GDA94. Estimated accuracy is generally within c.15m.
Contours are based on the Waratah 1:25,000 topographic map (Tasmap Series); contour interval 10m.
North is top of page (note – grid lines show grid North).
BASED ON FIELD DATA: MAY 2013 DRAWN: A. MCCONNELL, JUNE 2013
MTW
MTE
MMV
MMN
MAGNET MINE MAP 2 : TOWNSHIP AREA
PREPARED FOR MINERAL RESOURCES TASMANIA
BASED ON FIELD DATA: MAY 2013 DRAWN: A. MCCONNELL, JUNE 2013.

MAGNET MINE FEATURE INVENTORY

[SITE RECORDED MAY 2013]

Mine Area	Key Feature Number	Description	History	Significance[1]	Location (GDA 94)	Elevation (GPS, m)	Image
MINE SITE							
MMSU	F1	**Possible historical shaft – Magnet Proprietary Shaft?**: There is no clear present day evidence of a shaft at this location as the saddle area beside the road has been bulldozed (rehabilitated?). There is however a depression and adjacent low bank in the N part of the bulldozed area and possible mullock in the SW part of the bulldozed area and in the vegetated area immediately west. Possibly the *Magnet Proprietary Shaft* noted by Twelvetrees (1918, 148) as being 'a long distance south' – it is approximately on the alignment of the line of lode and the description of its location would seem to preclude it being one of the shafts in the MMSW area.	unknown (pre 1918?) [Twelvetrees (1918, 148) mentions a *Magnet Proprietary Shaft* 'a long distance south']	*not assessed* (potentially of high to low significance)	0369917.5410442, 0369901.5410436& 0369920.5410413	605-608	 
MMS	F1	**Adit – South Adit & finger dumps**: Large adit on creek edge and c.2m above creek level with a two headed finger dump at same level extending from the front at the same level across the valley (& which has diverted the creek). *Adit*: entrance is wide and 7m long and the side walls have partly collapsed; the portal is 6' high (partly infilled?), 6' wide with a 12' rock headwall; the adit is straight on a bearing of 264º for the visible length (c.20m); there is remnant timbering at the portal and inside the adit for the visible length; there is a strong flow/volume of clear water from the adit; also smell of sulphur. Twelvetrees (1918, 148-49) – describes the 'South Adit' as being driven at the time of his visit in 1917 and at the time "driven into the hill on a beautifully straight west line for a distance of 1039 feet" and planned to intersect the lode at a point c.300-400' south of the most southerly workings in 'the old mine'(main mine), and notes that the drive "is designed to intersect the lode below an outcrop of mineral located in one of the south trenches", and to intersect the lode at a point c.300-400' south of the most southerly workings in' the old mine'. Nye (1926) notes that the South Adit was connected to the main mine via a rise from the No.8 level of the mine before 1926, and that in 1926 a north drive is still being driven. Glasson & Cox	1917 (work (a north drive) continuing in 1926)	very high	0370390.5410653	476	

[1] Significance is ranked – very high, high, medium, low, none. Where there is insufficient information to assess a feature it is listed 'not assessed'.

		(1968, section) show the adit as being located approx between the No.4 and No.5 levels but connected to the No.8 level by a slightly inclined shaft (the No.8 level being extended a considerable distance south to link with the South Adit and prove the ground between,					 
MMS	F2	**Adit/Trench**?: Adit or trench c.50m upslope and in line with F1 (adit) (*not inspected*).	c. late 1910s (by 1917)? [Presumed part of the exploration related to F1.]	low	-	-	
MMS	F3	**Adit/Magazine**?: Adit c.1.5m above the creek level cut in from creek side track; the adit however is short (5m) with a crosscut with two 'rooms' at each end'; the entrance is a c.6.5m wide x c.24m long platform partly built with mullock(?) and which has a litter of artefacts (eg, ore skips, perforated metal plate, gci) on the outer edge and bank to creek; a star picket and mesh fence across entrance but does not completely exclude entry. *Adit*: The entrance is short with a c.5m long tunnel on a bearing of 277°; c.7' high x 6'6" wide with an 11' high headwall at the portal. The crosscut is c.15m long, with a western excavation (at right angles) at each end, each of which has a rock and concrete walled and roofed 'room'.	c. 1917? [Construction suggests this adit was built as a magazine, presumably for the development of F1.]	high	0370435.5410740	470	 
MMS	F4	**Cutting**: A c.25m long (E-W) by c.5m wide cutting back into the hillslope. The cut is approximately rectangular, but not regular or vertical sided. The lower end opens onto the creek side track (T1).	post 1903? [no features shown in this general area in Weekly Courier images 3/19/1903, although track is extant]	low	0370436.5410776	468	

MMS	F5	**Cutting**: A c.15-20m long (E-W) by c.4m wide cutting back into the hillslope parallel to and on the N side of F4. The cut is approximately rectangular, but not regular or vertical sided. The lower end open onto the creek side track (T1)	post 1903? [no features shown in this general area in Weekly Courier images 3/19/1903, although track is extant]	low			
MMS	F6	**Platform – building**: A c.31.5m long x 7m wide building platform on a cut bench; the platform shape and bi-level nature suggests a small lower room at the N end. The platform has an internal central square brick chimney butt and an external square stone chimney near the N end, exposed buried pipe (waste water?) on the S outer edge, and a scatter of surface artefacts –bricks (Jones & Cameron and BT&B Co.), gci, steel plate and strapping, & rail iron. There is an area of sloping ground c.4-5m wide above and across the back (W) of the building platform with a cut on the w edge – probable back yard. The building platform is connected to the creekside track (T1) below by a steep narrow (c.1.5'-2") zig zag track with steps and vertical steel posts (round c.2' pipe) (– handrailing?) in the lower part; also connects to F7.	post 1903? [no features shown in this general area in Weekly Courier images 3/19/1903, although nearby tracks are extant]	medium	0370424.5410803 & 0370412.5410790	479-487	
MMS	F7	**Platform – building**: Long narrow benched platform for a building; c.12m (N-S) x 3.5m; there is a scatter of bricks near the SW corner (- brick chimney butt?); also there are a number of vertical steel posts (round c.2' pipe) below the platform (– handrailing for an access path?); connected to F6 by a foot track. Presumed to be a house/shed site, but based on Weekly Courier images (2/8/1902, 1/6/1911, 23/7/1914) that show a pipeline running down the spur through this approx location it may have been a platform for a pipe stand? (although no pipe stand is shown in this location in the 1902 image).	post 1903? [no features shown in this general area in Weekly Courier images 3/19/1903, although nearby tracks are extant]	medium-low	0370415.5410828	486	
MMS	F8	**Artefact - ore skip**: Metal ore skip for aerial cableway?; located immediately W of T1 and just S of the creek.	unknown [presumably dates to the working of Adit 4)	low	0370416.5410874	468	
MMS	F9	**Platform – building**?: flatter rectangular benched area on upper (S) side of T2 - possible hut/building site.	by 1903? [appears to be hut in this approximate position in Weekly Courier image of 3/10/1903]	medium-low	0370398.5410865	474	
MMS	F10	**Platform – building**: Rectangular benched platform c.10m long (E-W) x 7m wide; the rear (S) wall cut into slope has an additional cut out area in the W end with an adjacent brick mound (– possibly accommodated a chimney); c.12m E of creek with relatively flat terrain to creek including a relatively level area immediately W of platform; the ground slopes steeply down to creek on the N side and the surface is debris from the excavation of the platform (extends to c.MMW F81); artefacts include scattered bricks (no makers marks), scattered gci sheet, fragmented bottle, fragmented plain white domestic china, part of a metal bedstead, a metal pick head. Pick head is 11" long x 4" wide.	by 1902? [appears to be building in this approximate position in Weekly Courier image of 2/8/1902)	medium	0370191.5410768 – 0370204.5410784	557-543	

							
MMS	F11	**Platform – building?**: Probable small rectangular benched platform (for hut/shed); 5m (E-W) x 3m; located immediately above T4 (See GR) and c.10m above F10.	by 1902? [cluster of buildings in this area shown in Weekly Courier image 2/8/1902]	medium-low	0370150.5410756	>560	
MMS	F12	**Workings -Quarried Area**: c.40m long x c.10-12m wide area with flat but sloping (down to N) floor cut back from the creek to E with a c.3m high vertical cut into bedrock on E side; has 2 long narrow mullock dumps in S half c. 10m apart and extending from the E cut wall towards the creek (ie, W) which are c.8m long and c.5m long respectively (also a third c.8m to the S but which is beyond the cut and extends uphill – see F13); accessed by a track on the W side (across the creek) (T5); has a narrow drain cut into the floor running parallel to the creek and c. 3m to E; two lengths of c.12" concrete pipe associated (1 in creek and 1 on T5). Interpreted as containing part of the original pack track to the Magnet Mine (pre-1899) (refer T5), re-used for? (possibly a mechanically cut open cut?) much later in the mine's history (c.1930s?)	track route (T5) – pre-1899 & workings – unknown (1930s?)	*not assessed* (potentially of high to medium significance)	0370157.5410734	557	 
MMS	F13	**Mullock - heap**: Narrow linear mullock heap c.2m wide by <1m high running up slope from just below F12 and creek – possibly associated with F12.	unknown (1930s?)	*not assessed* (potentially of medium to low significance)			
MMS	F14	**Platform – building?**: Probable platform (for hut/shed or processing); lightly benched platform c.15m (N-S) x 5-7m; located immediately above F12 (above the vertical cut wall); has two rectangular in-line earth mounds upslope to the N (– possible supports for a conveyor/tramway?).	unknown (by 1902 or1930s?)	*not assessed* (potentially of medium to low significance)			
MMS	F15	**Platform – building**: A platform on a cut bench; main area is c.7m long (E-W) x 5m wide with a low brick mound at approx each end on the outer (N) edge, and extending, but less clearly defined for another c.5m to W; the W end of the N edge is drystone walled; probable house platform with the brick mounds being chimney butts.	by 1902? [cluster of buildings in this area shown in Weekly Courier image 2/8/1902]	medium	0370230.5410733	570	
MMS	F16	**Platform – building**: A rectangular benched into the slope on the N side of the nose of the NE trending spur; c.10m long (E-W) x c2.5m wide; has a foot track/path off the E end which appears to be cut down to the E to T4 at F17.	by 1902? [cluster of buildings in this area shown in Weekly Courier image 2/8/1902 and 3/10/1903]	medium	0370255.5410745	563	

MMS	F17	**Platform – building?**: The nose of the NE trending spur has a flat rectangular area c.7m E-w x 6.5m N-S cut out from the T4 bench – probable hut/shed location; on the inner side (inside of T4) at this location the bench is cut back in a straight NW-SE line.	by 1902 or 1903? [cluster of buildings in this area shown in Weekly Courier image 2/8/1902]	medium-low	0370280.5410747	562	
MMS	F18	**Platform – building?**: A small approx square flat area cut slightly into a large level platform on the current Magnet Rd (old tramway?) on the nose of the spur (NE edge); c.3.5m x 3.5m – possible hut location.	c.1899 – 1902? [presumably associated with tramway]	*not assessed* (potentially of medium to low significance)	0370257.5410728	576	
MMS	F19	**Platform – building/s?**: On the E side of the current Magnet Rd (old tramway?) there is a major flat area (including on the revegetated edge) that is interpreted as a historical works area, possibly with one or more buildings (-possible stabling area for the horses for the tramway?); the area extends from the nose of the spur (at F18) S for 40-50m to a point where the platform widens by c.2-3m and steps up <0.5m form where it runs S for at least another c.20m; there are no features evident on this platform other than F18 and the road (old tramway), but as a 5-10m wide strip along the E edge of the road has been bulldozed (rehabilitation?) there may have been historical features which have been destroyed by the recent bulldozing.	c.1899 – 1902? [presumably associated with tramway]	*not assessed* (potentially of medium to low significance)	0370251.5410678	583	
MMS	F20	**Modified Area**: Area that appears to have been slightly levelled historically (now in regrowth forest) with spoil pushed to the NW forming a steep short bank in this area; difficult to interpret due to the extensive modern bulldozing (rehabilitation?) to the E.	unknown	*not assessed* (potentially of low significance)	0370187.5410667	584	
MMS	F21	**Mullock & Cutting**: Low mound of mullock, c.15m long x 3-4m wide that has a c.2-3m wide opening through it (- historical mullock that has an historical track cutting through it at right; difficult to interpret due to the extensive modern bulldozing (rehabilitation?) to the E.	unknown	*not assessed* (potentially of medium to low significance)	0370167.5410610	593	
MMS	T1	**Tramway**: Benched c.8'-10'/10'-12' wide track; major track leading from main mill area (connecting to MMS T2 and MMV T2) S along and slightly above the W side of the creek to F1 and F3; the track narrows to c.4'-6' beyond F3, and it is not clear if it extends S beyond F1; near the N end it has a link track up to MMS T2, then intersects with MMS T2 further S (at F4). Originally a tramway at least to the i/s with MS T2 (refer 1917 plan in Webster 2007).	by 1902? [the N end linking to T2 is clearly evident in Weekly Courier image 2/8/1902 (& 3/10/1903); track clearly evident in 1911 (looks to be in operation) in Weekly Courier image 1/6/1911]	high	0370424.5410903 – 0370442.5410852 – 0370446.5410808 – 0370390.5410653+?	465-468-476	
MMS	T2	**Tramway:** Benched c.10' wide track; leads from Adit 4, E then S to join the creek side track (T1) in the MMS area; has wider section (- storage or working area?) part way along (c. GR 0370427.5410842); and has a smaller track taking off to the N (to join T1) slightly further E (GR 0370443.5410828); partly destroyed by a large erosion hollow between Adit 4 and F9. Graded tramway connecting Adit 4 with the main railway (and lower mill buildings) (shown in 1917 plan in Webster 2007).	by 1902 [clearly evident in Weekly Courier image 2/8/1902]	high (as part of the No.4 Adit complex)	? – 0370398.5410865 – 0370436.5410776	474 - 468	

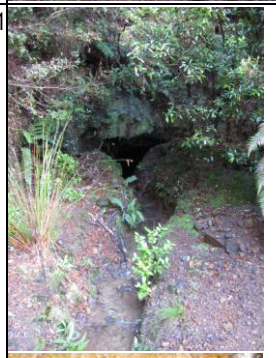
MMS	T3	**Track/tramway**: Heavily benched c.4' wide track (foot track?); leads down gently from Adit S2, SE around the spur (*only followed for c.50m*); moderately to well preserved.	1903? [Twelvetrees (1903, 35) notes adit 'being driven at the time of writing']	high-medium	0370288.5410840	516	
MMS	T4	**Track – original pack track & later tramway to Mine?**: Heavily benched c.4'-6' wide track (foot/bridle track?); runs around the contour at a gentle grade c.50m below the present day road (old tramway?); extent not surveyed – possibly linked to T5 and to the N overprinted by the later tramway and later road. Interpreted as the original pack track to the Magnet Mine, later partly overprinted by the 1899 tramway, which was then abandoned after the railway to Waratah was built in 1902, but re-opened in the 1970s to act as the EZ Co. haulage road. Described as being in rough condition in c.1917 by Twelvetrees (1918). Considered to be not likely to be the early (pre-1904) original (pre 1904) water race from Magnet Creek above Magnet Falls that provided 250' head of water to the mine (Nye 1923) - this is understood to have run around the E valley slope (although a pipe is shown running approx 2/3 up the S spur from the lower mill side. Presumed to have been constructed and used as a pack track from the time the mine opened until modified to a tramway (possibly not on same alignment) in 1899 (Twelvetrees 1900). Mine lease plan pre-1902 shows the tramway in this approximate location and clearly below the present road until just north of the western creek.	c.1891 (start of mine) – 1899 (as pack track) 1899 – 1902 (as tramway)	very high	?-0370197.5410759 -0370252.5410759 -0370280.5410747 -0370261.5410658+	560-558- 562-576	 
MMS	T5	**Track – with bridge**: Short section of track that appears to lead from MMS F12 across the creek via a bridge and then to the W and NW as a wide benched (c.10'-12') formation; blocked/overprinted by the modern road at the W end. The bridge has collapsed but the bridging is partly preserved and appears to have been an in creek log box culvert with c.0.5-1m of sediment built up on top [known c.1900 pack track style of bridging for small creeks], although this feature is slightly offset to the N of the track formation proper. Interpreted as two periods of track: The culvert bridging interpreted as the earliest feature and related to the original pack track to the mine (c.1891 – 1899), and the main formation with a 12" concrete pipe culvert (as there are 2 such pipes in the area of the bridge) being a later access road to F12.	c.1891 (start of mine) – 1899 c.1930s? (upgraded) [refer F12]	*not assessed* (potentially of high to low significance)	0370171.5410743	554	
MMSW	F1	**Trench**: Small vertically sided trench (costean?) cut into the slope a short distance above the main Magnet Road (& former Tramway?) and just S of the Water Race tail race; F1 – F4 are on an approx SW-NE alignment diagonally across the slope. Located on the main mine lease. Presumed to be part of a line of prospecting continuing S from the Open Cut (could be early (c.1890s) or later (1920s) in age).	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370150.5410756	557	

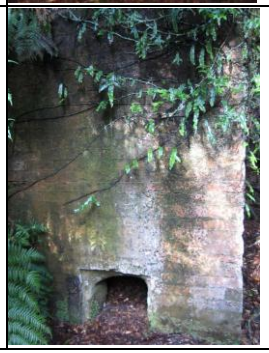
MMSW	F2	**Trench**: Small vertically sided trench (costean?) angled into the slope; trench is 3' wide x 5' long x 5' deep; F1 – F4 are on an approx SW-NE alignment diagonally across the slope.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370144.5410756	565	
MMSW	F3	**Trench**: Small vertically sided trench cut on the S end of a vertical cut into and along the slope; the trench is angled into the slope and is 3' wide x 5' long; F1 – F4 are on an approx SW-NE alignment diagonally across the slope.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370128.5410750	566	
MMSW	F4	**Cut**: Small rounded cut back into the slope; the trench is angled into the slope and is 3' wide x 5' long; F1 – F4 are on an approx SW-NE alignment diagonally across the slope.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370117.5410747	570	
MMSW	F5	**Shaft**: Vertical shaft 9' x 5'6", open to unknown depth; possible cross cut c.3m down the shaft; does not have a platform associated but has a small debris (mullock) fan below.;	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	medium-low	0370120.5410728	570	
MMSW	F6	**Trench**: Shallow vertically sided trench (costean?) running upslope; trench is 3' wide x 6'' long x 1.5' deep; has a small platform of spoil/mullock around the outer edge.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370116.5410721	569	
MMSW	F7	**Cut**: Short irregular cut/trench into the hillslope with a cross-slope linear cut c.3m below.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370102.5410713	571	

							
MMSW	F8	**Shaft & Trench**: An across slope trench 3' wide x c.25' long on a bearing of 47°, with a c.9' wide near vertical opening on the S end which appears to be an underlay shaft (or stoping) (bearing 297°).	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	medium	0370097.5410713	572	
MMSW	F9	**Trench**: Small vertically sided trench (costean?) cut into the slope.	unknown (probably 1920s, possibly by 1923) [presumed to be the prospecting works noted by Nye 1923, 1926 and 1932]	low	0370100.5410705/ 0370109.5410698	572	
MMSW	F10	**Tree Stump - Cut**: A c.2.5m high eucalypt stump with a horizontal cut top and at least 1 shoe mark; has been partially burnt.	unknown	low	0370097.5410697	581	
MMSW	F11	**Adit – Upper Creek Adit**: Adit with platform and outer finger dump, also an associated weir immediately upstream (F12); the adit located just above creek level (S creek in the MMW area), just above the main Magnet Road (former tramway?) W of the i/s with Forest Road. *Adit*: The adit entrance is 4m long x 5'5" wide with some collapse (?); at the portal the adit is wide and square cut, and 5'5" wide x 7' high with a c.13' headwall; the tunnel goes for c.10m where it appears to be blocked by rubble (collapse?), with some in situ timbering visible in the collapse; the tunnel bearing is 308°; no apparent water in Adit. *Mullock & Finger Dump*: There is an irregular platform outside the adit that extends c.4m to the S (to the creek edge) and 10.5m to the E; there is a c.5m long (at top) finger dump which extends E along the creek edge off the SE corner; there are several lengths of rail iron on the E edge of the mullock. Possibly the adit noted by Nye (1923)' at the SW corner of the original Magnet lease.	by 1923? [presumed to be the prospecting works noted by Nye 1923]	high-medium	0370118.5410695	579	

							 
MMSW	F12	**Weir**: Small low weir across the creek beside F11 (Upper Creek Adit) (S creek in the MMW area); located c. 5m upstream of F11; low (<0.5m high) curved wall of rock rubble; has vertical metal plate on the upstream side; creek has diverted around the weir; (possibly a sluice?).	c.1923? [presumed to be associated with F11]	medium-low			
MMSW	F13	**Cut & Shaft/Pit - Underlay Shaft? (Magnet Proprietary Shaft?)**: Large wide vertically sided cut back into hillslope on a bearing of c.277°, with a large square inclined pit (underlay shaft?) cut into the inner end; the main cut is c.20' long x 16-17' wide and has a level floor, partly built up with spoil/mullock; most of the NE side of the platform is occupied by a flat topped vertical sided stack of angular rock (larger mullock) which spills over the N edge of the platform (the full area of the rock mound is c.19' x 9'); at the inner end the platform has been cut down vertically for c.4'-6' and below this it is cut down but angled into the hill (ie, to N) (at c.45°); this possible underlay shaft is only c.10' wide, leaving a c.6' wide bench on the E side; the headwall (to platform is c.8; the shaft is filled with water to slightly below the bench level; the cut and platform is some metres above the creek. This is possibly the *Magnet Proprietary Shaft*. This shaft is reported in 1900, 1918 and 1923 (by Twelvetrees 1900, Twelvetrees 1918 and Nye 1923, respectively) sunk to 60' on gossanous outcrop (by 1900), and sunk to 60', being on Lease 2075-91M and 'a long distance south'. Based on Nye's (1923, 177) comment that there is creek 'to the immediate south of this shaft' and the lease boundaries, there are few options other than MMSW F13 for this shaft.	by 1900? [presumed to be the *Magnet Proprietary Shaft* reported in 1900, 1918 and 1923 by Twelvetrees (and Nye in1923]	high medium	0370080.5410672	580	 

MMSW	F14	**Trench/Cut**: Approx triangular platform formed by the cutting of a right angled vertical wall back into the hillslope and the building up of a spoil/mullock platform in front; the platform is c.14' wide at the outer end and 14' deep; the inner edge is a short wide vertical trench that is 6' wide at the mouth; set slightly above the creek; there is a cut tree stump on the NE corner of the mullock platform and a line of angular rock (larger mullock) along the base of the mullock platform (wide edge near creek)..	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	low	0370095.5410661	580	
MMSW	F15	**Trench**: Large trench cut into hillslope; 16' long x 4'6" wide; bearing 298º; has a semi-circular ridge/rim of spoil/mullock platform at the entrance which extends to the creek bank which is vertical in this area (- possibly excavated?), and there is also a line of rocks (larger mullock) running down the NE side of the trench.	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	medium-low	0370064.5410645	584	
MMSW	F16	**Trenches**: A set of two trenches cut into the hill which are in line and running up the hill on a bearing of 300º; the lower trench starts on the creek bank and is c.5m (15') long x 3' wide with a 5' high headwall; the upper trench is c.5.5m uphill, and is 7' long x 4'6" wide with a 5' high headwall, and is also irregular in shape suggesting that it may be an infilled larger trench or shaft; there is minimal associated spoil; the lower trench has mature tree ferns growing in it.	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	low	0370068.5410629	585	 
MMSW	F17	**Trench (possible Adit/Underlay Shaft?)**: Large trench cut into hillslope; c.3.5m (10') long x 3' wide with a large rectangular area with a downwards sloping floor into the hillslope with a headwall of c.10'; bearing 294º; has a small spoil/mullock platform at the lower end which extends to the creek, and spoil down both sides of the trench.	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	medium	0370052.5410605	584	

MMSW	F18	**Trench**: Large trench cut into hillslope; c.15m (45') long x 3' wide; bearing 285°; has a small spoil/mullock platform at the lower end which extends to the creek.	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	low	0370040.5410595	584	
MMSW	F19	**Trench/Channel**; A long trench running upslope (moderate) from the creek; there is no associated spoil at the creek end; form the creek to GR 0370005.5410606 the trench is c.3-4' wide x c.2' deep and relatively straight with slightly eroded edges; above GR 0370005.5410606 the trench is smaller (c.1.5-2' wide x 1.5' deep) and runs in a straight line on a bearing of 330°; the trench can be followed in its uphill part by the line of trees growing in the trench; does not appear to carry water; inspected for c.50m.	unknown (probably 1920s-1932) [presumed to be the prospecting works noted by Nye (1932, 176) who notes 'other trenches still further south' (than the main mine lease).	*not assessed* (potentially of medium to low significance)	0370026.5410585-0370005.5410606+	584-591+	
MMW	F1 (& F2-10)	**Adit – Adit 4**: Major adit extending into the W slope of the mine (the historical documentation and amount of mullock (F9, 10 & 14) indicates this was the major adit and mine entrance for the Magnet Mine; the adit is located on the N side of the southern creek line in the main mine area approx half way up the slope from the main mill and the present Magnet Road; the adit has a large platform in front with a number of features including building sites, a boiler and brick chimney (see F2- F8); the mullock from the adit is deposited as a series of short finger dumps immediately (c.20-70m) to the NE (F9 & 10), then as a large area of coalesced finger dumps c.90m-160m to the NE (beyond the mill buildings on this level). *Adit*: The adit is cut in directly from a high vertical cutting into the slope with a headwall of c.3-4m, at the entrance the adit bears at 278°; the portal entrance is largely blocked up with a long mound of silt that has left a c.2'-3' high opening at the top of the tunnel (*note – this has recently been cut through with a 5' long trench (by visitors to gain access to the adit?*)); there is water on the floor of the Adit tunnel and it appears that water flows out of the adit in wet periods with the silt mound at the adit entrance likely to have been deposited at a period/s of very high flow. *Platform*: Adit 4 has a very large platform in front; the total area of the platform is c.60m NE-SW x 30m NW-SE (with the outer edge at GR c.0370342.5410877 (467m)); the platform appears to have been built across the creek line (S creek on main W mine slope), and although it may have been channelled historically it now flows across the platform surface (which has possibly silted up) c.10m S of the Adit entrance (eg, at GR 0370336.5410868); on the S side of the platform there is a rectangular cut into the hillslope that appears to have housed a building or plant (F2), and to the E of this is a square brick chimney (F3) a brick boiler or engine bed (F4) and a vertical boiler (F5) (this area is described by Godfrey (1984, 54) as being the 'mine workshop'); beyond this on the SE edge of the platform where the creeks	c.1898 (not in existence in 1897) [not mentioned by Harcourt-Smith (1897); noted by Twelvetrees (1900) & shown on MRT 1899 Plan (as No.4 Tunnel) which also shows forge in approx area of F8; in 1903 Twelvetrees (1903, 35) notes 'work ongoing in No 1, 2, 3 & 4 levels']	very high	0370320.5410896	471	 

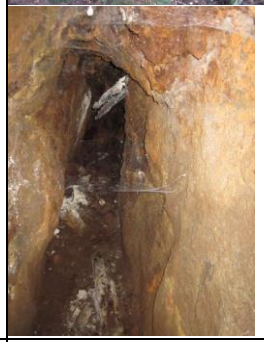
		flows there is a made channel for the creek (F6), with a stone edged platform (building site?) on the N side (F7); in the centre of the platform in the creek line is an upright squared post (partly burnt) that appears to be remnant door framing (at GR. 0370320.5410894); to the N of Adit 4 in the centre of the platform is another squared levelled area (presumed to be a building site) (F8); from the Adit 4 entrance the vertical headwall runs NE to the mill buildings, and a tramway formation (T6) runs parallel to this from near the Adit entrance to the mill building c.4-5m out from the headwall; there are also various artefacts on the platform – mainly building related (eg, bricks, timber and metal fragments) and mining related (boiler, ore bin/skip, heavy wire coil, angle iron), as well as some fibro-cement sheet fragments (probably asbestos); the bricks are primarily a mixture of BT&B Co. and Jones & Cameron bricks. Adit 4 appears to have been commenced in c.1898 (Harcourt-Smith 1897, 1899 Mine Plan). Webster (2007, 4) suggests Adit 4 and the internal main shaft were the main access to the mine for the rest of its life "judging by the extensive mullock dumps that have been built up to the level of the portal, and the arrangement of finger dumps that radiate out from it".					 
MMW	F2 (& F1)	**Cutting – for Building/Plant?**: Vertical sided cutting back into the S valley wall on the S side of the creek; cutting is c.10.5m (N-S) x c.12m (E-W) and the headwall is +3m high; the floor is flat and at the same level as the Adit 4 platform; there is some gci sheet in the area and remnant timbering (not diagnostic). Interpreted as a mine related building of plant site. No excavation is shown in this area in a 1902 Weekly courier image (2/8/1902). A Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922) show a new (since 1914) hut with and circular metal chimney flue on NE corner in this approximate location (but this i more likely to be the Mine Workshop which was slightly to the NE (and included F3-5). Building shown in this location on a 1917 plan (in Webster 2007).	unknown (probably c.1914; by 1917) [possibly by 1899 or 1903 (Twelvetrees 1900 & 1903); or post 1914 (but by 1922) based on Weekly Courier images]	high-medium (as part of the No.4 Adit)			
MMW	F3 (& F1)	**Structure – Chimney (in Mine Workshop?)**: A square vertical sided brick chimney/flue (presumed for mine equipment, possibly nearby boiler (F5)); the chimney is c.4-5' x 4-5' and is 8-10' high (top appears to be missing); there is a mostly buried opening at the base on the N side; the chimney is on the Adit 4 platform. A Spaulding image (no date, c.1918-1920) & a Weekly Courier image (7/12/1922) shows a new (since 1914) hut with and circular metal chimney flue on NE corner in this approximate location. This building is described by Godfrey (1984, 54) as the 'mine workshop'. Building shown in this area in 1917 plan (in Webster 2007)	unknown (probably c.1914; by 1917) [possibly by 1899 or 1903 (Twelvetrees 1900 & 1903); or post 1914 (but by 1922) based on Weekly Courier images]	high-medium (as part of the No.4 Adit)			

MMW	F4 (& F1)	**Structure – Engine Bed? (in Mine Workshop?)**: A rectangular vertical sided brick foundation open on the E side (presumed to be a bed, possibly an engine bed, for mine equipment, possibly related to the nearby boiler (F5)); the foundation is c. 6' x 4', and c.4' high; it is located on the Adit 4 platform c.5m E of the brick chimney/flue (F3) and 5m W of the boiler (F5). This feature appears from Godfrey (1984, 54) to be part of the 'mine workshop'. Building shown in this location in 1917 plan (in Webster 2007).	unknown (probably c.1899 or 1914; by 1917) [possibly by 1899 or 1903 (Twelvetrees 1900 & 1903); or post 1914 (but by 1922) based on Weekly Courier images]	high-medium (as part of the No.4 Adit)			
MMW	F5 (& F1)	**Structure – Boiler (vertical) (in Mine Workshop?)**: A vertical boiler located on the Adit 4 platform c.5m E of the brick structure that is a probable engine foundation (F4) (or which may be the foundation for the boiler?); the boiler is c.3' diameter and 8' high; no fittings survive. This feature appears from Godfrey (1984, 54) to be part of the 'mine workshop'. Building shown in this area in 1917 plan (in Webster 2007).	unknown (probably c.1899 or 1914; by 1917) [possibly by 1899 or 1903 (Twelvetrees 1900 & 1903); or post 1914 (but by 1922) based on Weekly Courier images]	high-medium (as part of the No.4 Adit)			
MMW	F6 (& F1)	**Channel – Creek Diversion Channel**: A vertical sided, square cut channel with stone lined walls located on the E edge of the Adit 4 platform at the S end (approx 16m E of F5); the channel is c. 5' wide and c4m long; F7 is located on the N side and a track to the SE (MMS T2) starts on the S side. Interpreted as a diversion channel for the creek (with the section across the platform apparently filled in with creek sediment).	by 1899? [presumed to be an early feature (Twelvetrees 1900)]	high-medium (as part of the No.4 Adit)			
MMW	F7 (& F1)	**Platform – Building/House**: A rectangular platform that is cut in slightly on the W side and built up on the E and S side; c.5-6m E-W x 3-4m N-S; the S and E banks of the platform have dry stone lining; has a mound of bricks (former chimney?) and a scatter of metal fragments (various). No building shown in this area in 1917 plan (in Webster 2007).	by 1899? [presumed to be an early feature; not evident in 1914 or 1922]	high-medium (as part of the No.4 Adit)			
MMW	F8 (& F1)	**Platform – Building/House**: A rectangular levelled area that is cut in slightly below the present Adit 4 platform level; c.6m E-W x c.4m N-S; has a scatter of bricks and metal fragments (various). No building shown in this location in 1917 plan (in Webster 2007).	by 1899? (or c.1914) [presumed to be an early feature (MRT 1899 Plan shows 'forge' in this approx locn); extant by 1914 (shown as a large gable roofed building (Weekly Courier image 23/7/1914, also 7/12/1922)]	high-medium (as part of the No.4 Adit)	0370382.5410893	465	

MMW	F9 (& F1)	**Mullock – Finger Dump Set**: A set of 3 finger dumps extending E off the Adit 4 platform approx E of the Adit; the finger dumps are c.5-8m long; there is at least 1 section of tramway associated with the finger dumps (possibly collapsed tramway along the finger dump?) and there is a channel cut down the S side of the set of dumps. Interpreted as the initial early period mullock dumps from Adit 4. Shown well in a 1922 Robinson mage (Weekly Courier 7/12/1922)	by 1899? [presumed to be an early feature (Twelvetrees 1900)]	high-medium (as part of the No.4 Adit)	0370381.5410907	463	
MMW	F10 (& F1)	**Mullock – Finger Dump Set**: A set of 4 finger dumps extending NE off the Adit 4 platform at the NE end, approx 55-65m from the Adit; the finger dumps are c.14m long and the set are c.10.5m wide (NE-SW); this set of finger dumps are separated from the S set (F9) by a depression which houses a brick floored area (F11). Interpreted as the second early period mullock dumps from Adit 4 (after F9).	early 1900s (by 1911) [presumed to be an early feature (Twelvetrees 1900) – later than F9 but prior to F14 (starts 1911)]	high-medium (as part of the No.4 Adit)			
MMW	F11	**Platform – Building**: A rectangular levelled area in a depression between finger dump sets F9 and F10; the levelled area is possibly excavated into pre-existing mullock; the area has a concrete slab base/floor and low concrete edging, and paved with bricks (these are all/mainly Jones & Cameron bricks); the floor is c. 6-7m E-W x c.5m N-S. Interpreted as a specialised processing area related to the mill/ concentrating plant to the N and on the same approximate level.	by 1909? [possibly shown in Weekly Courier image 11/3/1909; possibly lost by 1914 (no apparent structure in this location in Weekly Courier image 23/7/1914)]	*not assessed* (potentially of high to medium significance)			
MMW	F12	**Platform – Mill Building (Upper Level)**: A rectangular levelled area that is cut into the slope at the W end, but built out over the slope on E side with timbering and a timber floor; the platform is c.10m N-S x 10m E-W; it is set between a set of 4 finger dumps (F10) to the S and a large area of coalesced finger dumps (F14) to the N; various tracks & tramways (F4, 5 & 6) meet at the W end. Interpreted (from the location and historical images) as the upper level of the Magnet Mine mill/concentrating plant (= L4); shown in Weekly Courier images as having an industrial type multi-gable roof (ridges aligned E-W).	by 1902 (steps on S side also shown) [first shown in Weekly Courier image 23/8/1902; possibly as early as 1899]	very high	0370393.5410929- 0370399.5410937	467 - 468	
MMW	F13	**Platform – Mill Building (Upper Mid Level)**: A rectangular to irregular area with a relatively flat floor cut into the slope directly below F12 at the W end; the platform sits on mullock; it has a N-S brick wall at the W end with the inner edge running NE off the brick wall is c.15m N-S x 12m E-W; in the central N part of the platform (GR c.0370409.5410932 (466m)) is a pair of timber bed logs (for an engine?); a narrow timber tramway runs along the NE edge of the platform then E and over the bank to the base of the mullock (at L2 & MMV T2); a second narrow timber tramway runs directly across the platform and over the bank to the base of the mullock (at L2 & MMV T2) to the S; the SW corner of the platform has a large mound of rubble (possibly from F12 above?) that includes round and squared timbers, bricks and various metal items (including a cam shaft and iron bolt rods); a set of steps made of steel post anchored timber plank risers runs up the mullock slope from the	by 1902 (steps on S side also shown) [first shown in Weekly Courier image 23/8/1902; possibly as early as 1899]	very high	0370400.5410931	468	

		platform level to F12 immediately S of the platform. Interpreted (from the location and historical images) as an upper mid level of the Magnet Mine mill/concentrating plant (= L3); shown in Weekly Courier images as having a skillion roof which is conjoined to the wall of the upper level building and roof of the level 2 building.					
MMW	F14	**Mullock – Adit 4 Main Mullock**: Largest single area of mullock (mine waste) at the Magnet Mine; comprises a c.70m N-S x 30m E-W undulating bench of coalescing finger dumps at c.470-475m which fan out to the N from the S/SW; the finger dumps full the full N extent of the valley abutting gains the N valley slope and burying the creek which comes down the NW part of the valley; there is a track (T5) which runs around the W side of the mullock against the slope and as far as the NW creek; the mullock bench has a steep slope (skirt) to the E with the mullock extending to the valley floor (at c.MMV T2 at c.466m); this mullock skirt extends across most of the W valley slope face in the lower section; the remains of at least two timber tramways run down the skirt surface in the area of the former mill/concentrating plant (see F13); This mullock is interpreted as coming from Adit 4, and post dating the smaller finger dumps to the south of the mill building (F12). Not present in Weekly Courier image dated 11/3/1909 (which shows a house in area); shown as just starting (2 parallel finger dumps running along the slope N almost to the creek line with the house still present in Weekly Courier image 1/6/1911; the finger dump appears to be about ¾ its final size (and the building is not obvious (buried?)) in Weekly Courier image 23/7/1914.	c.1911 (start) [shown as just starting in Weekly Courier image 1/6/1911; c.¾ its final size in Weekly Courier image 23/7/1914]	very high - high (as part of the No.4 Adit)	0370440.5410970- 0370420.5410921- 0370397.5411008- 0370395.5410962- 0370393.5410929	(*480*)- 466- 474- 471- 467	 
MMW	F15 (& T4)	**Platform – Building (explosives store?)/House?**: A small roughly rectangular and levelled area that is cut into the hillslope on the upper (W) side of track T4. Godfrey (1984, 54) describes the explosives store as being in this approximate location, and notes it is 'still visible' (likely to be this site of F16).	unknown	medium-low	0370379.5410962	474	
MMW	F16 (& T4)	**Platform – Building (explosives store?)//House?** : A small roughly rectangular and levelled area that is cut into the hillslope on the upper (W) side of track T4; c.4m x c.3m; has a small number of scattered artefacts associated. Extant by 1914 (shown in Weekly Courier image 23/7/1914); a Spaulding image (no date, probably 1918-1920) & a Weekly Courier image (7/12/1922) show the same building still in this location as in 1914). Godfrey (1984, 54) describes the explosives store as being in this approximate location, and notes it is 'still visible' – likely to be this site.	by 1914 [still extant in 1922]	medium low	0370374.5410959	479	
MMW	F17	**Shaft/Adit? – collapse into underground working? (possibly Adit 2)**: small approx circular opening vertically into a larger open underground space. Given its location it is interpreted as a collapse feature in to Adit 2. A comparison of various historic images and an 1899 Plan indicates that the portal to Adit 2 is slightly to the E of F17 and just below (floor is intermediate bench of F18). As there is no evidence of the portal to Adit 2 in this location it must have been buried. The major fall line gully in F18 starts in the approximate location of the Adit 2 partial and may be due to seepage from the adit. Adit 2 was initiated by 1897 (Harcourt-Smith 1897, 10), and Twelvetrees (1903, 35) notes 'work ongoing in No 1, 2, 3 & 4 levels'. (Twelvetrees 1918) notes this adit has	Adit 2 in place by 1897 [work still ongoing in 1903; abandoned for 'along time' in 1918]	very high (as feature related to/part of the No.2 Adit)	0370307.5410968	513	

		been abandoned for 'along time' in 1918.					
MMW	F18	**Mullock – Adit 2? Main Mullock**: largest single area of mine waste/mullock after the F14 mullock from Adit 4; this area of mullock (- interpreted as being derived from Adit 2) is c.55m NE-SW x c.45m SE-NW; it has three different level benches, each of which run across all or most of the face of the mullock heap, and each of which are narrow (c.2m to c.7m wide – . the upper platform (at the top of the mullock deposit) is at c.510 – 517m and on the outer side and <1m below the present Magnet Mine; . the middle platform is at c.506-508m (GR 0370316.5410949 – 0370329.5410962) – this is possibly the level of the Adit 2 entrance/portal; . the lower platform is at c.500m (at GR c. 0370337.5410972 (N end)). There is a distinct erosion gully running approx down the fall line near the S edge of the mullock; based on a c.1918-1920 Spaulding image & a Weekly Courier image (7/12/1922) the source of the water is Adit 2 (blocked up with horizontal timbering in image) the buried Adit 2 entrance), which is now clearly buried. Adit 2 in place by 1897 (Harcourt-Smith 1897, 10); MRT 1899 Plan – shows Adit 2 as well as the no.2 ore shed and forge on the same level; Adit 2 still operational in 1899 (Twelvetrees 1900); 1902 - building and inclined tramway shown (Weekly Courier image 2/8/1902); Twelvetrees (1903, 35) notes 'work ongoing in No 1, 2, 3 & 4 levels'; 1914 – adit entrance/ore bins and inclined tramway still extant and shown clearly to be just below the old tramway and above and S of a major bench (see F19?) (Weekly Courier image 23/7/1914); Spaulding image (no date, c.1918-1920) & a Weekly Courier image (7/12/1922) show water exiting from a face of horizontal timbering (blocked Adit 2?).	by 1897 [developed over time; blocked up by c.1920 (& by 1922); later buried]	high (as part of the No.2 Adit)	0370363.5410966- 0370350.5410956- 0370338.5410941- 0370327.5410936- 0370313.5410938- 0370295.5410949- 0370312.5410965- 0370327.5410987- 0370337.5410972	485- 489- 491- 495- 506- 517- 513- 510- 500	 
MMW	F19	**Mullock – hollow/depression in Adit 2 Main Mullock**: A distinct scooped out hollow into the mullock occurs in the N half of the Adit 2 mullock heap between the middle and lower platforms; it is c.5m deep x 3.5m wide and c.4m high at the headwall (sloping debris); there is shrubby native vegetation in the hollow. Difficult to interpret – the form and altitude suggests it is the surface of the largely buried remains of the 'Ore Paddock Seconds' (Jones 1899), although it appears to be located too far N. Thought most likely to be the partly buried remnant (by Adit 2, or later open cut, mullock) of a major bench to the N and below the Adit 2 entrance shown in a 1914 Weekly Courier image (23/7/1914); bench still exposed in Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922).	bench in place by 1914 & still exposed in c.1918-1922	medium-low	0370338.5410960	498	
MMW	F20	**Platform – Mullock (from Adit S1 ?**: Irregular – rectangular flat platform c.8m E-W x 4m N-S built out to the E with angular rock mullock, now mossy (implying an older feature); no evidence of buildings; partly modified (on W edge) by modern Magnet Road and later open cut workings on the W side (F30). Interpreted as the No.1 South Adit mullock – the 1923 Mine Plan shows the No1 South Adit at this approximate location, but the portal is no longer evident (appears to have been destroyed by later workings (of F30?)).	unknown (by 1923) [presumed to be an early feature given the mossy nature of the stone; extant by 1923 (No1 South Adit shown on 1923 Plan)]	high-medium (as the only evidence of the No.1 Adit)	0370227.5410901	533	

MMW	F21	**Adit – Adit 3 ?**: Vertical, irregular shaped hole with an irregular small open cut above (W); the hole opens into a narrow adit with minor remnant timbering and which trends approx W; the open cut has associated metal water pipe (which in one section is grown over by a tree) and a sparse scatter metal artefacts; located on the W side of the present day Magnet Road; there is a small foot track (T10) which leads S from just above the adit and associated cut. Interpreted as part of Adit 3 (collapse into adit tunnel?) given its location (the historical mapping (1899 Plan) shows the No. 3 Adit to be slightly to the N (but there is nothing in that area)) and the presence of a finger dump (F22) c.15m to the E and c.5-7m below; Weekly Courier image 23/7/1914 shows a working in this approximate location with a small mullock pile below (F22?) and a larger mullock fan in the location of F23 which has a small building sitting on the top (and situated below the pack track/tramway – presumably the later main mullock dump for Adit 3. Adit 3 is not in existence in 1897 as it is not mentioned by Harcourt-Smith (1897). Twelvetrees (1900) notes No 4 adit in existence in 1899 implying the No 3 Adit is already driven; and Twelvetrees (1903, 35) notes that 'work ongoing in No 1, 2, 3 & 4 levels'. Nye (1926) also mentions work in the No.3 Adit, but its apparent long term abandonment in 1918 (Twelvetrees 1918) suggests it is only temporarily reopened in 1926. [*The actual entrance/portal for Adit 3 has not been located and is thought to have been destroyed by the construction of the present Magnet Road*]	c.1898-1899 (not in existence in 1897) [ongoing in 1902-3; abandoned for 'along time' in 1918; noted as being worked in 1926 (temporary?)]	very high (as a core part of the No.3 Adit)	0370203.5410869	540	  
MMW	F22	**Mullock – Adit 3? finger dump**: Small (c.5m long at top), single finger dump located c.10m below the present day Magnet Road. Interpreted as part of Adit 3 (F21) from historical mapping and the presence of a shaft/collapse feature (into adit tunnel?) c.15m to the W and c.5-7m above (with Adit 1 probably destroyed by the road). A Weekly Courier image (23/7/1914) shows a small mullock pile in this approximate location with a working above (presumed to be F21) and a larger mullock fan in the location of F23 which has a small building sitting on the top (and situated below the pack track/tramway – presumably the later main mullock dump for Adit 3.	c.1898-1899 (not in existence in 1897)? [extant in 1914]	high (as part of the No.3 Adit)	0370222.5410869	533	

MMW	F23	**Mullock – fan (main Adit 3? Mullock dump)**: A long, relatively narrow debris (mullock?) fan; 50-60m+ E-W x 5m widening to c.20m N-S at the lower end; extends from the present day Magnet Road down to approximately the level of Adit S2, where it has been removed by large scale creek erosion; there is a narrow (c.1m wide) erosion gully running down the centre of the fan; the scree is of smaller material and relatively loose (implying later period mining?); Interpreted as the second and main mullock dump for F21 (interpreted as Adit 3) on the basis of a Weekly Courier image (23/7/1914) which shows a large mullock fan in this approx location with a working above to N and a small mullock pile below (presumed to be F21 & F22, respectively); in the 1914 image this large fan has a small building sitting on the top (and situated below the pack track/tramway).	by c.1899 ? [extant in 1914]	high	0370211.5410850 – 0370231.5410863 – 0370254.5410875	540-516	
MMW	F24	**Adit – Adit South 2**: Major adit extending into the hill, located on the N edge of the creek with a small platform in front (F25); also a single high finger dump in front (F26), with a cut creek diversion channel on the S side (F27), but with creek now flowing across platform and over in very large erosion bowl; track leading off to SE (T3); and some artefacts on platform – glass bottle fragments, metal (iron strapping). *Adit*: Short entrance to major adit on bearing of 245º; 7' high x 7' wide (at base) with c.14' headwall at portal; tunnel is c.5' at base x 6'6" high and c.30-40m where it blocked (collapse?); floor dry, but some calcite formation on tunnel walls. Twelvetrees (1903, 35) notes the South 2 Adit is 'being driven at the time of writing'. A Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922) show the portal of Adit S2, the bench, the finger dump (F26) and a fall line chute (for ore?) which runs down to the immediate N side (?) of the Adit 4 portal (F1) (to tramway (T6)?); all features except chute shown in 1914 Weekly Courier image (23/7/1914).	1903	very high	0370250.5410856	515	 
MMW	F25	**Adit S2 Platform**: Small slightly benched platform in front of Adit S2; c.10m long x 5m wide; formed across creek with a finger dump (F26), diversion channel (F27) and track (T3) associated. Twelvetrees (1903, 35) notes the South 2 Adit is 'being driven at the time of writing', and the platform is presumed to have been constructed at the same time. A Spaulding image (no date, c.1918-1920) & Weekly Courier images (23/7/1914 and 7/12/1922) show the portal of Adit S2 and the bench (& the finger dump (F26).	c.1903	high-medium (as part of the No2 S Adit)	0370260.5410864	515	

MMW	F26	**Adit S2 Mullock - Finger Dump**: Long, very high finger dump extending E off the S central edge of the Adit S2 platform into the steep creek valley; c.30m long at top (platform level); eroded on the N side by the creek which has re-found its original course and created a very large erosion cut on the N side of the finger dump and outer edge of Adit S2 platform. Twelvetrees (1903, 35) notes the South 2 Adit is 'being driven at the time of writing', and the platform is presumed to have been constructed at the same time. A Spaulding image (no date, c.1918-1920) & Weekly Courier images (23/7/1914 and 7/12/1922) show the portal of Adit S2 and the bench (& the finger dump (F26).	initiated c.1903 [largely extant by 1914]	high (as part of the No2 S Adit)	0370260.5410864	515	
MMW	F27	**Adit S2 Diversion Channel**: Square cut channel c.5m long and 1.5m wide; rock walled; located on the E edge of the Adit S2 platform and S edge of the finger dump, and immediately N of the foot track (T3). Twelvetrees (1903, 35) notes the South 2 Adit is 'being driven at the time of writing', and the channel is presumed to have been constructed at approximately the same time.	c.1903	medium (as part of the No2 S Adit)	0370260.5410864	515	
MMW	F28	**Mullock – heap/fan (– source unknown)**: A small mullock heap (older mullock) which forms a broad fan (c.15m wide) which extends from approx the main Magnet Road downslope for c.15m (horiz). [*It has not been possible to associate the debris/mullock with any particular workings – its location suggests it may have been associated with the Open Cut or Adit*] First evidence of workings in this area and a small mullock heap below (below pack track/tramway) is in a Weekly Courier image (23/7/1914) – but the workings are not clear as the image is fuzzy in this area. As the area is likely to have contained the *No.1 South Adit* (see F30) this may be the mullock from that Adit. Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922) show the same deposit.	by 1914 (possibly by c.1903?) [presumed to relate to Adit S1 hence to pre-date Adit S2 which was driven in 1903].	*not assessed* (potentially of high to low significance)	0370281.5410924	512	
MMW	F29	**Cut – North Cut *(contained Adit 1)*:** Large irregular cut back into the W slope from the main Magnet Road (former tramway) but below the historic Open Cut; in the area of (S of) Adit 2; the cut area is c.25m long (along the road) x 10m deep (cut into the hill from the road); the rear wall slopes steeply and the floor of the cut is irregular; similar to, but smaller than, F30. Difficult to interpret as this area lies well below the historic 'Open Cut'. The 1899 plan of the mine (and later Weekly Courier and other images) indicates that Adit 1 and the associated Ore Shed and Assay House were all located within this cut, implying that the cut is later than 1914 and Adit 1 has been buried and the buildings removed by the later workings. The later cut is possibly a cut into the area of stoping in the Adit 1 area (Jones 1899) at some time after the Magnet – Waratah railway was put in. Nye (1923) notes that there is an adit which connects with Sheer's rise (see F31) from the No. 1 South level (the existing mapping suggests	current large cut is post-1922 [initial workings in this area by at least 1897; workings 9at least Adit 1) abandoned for 'along time' in 1918]	none (but may contain highly significant remains if further excavated)	0370285.5410957- 0370295.5410972	518- 517	

		this is Adit 1) which was also presumably in this area. Features in this area include Adit 1 (in place by 1897), the No.1 Ore Shed and the Assay House (MRT 1899 Plan); 2-3 buildings on the Adit 1 platform (Weekly Courier image 2/8/1902); 3 buildings on the bench in front of the Adit 1 portal and also a track up from the old tramway to the Adit 1 portal then running N around the spur (ie, MMW T1) (Weekly Courier image 23/7/1914). The buildings are gone by c.1918-1920 (Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922) shows bench but no buildings in this area. (Twelvetrees 1918) notes this adit has been abandoned for 'along time' in 1918. This cut is currently within the Magnet Mine designated Fossicking Area.					
MMW	F30	**Cut – South Cut *(continuation of the Open Cut?)*:** Large irregular cut back into the W slope from the main Magnet Road (former tramway) at the S end of the historic Open Cut; the cut area is c.50m long (along the road) x 15m deep (cut into the hill from the road); the rear wall slopes steeply and the floor of the cut is irregular; similar to, but larger than, F29; there are a number of small irregular recent pits cut into the lower slopes along the road (- interpreted as modern fossicking works). Interpreted as being originally the S end of the Open Cut, but later opened up further, destroying and enlarging the original Open Cut area; possibly also partly formed by the collapse of stoping in the underground workings (Jones 1899) once the tramway was put in. This area appears to have contained the *No.1 South Adit* (at the S end) and *Smith's, Jones' and Emmersons' Passes* may also each have had an opening to the surface in about the centre of F30 (refer 1923 Mine Plan). Probably also contained the '*Second Exit'*, a vertical opening to surface from Level 4 at the S end of the Open Cut shown on Twelvetrees (1918) mine cross section based on his 1917 inspection. First evidence of workings in this area and a debris fan below (below pack track/tramway is in a Weekly Courier image (23/7/1914), but the workings are not clear as the image is fuzzy in this area. A Spaulding image (no date, c.1918-1920) & Weekly Courier image (7/12/1922) show that this area may have been cut back by this time. This cut is currently within the Magnet Mine designated Fossicking Area.	current large cut is post-1918 (& probably post-1923) [initial workings in this area by at least 1914]	none (but may contain highly significant remains if further excavated)	?-0370244.5410948	? - 526	
MMW	F31	**Cut – 'Open Cut' (historical)**: Narrow deep excavated horizontal cleft across the W slope near the N end; current length is c.55m (but it is truncated by a large more recent open cut at the S end (F30) and may have lost up to c.50m more length to the S). The S c.25m has a c.2m wide relatively flat floor, an almost vertical cut into rock (c.3m+ high) on the uphill side, and a more gently sloping wall (mullock?) on the outer (E side); may also have the now buried opening of Scheer's Pass opening to the surface (refer 1923 Mine Plan). Nye (1923) notes that there is an adit, mostly Adit 1, which connects with 'Sheer's rise' from the No. 1 South level. The N c.25m is similar but wider (up to c.4m wide) with an almost overhanging wall on the uphill side and a more steep wall on the E side, and has a square-rounded vertical shaft (collapse into stoping?) at each end and an intermediate large trench (c.10m x 2-3m wide) with a shaft (collapse into stoping?) at the S end (F31-34); there is fencing (star picket and wire) around the set of shafts.	c. 1891 (by 1897) [first workings at the Magnet Mine (by R Bell) – highly significant] [Webster (2007, 12) regards the open cut as "one of the most significant historic features of the Magnet Mine"].	very high Of significance as the earliest part of the mine; demonstrating the gossanous outcrop that led to the discovery of the mine; and as the main area of surface workings. Webster (2007) regards the open cut as "one of the most significant historic features of the Magnet Mine".	0370246.5410934	533	

		At the N end the narrow cleft opens up onto a long (c.50m N-S x 8-10m E-W) platform (presumed to be associated with, but not part of, the 'Open cut) that has 2 house/building platforms, a shaft, a trench and a pit (infilled shaft?) (refer F35-F39). The Open Cut is the area of the first workings at the Magnet Mine, and occurs on the lease pegged by Bell in 1891 on the basis of gossan he noted in the area some years earlier. Clearly being worked by 1897 on the basis of comment by Harcourt-Smith (1897, 10) that "The lode has been traced by trenches". The Open Cut and later trenching to the S to trace the line of lode appear to be extremely important in the development of the mine.					
MMW	F32	**Shaft/Pit – in Open Cut**: Irregular-rounded vertical shaft in base of Open Cut; in approx centre of Open Cut c.5' diameter; takes up most of the width of the floor of the Open Cut; has fencing (star picket and wire) around the shaft. Interpreted as a possibly later excavated shaft or an excavated opening into early stoping associated with Adit 1 and 2. Possibly the rise on Leonard's Pass shown in the 1923 Mine Plan.	by 1923	high-medium (as part of the Open Cut)	0370258.5410971	533	
MMW	F33	**Shaft/Pit – in Open Cut**: Approximately rectangular trench in the base of the Open Cut; in the centre of the N half of the Open Cut; trench is c. 1.5m wide x 8m long; takes up most of the width of the floor of the Open Cut; there is an irregular largely vertical shaft, c.5' diameter at the S end; has fencing (star picket and wire) around the trench edge. Interpreted as a possibly later excavated exploratory trench into the floor of the Open Cut, with an excavated shaft or opening into early stoping associated with Adit 1 and 2. Possibly the rise on Lamb's Pass shown in the 1923 Mine Plan.	by 1923	high-medium (as part of the Open Cut)	0370262.5410998	546	 

MMW	F34	**Shaft/Pit – in Open Cut**: Irregular-rounded vertical shaft in base of Open Cut; at N end of Open Cut; c.5' diameter; takes up most of the width of the floor of the Open Cut; has fencing (star picket and wire) around the shaft. Interpreted as a possibly later excavated shaft or an excavated opening into early stoping associated with Adit 1 and 2.	unknown (probably by 1923)	high-medium (as part of the Open Cut)	0370273.5410991	534	
MMW	F35	**Shaft/Pit – N of Open Cut (same level)**: Small irregular-rounded pit on the W side of the platform at the N end of the Open Cut; a small pit or small infilled shaft. This feature (or F36) is likely to be Moore's Rise shown on the 1923 Mine Plan.	by 1923 (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	medium (as associated with the Open Cut)			
MMW	F36	**Shaft – N of Open Cut (same level)**: Irregular-rounded vertical sided hole (depth not established) on the W side of the platform at the N end of the Open Cut; c.4' diameter; likely to be a shaft. This feature (or F35) is likely to be Moore's Rise shown on the 1923 Mine Plan.	by 1923 (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	high-medium (as associated with the Open Cut)	0370285.5411018	533	
MMW	F37	**Shaft/Trench – N of Open Cut (& below)**: Rectangular vertical sided trench (depth not established) in a gully slightly below and NW of the platform at the N end of the Open Cut; c.3' x 6'; presumed to be a trench.	by 1899? [MRT 1899 Plan shows a trench to NW of F39 – not the correct location but could be accounted for by map error; presumed to be associated with the initial working of the Open Cut]	medium (as associated with the Open Cut)			
MMW	F38	**Platform – Building/House**: Small (c.4m x 2.5m) levelled area partly cut back into the slope at the S end of the platform at the N end of the Open Cut, and at the same level as the platform; presumed to be a hut or other building site.	unknown (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	medium (as associated with the Open Cut)			
MMW	F39	**Platform – Building/House (1899 Mine Managers House)**: Approx square platform located on the N end of the platform at the N end of the Open Cut, which in the area of the platform is on a narrow flat spur; the platform is c.9m (across the spur – almost full spur width) x c.10m (along the spur); the platform is slightly benched down into the spur platform at the S end and is slightly built up at the N end; the platform is slightly lower along the E and N sides (bands c.3m wide) (-implying verandahs or sleep outs on these sides). Presumed to be the first Mine Managers House as associated with the Open Cut and Adits 1 & 2; MRT 1899 Plan shows a relatively large building, labelled 'Managers House', in this area on the nose of a spur; building shown in this approximate location in Weekly Courier image 23/7/1914.	by 1899 (still extant in 1914) [presumed to be associated with the initial working of the Open Cut]	high	0370310.5411023	529	

MMW	F40	**Platform – Building/House**: Approx rectangular platform benched into the nose of a small spur on the SE side of the creek, and c.5m from the creek; immediately above track T1 (c.1.5-2m above); c.7m SE-NW x 5m NE-SW; has a central low brick mound (- probable chimney) and there is a relatively dense scatter of domestic artefacts between the platform and the creek (the artefacts include glass, china and metal of a variety of types). Also possibly associated is an enamel crib on the creek line c.10m SW of the platform (at GR c.0370288.5411015 (535m)).	unknown (possibly by 1899) [presumed to be associated with the initial working of the Open Cut]	medium	0370302.5411059 0370288.5411055	518 515	
MMW	F41	**Weir**: Small weir-type construction across the creek line; comprised of a curved (concave upstream) line of stones (approx cobble-boulder size).	unknown (possibly by 1899) [presumed to be associated with the initial working of the Open Cut]	medium-low	0370262.5411032	524	
MMW	F42	**Cut:** Large semicircular cut, or bowl like depression with a steep W slope back into the W slope, the W edge of which is c.5m E of the platform (F43) on which the house/building platforms (F44- F47) are located (& approximately opposite F44 & F45); the upper W edge is vertically cut in rock; the cut is c.15m wide (NE-SW) x 25m long (NW-SE). Difficult to interpret – assumed to be a working and possibly part of the open cut (it is located directly above the Open Cut), or an enlarged cut into collapsed stoping, or a landslip on a working; shown clearly in a Spaulding c.1918-1920 image and Weekly Courier (7/12/1922) image as connected to the Open cut but appears relatively fresh.	unknown [possibly part of the Open Cut (ie, c.1891 – 1897), or a by c.1918-1920 collapse feature]	*not assessed* (potentially of high to low significance)			
MMW	F43	**Platform – on spur for group of houses**: A relatively flat NE-SW trending spur which has been levelled to create a platform for a number of buildings (House Group 1 (Webster 2007)) (F44-F47); the levelled area is c.50m long (NE-SW) x 7m wide at the north end and c.20m wide at the S end; at the S end the platform has been benched into the spur (c.0.5m) and the cut bank has been lined with drystone walling in the W corner; there is also drystone walling embankment on the N side at the head of the creek (where there appears to have been some fill in the head of the creek line) and on the SE edge at the S end (c.10m); a possible track leads off the SE end (- possibly leads up to House Group 2 (Webster 2007)) (F53-F55).	by 1899 [presumed to be associated with the initial working of the Open Cut]	high-medium			
MMW	F44	**Platform – Building/House**: Medium size rectangular area slightly benched into the nose of the spur with another bench (c.0.3-5m high) c.1-2m in front (to NE); c.7m NE-SW x c.4m NW-SE; presumed to be a hut or other building site. MRT 1899 Plan shows 2 houses in this approx location (most likely to be F44 &F45); building shown on N end of flat spur in this approximate location in Weekly Courier image 23/7/1914; not shown in a Spaulding (no date, c.1918-1920) or Weekly Courier image (7/12/1922) image. [Part of House Group 1 (Webster 2007)]	by 1899 (extant 1914; not extant 1918/1922) [presumed to be associated with the initial working of the Open Cut]	medium (also of significance as part of a building cluster (House Group 1))	0370262.5410998	546	

MMW	F45	**Platform – Building/House**: Medium size, slightly raised rectangular area on the surface of the flat levelled bench (F43) between F44 and F46; c.6m NE-SW x c.5m NW-SE; the SE edge of the raised platform has stone edging; presumed to be a hut or other building site. MRT 1899 Plan shows 2 houses in this approx location (most likely to be F44 &F45); no building shown in this location in Weekly Courier image 23/7/1914. [Part of House Group 1 (Webster 2007)]	by 1899 (not extant 1914) [presumed to be associated with the initial working of the Open Cut]	medium (also of significance as part of a building cluster (House Group 1))			
MMW	F46	**Platform – Building/House**: Medium size, slightly raised rectangular area on the surface of the flat levelled bench (F43) between F45 and F47; c.7m NE-SW x c.5m NW-SE; the SE edge of the raised platform has stone edging (along c.50% of length); presumed to be a hut or other building site. There is a small square pit set in a vertical walled, right-angled cut, below and on the NW side of F46 (function unknown – possible toilet?). MRT 1899 Plan shows 2 houses on this bench but to the N (probably F44 &F45 and not F46); no building shown in this location in Weekly Courier image 23/7/1914. [Part of House Group 1 (Webster 2007)]	unknown (possibly pre-1899)	medium (also of significance as part of a building cluster (House Group 1))	0370237.5410986	549	
MMW	F47	**Platform – Building/House**: Medium size, very slightly raised square area on the surface of the flat levelled bench (F43) at the S end; c.6m NE-SW x c.6m NW-SE; there is a low square stone mound with vertical sides in the centre of the NE side (-drystone, rubble chimney base): presumed to be a hut or other building site. MRT 1899 Plan shows 2 houses on this bench but to the N (probably F44 &F45 and not F47); building shown in this location in Weekly Courier image 23/7/1914, as well as another building in front; same 2 buildings shown in a c.1981-1920 Spaulding image and Weekly Courier image (7/12/1922). [Part of House Group 1 (Webster 2007)]	>1899 possibly by 1902 (Weekly Courier image 2/8/1902) extant in 1914 extant in 1918+ (by 1922)	medium (also of significance as part of a building cluster (House Group 1))	0370227.5410988	549	
MMW	F48	**Platform – Building/House**: A small semi-rectangular benched platform on the SE edge of the creek and below the House Group 1 platform (Webster 2007) (F43); the bench is c.4m E-W x 2.5m N-S; the front (N side) of the platform has a drystone rubble construction embankment wall; a small foot track? runs SW up the creek edge from the platform and another NE from the platform (not followed).		medium-low (also of significance as part of a building cluster (House Group 1))	0370247.5411013	543	
MMW	F49	**Sluice**: Small, concreted stone winged weir (concave upstream) with a square central opening in the middle of the creek (which flows c.E) with a metal bar across the top; the full structure is c.5' across x c.2-3' deep; the opening is c.1' square; below this structure the natural creek line has been blocked off with rubble and earth and an alternative channel (tailrace?) (F50) has been excavated to the NE. Interpreted as small in creek sluice, with associated tailrace.		high (with tailrace)	0370176.5410987	563	

MMW	F50	**Channel – Tailrace**: Excavated channel c.2'-4' wide which runs c.NE then N around the hillslope from the creek at F49 at a grade of c.9º; the race has the excavated spoil piled on the outer edge; the channel is largely infilled today.	1913 'flume' shown in approx locn (SP 10/3/13)	high (with tailrace)	0370215.5411005	555	
MMW	F51	**Cut**: Short (c.5m long) straight vertical cut into hillslope, above and c.15m NW of F49; aligned approx E-W. Probable exploration cutting.	unknown	low			
MMW	F52	**Alluvial Workings**: Located above, and c.30m from, F49 on the same creek line (and possibly associated); comprises a fall line line of mounded mullock c.20m long x 4m wide on the S side of the creek and a cut bank on the opposite side of the creek; the full area of workings is c.25m x 15m. 'There is no information about this open working, although it could be 'Pasch's trench', a high level trench to the west of the of main mine described by Twelvetrees (1900, 20), as the location is approximately the east edge of lease 1827-93M (44ac) which was first leased to a F. Paasch sometime prior to 1897 (Survey Plans).	unknown (possibly c.1897-1899)	high	0370128.5410983	585	 
MMW	F53	**Platform – Building/House**: A small-medium size, square benched platform into the W slope a short distance below the recent (c.2007) Bass Metals exploration road, and well above and c.60m SW of House Group 1 (Webster 2007); the platform is c.5m NE-SW x c.5m NW-SE; the platform is benched in on the NW side and built out on the SE and NE sides; a foot/bridle track (T8) runs c.3-5m below the platform on the SE side. Appears to be present in Weekly Courier image 2/8/1902 (image fuzzy); no building shown in this location in Weekly Courier image 23/7/1914. [Part of House Group 2 (Webster 2007)]	by 1902? (not extant in 1914)	medium-low (also of significance as part of a building cluster (House Group 1))	0370164.5410949	578	

MMW	F54	**Platform – Building/House**: A large rectangular slightly benched platform into the W slope on the edge of a natural bench; c.5m E of the recent (c.2007) Bass Metals exploration road, and well above and c.80m SW of House Group 1 (Webster 2007); the platform is c.8m NE-SW x c.7m NW-SE; the platform is only lightly benched in on the SW and part of the NW side and is built out on the SE side; there is a low, roughly square stone rubble mound at the NE end (- chimney butt). Appears to be present in Weekly Courier image 2/8/1902 (image fuzzy); building shown in this location in Weekly Courier image 23/7/1914. [Part of House Group 2 (Webster 2007)]	by 1902 (still extant in 1914)	medium (also of significance as part of a building cluster (House Group 1))	0370150.5410939	582	
MMW	F55	**Platform – Building/House**: A small, rectangular benched platform into the W slope a short distance below the recent (c.2007) Bass Metals exploration road, and well above and c.75m SW of House Group 1 (Webster 2007); the platform is c.5m NE-SW x c.3m NW-SE; the platform is slightly benched in on the NW side and slightly built out on the SE side; a foot/bridle track (T8) runs c.3-5m below the platform on the SE side. Appears to be present in Weekly Courier image 2/8/1902 (image fuzzy); building shown in this location in Weekly Courier image 23/7/1914. [Part of House Group 2 (Webster 2007)]	by 1902? (still extant in 1914)	low (also of significance as part of a building cluster (House Group 1))	0370159.5410937	578	
MMW	F56	**Trench**: Small trench cut into hillside (costean?); c.3-4' long x c.2' wide.	unknown (probably by 1923)	low	0370165.5410882	572	
MMW	F57	**Trench**: Small trench cut into hillside (costean?); c.3-4' long x c.2' wide.	unknown (probably by 1923)	low	0370160.5410884	576	
MMW	F58 (& T8)	**Trench**: Small trench cut into hillside (costean?); c.4-5' long x c.2' wide; is cut into the hillside from the inner edge of track T8.	unknown (probably by 1923)	low	0370151.5410890	582	

MMW	F59 (& T9)	**Adit?/Cut?**: Irregular, elongate vertical sided cut back into the hillslope with a well formed finger dump immediately in front and a fan/apron of mullock below; the cut is c.4' wide by 6-8' long and on a bearing of 288º; no tunnel opening is apparent, but by the extent and form of the mullock in front suggests there is a blocked adit; the finger dump is c.4-5m long; the fan apron is c.25m (horizontal) long, extending down to track T11 (noted on the S edge; track T9 runs at least to the cut opening from the N; this cut and mullock fan sit directly above F21 (Adit 1?).	unknown (probably by 1923)	medium	0370175.5410886	569	 
MMW	F60	**Trench?/Short Adit?**: Apparent short trench cut into hillside with an apparent short (<2' long) below-surface extension into the hill; c.4-5' long x c.3' wide; cut into the hillside from the inner edge of track T8 with a moderately large (c.5m x 3m) mullock platform in front ((ie, on downhill side of T8). The low tunnel section and amount of associated mullock indicate this feature may be a partly filled short inclined drive/adit.	unknown (probably by 1923)	medium-low	0370158.5410894	580	 

MMW	F61 (& T8)	**Trench**: Small trench cut into hillside (costean?); c.3-4' long x c.2' wide; has short (<2' long) below-surface extension into the hill; is cut into the hillside from the inner edge of track T8.	unknown (probably by 1923)	low	0370154.5410898	583	 
MMW	F62	**Pit (with Shaft?)**: large approx rectangular deep pit with a vertical headwall (SW end); c.8-10m SW-NE x c.3m NW-SE, with a c.5m high headwall; the floor is hummock suggesting infill or collapse; it is possible that there is an infilled shaft in the pit given its size; this feature lies in a SW-NE line with F21 (below to NE) and F63 & 64 (above to SW); small foot track T11 runs SW-NE along the uphill (NW) edge.	unknown (probably by 1923)	medium	0370187.5410856	558	 

MMW	F63	**Pit (Shaft?)**: Rectangular, vertical sided pit; c.5m x c. 3-4m, and c.4m high at headwall (SW edge); has a c.2m x 2.5m mound of spoil on the lower (NE) edge; possibly a infilled shaft?; small foot track T11 runs SW-NE at least up to iF63's NW corner.. This feature lies within the F21 + F62-64 SW-NE line of workings.	unknown (probably by 1923)	medium	0370176.5410841	562	
MMW	F64	**Cut**: Rounded, bowl like, steep sided cut SW into hillslope on the nose of a steep spur ridge; c.6m SW-NE x c. 5m NW-SE, with a c.3-4m high headwall (SW edge); has a mound of spoil on the lower (NE) edge; this feature is at the SW end of the F21 + F62-64 line of workings; F64 is c.5-10m below foot/bridle track T8.	unknown (probably by 1923)	medium-low	0370179.5410838	559	
MMW	F65	**Cut - into Stoping**: Square cut, vertical sided opening/trench that leads into underground stoping at the SW end; alignment 207º; opening is c.3' wide, and the total length of workings is c.15-20m; the headwall at the entrance to the stoping is 5' and the depth of stoping is c.5-6m; this feature lies immediately S of the F21 + F62-64 line of workings and is in line with F66 & F70 to the SW.	unknown (probably by 1923)	low	0370182.5410842	560	
MMW	F66	**Trench into Stoping, & Shaft**: Long rectangular, near vertical deep trench (- possibly an excavation into stoping) with a deep vertical sided pit (shaft?) at the SW end; the full length of the excavation is c.12m; the trench is c.8-9m SW-NE x 2-3' wide and is cut through a knob of exposed bedrock (- possibly this had mineralisation?); the pit/shaft is c.3m x 4m and c,2m deep there is minimal spoil associated with the trench, but the pit/shaft has a small spoil mound on its lower outer edge. This feature lies in line with workings F65 and F70.	unknown (probably by 1923)	medium	0370176.5410829	559	
MMW	F67	**Platform – building?**: Rectangular platform on E edge of present road; c.20-25m N-S x c.10m E-W back to cut benched W edge (W of road); slopes slightly to N; only the E 6m width survives unmodified by the road (alternatively may have been for huts/sheds along tramway edge). A building is shown in this approximate area in a 1903 Weekly Courier image (3/10/1903).	by 1903?	*not assessed* (potentially of medium to low significance)	0370206.5410819	547	
MMW	F68	**Cut**: Small, steep sided, bowl like cut W into hillslope; c.4m deep x 3m wide, with a c.2m high headwall (although the cut appears to be partly infilled (Ie, originally deeper)); there is a small platform of mullock on the lower side which forms a horseshoe shape which is c.2m wide at its thickest.	unknown (probably by 1923)	medium-low	0370170.5410804	557	
MMW	F69	**Trench**: Small trench cut into hillside (costean?); 6' long x 3' wide; located between F68 & F70.	unknown (probably by 1923)	low			

MMW	F70	**Cut**: Semi-rounded, steep sided, pit; c.6m SW-NE x c. 5m NW-SE, with near vertical walls on the NW and SE sides; the lower edge is c.2m high and the headwall (NW edge) is c.5-6m high; this feature is in line with workings F65 and F66 and is at the SW end.	unknown (probably by 1923)	medium-low	0370159.5410803	560	
MMW	F71	**Adit**: A complex adit with a set of 4 tunnels (or maybe 3 tunnels and 1 trench) at various directions that start in the entrance or just beyond (with the adit roof having collapsed in); located off the inner edge of the main Magnet Road c.90m N of the forest Road i/s, and c.10-20m horizontally from the S creek on the W face; there is no obvious large mullock pile below the road (- suggests the adit tunnels were not extensive?); the present day entrance is has roughly vertical walls, is c.3.5m long x 4-5' wide, opens up into a larger area of c.8' x 12', and has a bearing of 267°; the four tunnels take off from this central area; a mound of spoil in the entrance suggests this may have been part of the tunnel but that the roof has collapsed. *Tunnel 1*: this is an offset to the S which is blocked near the entrance except for a small window which shows the tunnel extending beyond and with an intermediate open area due to roof collapse (at GR 0370159.5410775); this tunnel is 8' high x 7' wide x c.10m+ long (possibly blocked with collapse at c.10m), with a bearing of 194°. *Tunnel 2*: this is an offset to W (on same approx alignment as the entrance); this tunnel is 7' high x 6'6" wide x c.11' deep (possibly blocked with collapse?), on a bearing of 268°. *Tunnel 3*: this is an offset to N that takes off slightly to the NW then bends back slightly NE and runs under(?) tunnel/trench 4; this tunnel is 6' high x 3' wide x and at least 12' long (possibly blocked with collapse?), on a bearing of 351°. *Tunnel 4*: this is an offset to the N, which has a short NW trending entrance; this entrance is 5' high x 3' wide x 82' long (possibly only a trench), on a bearing of 343°.	unknown (probably by 1923)	high-medium	0370142.5410773	554	  

							
MMW	F72 (& T8)	**Adit**: Adit with platform and small mullock fan, also located on foot/bridle track T8; also in line with shaft F71 and trenches F73 & F74. *Adit*: The adit entrance is 3.5m long x 4' wide; at the portal the adit is 4' wide x 6' high; the tunnel goes for c.30m where it appears to be blocked by rubble (collapse?), at which point here appears to be an offset to the S; appears to be some remnant timbering and in situ rails; the tunnel bearing is 302°; there is water pooled on the floor of the tunnel and erosion in the entrance suggests there are occasional high flows, *Mullock*: There is a platform of mullock at the front of the adit entrance that is c.8m wide (N-S) and 6m deep (E-W).	unknown (probably by 1923)	high-medium	0370132.5410799	565	 
MMW	F73	**Trench (-air shaft for F72?)**: Small trench cut across the hillslope, in line with, and c.20-25m uphill from F72 (Adit); 8' long x 3' wide; vertical sided and deep (2.5m deep) with a small channel (- drain?) cut in the S corner.	unknown (probably by 1923)	medium-low	0370112.5410816	578	

MMW	F74	**Trench**: Small trench cut into hillside (costean?); 5' long x 4' wide; has a small platform of spoil on outside (SE) edge; located N of F73 and immediately below at linear cut across the slope that runs NE-SW, and extends S to the line of F72 – F73.	unknown (probably by 1923)	low	0370113.5410826	581	 
MMW	F75	**Platform - Building/House?**: A rough approx level area with at least 1 right angled corner; at least c.4m x c.6m; located below and c.20m E of F76 (building/house?) and c.15-20m N of the water race fall line channel (F80) near the end of the Water Race (F79). Interpreted as a probable house or other building site.	unknown (probably by 1923)	medium-low	0370115.5410863	593	
MMW	F76	**Building/House**: A low, roughly square stone rubble mound c.8m N of the Water Race (F79) and nearby creek; although there is no evident levelled area or footings, the land between the Water Race and the stone mound is flat and approx horizontal and the mound is interpreted as a chimney butt for a house.	unknown (probably by 1923)	medium	0370081.5410869	592	
MMW	F77	**Cutting – Building/Works Area?**: Large, well formed rectangular cut into the W slope (on gently sloping land just below the ridge crest); the rear cut is c.15m long N-S and is c.1.5m high and vertical, and the side walls (E-W) are c.12m long; the area is open at the front; located on the same approx level and c.15m N of F78. Function unknown (possibly a later period, non-mining feature?).	unknown	*not assessed* (potentially of medium to low significance)	0370052.5410979	602	
MMW	F78	**Cutting – Building/Works Area?**: Right angled cut into the W slope (on gently sloping land just below the ridge crest); the cut is c.8m N-S x 2m E-W and is c.1.5m high at the rear; located on the same approx level and c.15m S of F77. Function unknown (possibly a later period, non-mining feature?).	unknown	*not assessed* (potentially of medium to low significance)	0370028.5410950	603	

MMW	F79	**Channel - Water Race**: Distinct water race which contours around the W slope (relatively gentle at this height); 3' wide by 2'+ deep with spoil mounded along the outer (E) edge; runs across the creek line on which F52 & F49 are located (and c.20m W of F52) and continues N (not followed further); it terminates to the S at GR 0370084.5410855 (594m) at which point it runs steeply downslope in a small channel (F80) (the c.2007 Bass Metals exploration road crosses the water race at this point); the surveyed length is c.200m, over which distance the race loses c.2m (implies a grade of c.1%). The size and extent of the water race and outflow channel (F80 & F81) suggests it had an important purpose, but this is not clear from the present day remains. The two main options are – 1. the water was intended to augment the water in the S creek of the W face of the mine workings, which would have been used in the Adit S2 and Adit 4 areas and possibly by the Mill; or 2. It was to feed the complex adit F71, but was later diverted down T8.	unknown (possibly by 1923)	high	+0370105.5411002- 0370058.5410914- 0370051.5410877- 0370084.5410855	596 595 596 594	 
MMW	F80	**Water Race Outflow Channel**: An approximately fall line channel that runs from the S end of the Water Race (F79) SE to just above the Main Magnet Road c.60m N of its i/s with Forest Rd; the channel is c.2' wide and 1.5-2.5' deep with vertical sides; the channel has at least 2 bends (angled & 1 near F73 & 74 and the other at F81); the upper part has a bearing of 332^{o} and a grade of c.21^{o}, the central part has a bearing of 375^{o} and a grade of c.30^{o}, and the lower part has a bearing of 310^{o} and a grade of c.10^{o}; T8 appears to terminate at F80/F81 at the S. The size and extent of the Water Race and outflow channel (F80 & F81) suggests it had an important purpose, but this is not clear from the present day remains. The two main options are noted in the description of F79.	unknown (possibly by 1923)	high (as part of the water race)	0370084.5410855- 0370103.5410815- 0370133.5410772+	594- 584- 555-?	 

MMW	F81 (& F80, T8)	**Channel Diversion**: A low earth mound with vertical steel plates on the uphill side has been built across the Water Race Outflow Channel at GR 0370133.5410772; presumably to divert the water way from the Adit below (Adit F71) – either as part of the construction, or later; as track T8 appears to terminate at this point, it is possible that the T8 formation has been used as the diversion channel below F81.	unknown (possibly by 1923)	medium (also of significance as part of the water race)	0370133.5410772	555	 
MMW	F82	**Artefact – ore skip**: Small metal ore bin/skip in creek – presumably not in situ?; immediately below MSW F10.	unknown	low	0370204.5410784	543	
MMW	F83	**Platform – Building/s**: A c.20-25m long (N-S) x 5m wide (E-W) approximately level benched area in the area of the N creek (between the 2 tributaries) immediately below track T1 (not inspected in detail). Interpreted as a platform for houses or other buildings associated with the early mining (Open Cut and Adits 1-2 and/or North Magnet).	unknown (probably by 1899)	medium			
MMW (& MMN)	T1	**Track/Tramway**: C.6' to 10' wide heavily benched track that contours around the W valley slope at a very gentle grade, climbing gradually to the N (26m in c.370m – 7%); the track starts in the MMW area leading from near the MMW Adit 2 area below the Open Cut, NE around the spur and NW to the first creek, then NE to the second creek (– this section is c.6' wide and c.170m long), then heads E to the spur nose in the MMN area, then runs around the spur and NW towards the next creek (this section is 10' wide and c.200m long; the track continues on approximately the same gentle grade and width to the N, possibly to the Magnet West Township (*but was not followed*). The track climbs gently from the Cut (F29) edge to the nose of the spur at 515m where a smaller track takes off leading downslope to the S, then contours around the nose W to the first creek at 512m, where the formation has been washed out (and there is a quantity of surface artefactual material), then leads N climbing very gently. Interpreted as a tramway because of its width and low, even grade. Appears to have commenced on the main pack track/tramway and run to Adit 1 then N around the spur to the Magnet North mine and continued around the slope to above the Magnet West Township (where a horizontal bench can be seen in historical photos); in 1914 shown running from the main pack track/tramway and run to Adit 1 then N around the spur (Weekly Courier image 23/7/1914).	c. 1900 (still extant 1914) [presumed to have been put in to service the Magnet north workings]	high	?-0370300.5410978 -0370331.5411024 0370297.5411054 +	? – (*521*) 515 512	 

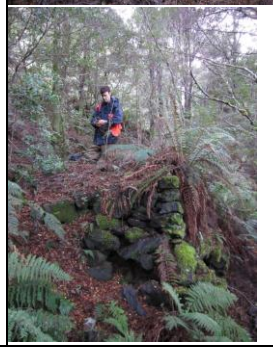
MMW	T2	**Track**: Small benched, c.3' wide track that leads steeply down off T1 (at GR 0370331.5411024) to the S towards Adit 2 (*not followed*). Appears to be a foot track providing access to Adit 2 (refer 1899 mine plan & Weekly Courier image 23/7/1914); in 1914 shown running down to the SE from the pack track/tramway from Adit 1 to the N then N just before the spur nose (Weekly Courier image 23/7/1914).	by 1899 (still extant 1914) [presumed to have accessed Adit 2)]	high-medium	0370331.5411024	515	
MMW	T3	**Track**: Small benched, c.2-3' wide track that leads down moderately steeply off T1 just N of where it has been cut by F29 (at GR c. 0370300.5410978) to the NE (presumably to Adit 2 (refer 1899 mine plan) where it is cut by the main Magnet Road; not evident below the road. Interpreted as a foot track.	by 1899 [presumed to have accessed Adit 2)]	low			
MMW	T4	**Track**: Narrow (c.4' wide) benched track that runs from behind the upper level of the Mill building (F12) N sidling around the slope into the NW creek line (where it could not be traced further); at the lower end it appears to have been cut off by T6 (ie, the construction of the tramway to Adit 4); it has two rectangular level areas on the upper side at the lower end (probable house sites F15 & F16); there is a c.3' track leading down to the NE from near the present S end. Interpreted from its location to be a direct and early phase foot/bridle track from the early adits (Adits 1 & 2) to the valley floor to the mill; and later (?) used as a foot connection from the Adit 4 level to the defunct tramway via a major building (F18), probably once the Magnet – Waratah railway was in and the mine was worked via Adit 4 (by c.1911). This later is based partly on a JH Robinson image (c.1910, pre 1914) which shows a benched track leading up to it from c.Adit 4 level.	by 1902 (see MMW T6)	high-medium	0370383.5411025 0370383.5410988 0370382.5410976 0370374.5410959	493 484 474 479	
MMW	T5	**Track**: C.6' wide, track that runs approximately on the level from behind the upper level of the Mill building (F12) N between the W hillslope (into which it is lightly benched) and the W edge of the major Adit 4 mullock dump (F14) to the NW creek; it sits c.0.5-1m below the mullock surface. Interpreted from its location to be a general access track from the Adit 4 workings to the northern mullock and NW creek. There is no evidence that this track existed before the main Adit 4 mullock dump (MMW F14) or the upper mill building (MMW F12) – and this is after 1902 (Weekly Courier image 23/8/1902).	post-1902 (see MMW 14)	medium-low	0370392.5410988– 0370395.5410962+	470- 471	
MMW	T6	**Tramway/Railway – Adit 4 to Mill**: C.3-4' wide formation that runs approximately on the level from the upper Mill building (F12) SW to Adit 4 (F1); it runs for the most part on the Adit 4 platform; there are remnant sleepers visible for approx 50% of the length of tramway (mainly in the N part); there is a line of stones running along the NW side for part of the length. Not likely to have existed until the upper mill building (MMW F12) was constructed – by 1902 (Weekly Courier image 23/8/1902).	c.1899-1902	high-medium (as part of the No.4 Adit)	0370375.5410938– 0370363.5410921– 0370320.5410896	(472)- 469 – 471	
MMW	T7	**Track**: C.4' wide, benched track that runs steeply downslope (E) on the N side of House Group 2 (Webster 2007) (F53-55) and below the house sites; runs approximately 15-20m below the houses where it turns sharply N (and could not be followed) (- appears to run down towards House Group 1 (Webster 2007)); is connected to (or joins?) T8 which heads S across the slope from near the lower bend (GR. 0370193.5410958).	unknown (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	high-medium	0370193.5410958	(570)	

		Interpreted from its location to be a foot/pack track from the alluvial workings upslope via Webster's House Group 2 to Webster's House Group 1.					
MMW	T8	**Track**: C.4' wide benched track that runs S across the main W slope of the Magnet Mine at c.585m-566m (or lower); it starts (or is joined by T7) just below the NE of House Group 2 (Webster 2007) (F53-55), then runs S below them to a creek line (at GR 0370154.5410907), then through a cluster of trenches and adits (including F60 & 61) around the nose of a spur above F64 (a cut) then around the hillslope to F72, then continues S to the Water Race Outflow Channel (at GR XX) where it cannot be followed further (but was possibly originally the alignment of the lower part of the Outflow Channel (F80) leading down to the main Magnet Road, formerly the main access tramway. This is the longest section of preserved track identified in the MMW area with the recorded length being c.22-250m, and connects to an unusually high number of mine related features. Interpreted from its location to be a foot and pack track from the main access tramway (now the main Magnet Road) to the various higher level workings and house/hut sites.	unknown (probably by 1923) [presumed to be associated with the upper workings and buildings]	high	?-0370193.5410958 -0370154.5410907 0370154.5410898 -0370157.5410867 -0370165.5410836 -0370132.5410799 0370133.5410772 - ?	?- - 585 583 -569 -566 565 555 - ?	
MMW	T9	**Track**: Small benched, c.2-3' wide track that leads moderately steeply down from F59 (adit) to the NE towards the Open Cut (FF31); it could not be followed from near the S edge of the more recent cut F30, but its alignment suggests it could connect to T1; alternatively it stops almost where the top of T10 was located, hence might be a zig zag track incorporating T10. Interpreted as a foot track because of its size and steeper grade.	unknown (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	medium	0370175.5410886- 0370196.5410907-?	569- 568-?	
MMW	T10	**Track**: Small benched, c.2-3' wide track that leads moderately steeply down to the SE from just S of F30 (large cut) and towards F21 (Adit 1); as it starts almost at the bottom of the extant section of T9 it may be one single zig zag track incorporating T10. Interpreted as a foot track because of its size and steeper grade.	unknown (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	medium	0370206.5410883	558	
MMW	T11	**Track**: Small benched, c.3' wide track that leads gently up in a SW direction from between F59 (adit, above) and F21 (Adit 1?, below) and along the N side of F62 then to the NW corner of F63, after which it could not be followed Interpreted as a foot track.	unknown (probably by 1899) [presumed to be associated with the initial working of the Open Cut]	medium	?-0370193.5410869 -0370176.5410841	?-551 -562	
MMN	F1	**Adit – Upper Adit**: Adit with benched platform in front, a mullock fan, and large excavated cut on the S side (F2). *Adit*: Adit is access from the rear cut of bench (ie, has no trench entrance); the tunnel is c.7' high (originally probably 8') and widens from the roof to the base where it is 5' wide; the tunnel is straight and on a bearing of 275°; there are no timbers at or near the portal, but there appear to be sleepers on the tunnel floor; there is c.10-20cm water on the tunnel floor, but not water flowing out at the time of inspection (small channel at entrance suggests some flow at wetter times); there is some calcite formation on the tunnel walls.. *Platform*: The platform outside the tunnel is c.9m x 9m and extends another c.4.5m	by 1900 (post-1897) (abandoned by 1917-18)	high	0370457.5411123	496	

		more narrowly (c.4-5m wide) to the N (and a track may lead off from the N end); the outer edge is formed of mullock that has been tipped down the slope forming a fan; there are a few artefacts on the platform – Dutch oven lid, a billy and brown glass beer bottles (probably post-mining). *Mullock*: The mullock is primarily large angular rocky fragments, and the surface rocks of the fan have considerable lichen and fern growth (suggesting an early date). The North Magnet workings are not mentioned by Harcourt-Smith (1897), but the workings and the Upper Adit (MMN F1) were in existence in 1900, with Twelvetrees 1900) noting that the upper adit was 186' above the lower adit, driven into the hill for c.360', and with a drive to the S. The upper adit appears to have been abandoned by1917-18 (Twelvetrees 1918). In 1923 the Adit is described by Nye (1923) as driven west for 300 feet; with drive to SE which is blocked up at that time. The only mapped information is in Glasson & Cox (1968, section), which shows two adits/drives, with the upper adit as being approx at the No.3 level of the Magnet Mine and the lower adit being between the No.5 and No.6 levels, approx above each other in a WNW-ESE plane. The mullock appears to be pictured in J.H. Robinson's c.1908 image.					 
MMN	F2	**Cut Platform – plant/building site**: C.3-5m S of Upper Adit is a large square level area cut into the hillslope; the levelled area is c.6.5m N-S x 5m E-W, with a 3-4m high vertical headwall cut into bedrock (W wall), and with the outer edge built up with cut material.	by 1900 (post-1897) (abandoned by 1917-18) [presumed to be associated with the North Magnet Mine workings]	high-medium (as part of the Upper Adit)	0370452.5411114	501	
MMN	F3	**Platform – Building/House**: Rectangular benched area cut onto slope (approx on spur nose); platform is c.8m N-S x 3.5m E-W and the inner cut wall is vertical and c.1m high; the platform has scattered building materials including mortared brick with gci shuttered concrete render on 1 side, bricks, flat metal sheet, and a gci chimney flue (on the ground on the E edge of the platform; possibly accessed by small (c.4') track (T5). Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911). Also possibly pictured in J.H. Robinson's c.1908 image.	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium	0370442.5411049	498	 
MMN	F4	**Platform – Building/House**: Large rectangular benched area cut onto slope (on W side of spur nose); platform is c.14m NW-SE x 5m NE-SW and the inner cut wall is vertical; there is a smaller approx square flat platform c.1.5m below the W corner of the main platform; no artefacts noted; accessed by small (c.4') track (T5). Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium-low	c.0370438.5411049	502	

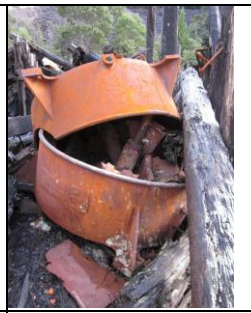
		(Weekly Courier image (1/6/1911). Also possibly pictured in J.H. Robinson's c.1908 image, with another hut below on the south side.					
MMN	F5	**Artefacts - Scatter**: A c.60m long x 5-12m wide spread of artefacts that extends from the nose of the spur at T1, diagonally downslope to the NE to T5; the artefacts are of a wide range and are dominantly domestic and building materials – including bricks, bottle glass, ... a battery,	by 1900? (post-1897) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370404.5411119- 0370433.5411157	? - 522	
MMN	F6	**Shaft – Shaft**: Vertical sided, well formed rectangular shaft, 6' x 4'; has a low mound of spoil/mullock on the outer (c.S & E) sides that extends almost to Shaft MN2; located on the nose of the spur; also approx on the line of Adit MN1.	by 1900? (post-1897) [presumed to be part of the North Magnet Mine workings]	high-medium (as part of the Upper Adit)	0370388.5411134	(530)	
MMN	F7	**Shaft – Shaft**: Vertical sided, well formed rectangular shaft, 6' x 4' (oriented at 90° to Shaft MN1 and on same approx level); has a low trench like entrance on the E end and a depression on the W end (possibly sunk in a costean?); has associated artefacts on the E end – an enamel crib, fragmented bottle glass (including a square based bottle), broken drinking glasses and domestic china; located on the nose of the spur; also approx on the line of Adit MN1.	by 1900? (post-1897) [presumed to be part of the North Magnet Mine workings]	high-medium (as part of the Upper Adit)	0370395.5411136	536	
MMN	F8	**Trench/Shaft? – Shaft/Trench**: Vertical sided, apparently shallow (<1.5m deep) trench/shaft, 4' x 2'6' (on same approx level as Shaft MN1 & 2); has a small spoil/mullock mound on the outer (E) side; has minor associated artefacts; located N of the nose of the spur; but approx on the line of Adit MN1.	by 1900? (post-1897) [presumed to be associated with the North Magnet Mine workings]	medium-low			

MMN	F9	**Trench/Shaft? – Shaft/Trench**: Shallow (<1.5m deep) pit/shaft, 4' x 2'6' (possibly an infilled shaft with collapse of the surface edges) (on same approx level as Shaft MN1, 2 & 3); has a small spoil/mullock mound on the outer (SE) side; has minor associated artefacts; located N of the nose of the spur; but approx on the line of Adit MN1.	by 1900? (post-1897) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370399.5411142	536	
MMN	F10 (& F11)	**Trench/Shaft? – Shaft/Trench**: Long trench with vertical sides and is filled with water to 4' below the surface – possible infilled shaft?; 15' long x 6' wide; is connected by a straight line of shallow trenching to F10, a similar trench on the same alignment, the trenches are c.20m apart.	by 1900? (post-1897) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370368.5411119- 0370365.5411125	531-534	
MMN	F11 (& F10)	**Trench/Shaft? – Shaft/Trench**: Long trench with vertical sides, but an irregular surface edge due to minor collapse – possible infilled shaft?; 15' long x 6' wide; is connected by a straight line of shallow trenching to F11, a similar trench on the same alignment, the trenches are c.20m apart.	by 1900? (post-1897) [presumed to be associated with the North Magnet Mine workings]	medium-low			
MMN	F12	**Platform – Building/House**: Approx square benched area cut into slope approx on spur nose and immediately below Shaft MN1 (F6); the platform is c.4m x 4.5m and the inner cut wall is vertical; the platform has a low mound of spoil running down the SW side (also running along the SW side of F13 which is immediately below F12); light scatter of artefacts – mainly fragmented bottle glass. Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911).	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium			
MMN	F13	**Platform – Building/House**: Rectangular benched area cut into slope approx on spur nose and immediately below F12; the platform is c.10m NE-SW x 8.5m NW-SE; the platform has a low mound of spoil running down the SW side (also running up along the SW side of F12); light scatter of artefacts – mainly bricks (Jones & Cameron) and metal. Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911).	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium	0370395.5411125	534	
MMN	F14	**Platform – Work Area/Building/House**: Large rectangular benched area cut into slope (on SW side of spur nose) c.1m above T1 and almost on the spur nose; the platform is c.10.5m E-W x 5m N-S and the inner cut wall (N wall) is vertical; track T7 leads off form the W end of the platform, heading uphill to the NW Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911).	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium-low			

MMN	F15	**Platform – Building/House**: Rectangular benched area cut onto slope on SE side of spur nose; platform is c.8m NW-SE x 5m NE-SW and the inner cut wall is vertical and 0.5-.1m high; a short (c.5-8m) c.3-4' wide track (footpath/pack track?) leads off from the S corner, SW to meet T7. Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911).	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370380.5411136	537	
MMN	F16	**Platform – Building/House**: Small rectangular-triangular benched area cut into slope on spur nose; platform is c.5m x 3m; there is a narrow (c.1' wide x 1' deep channel running directly downslope along the SW side of the platform (costean or drain?). Possibly shown in 1903 Weekly Courier image (3/10/1903), but not evident in 1911 (Weekly Courier image (1/6/1911).	by 1900 (post-1897) (extant 1903, not extant 1911) [presumed to be associated with the North Magnet Mine workings]	medium-low			
MMN	F17	**Platform – Building/House?**: Small rectangular slightly benched and built up area cut into slope above F9; platform is c.5m x 4m; no artefacts noted; possible small (2'-3') track leading SW from the platform. Possibly shown in 1903 Weekly Courier image (3/10/1903).	by 1900 (post-1897) (extant 1903) [presumed to be associated with the North Magnet Mine workings]	medium-low			
MMN	F18	**Platform – Building/House**: Irregular - rectangular benched area cut into slope (approx on spur nose) below the present Magnet Road; platform is c.22m N-S x 10m wide at the S end (full extent) but narrowing to <5m wide at the N end; it has a straight outer (E) edge but the inner (W) edge appear to be fill from the construction of the Magnet Road (or earlier tramway); there is a large square, approx vertical sided stone rubble mound (chimney butt) in approx the centre of the outer edge (on outside) which is 7' wide at the base and 1.3m high; the platform has scattered materials - mainly bricks (red BT&B Co., and pale bricks with frogs on one side and no maker), and fragmented metal. Interpreted as a major building site (possible hotel?) the platform of which has been partly buried during the construction of the main tramway &/or the later Magnet Road. Shown clearly in a JH Robinson image (c.1910, pre 1914) as a having two gabled wings at right angles (aligned N-S and E-W) with the chimney in the internal angle and a skillion roofed section on W side, and a track leading up to it from c.Adit 4 level (MMW T4?). Also shown in a 1911 (Weekly Courier image (1/6/1911).	by 1910 (possibly late 1890s-early 1900s)	medium	0370485.5411022	482	 

MMN	F19 (& F18)	**Artefact Scatter:** There is a sparse scatter of domestic and building debris below F18 for c.20-25m (c.12m horizontally); includes gci sheet, fragmented dark green bottles, bricks (Jones & Cameron), rocks, and an iron cooking stove (oven) (rectangular metal box, 3' long x 2'6" deep x 10.5" high) with one hinged long side, metal feet at each front corner and a metal bar to the rear at each rear corner (suggests the oven was built into a wall & sat on a hearth)).	unknown (probably c.1901) (see MMN F18)	medium-low	0370496.5411017	471	
MMN	T1	**Track/Tramway**: C.6' to 10' wide track, heavily benched track that contours around the W valley slope at a very gentle grade, climbing gradually to the N (26m in c.370m – 7%); the track starts in the MMW area leading from near the MMW Adit 2 area below the Open Cut, NE around the spur and NW to the first creek, then NE to the second creek (– this section is c.6' wide and c.170m long), then heads E to the spur nose in the MMN area, then runs around the spur and NW towards the next creek (this section is 10' wide and c.200m long; the track continues on approximately the same gentle grade and width to the N (*but was not followed*); the track runs through the MMN area, and track T2 leads off from T1 N of the main MMN area. Interpreted as a tramway because of its width and low, even grade. Likely to continue around the slope to above the Magnet West Township (where a horizontal bench can be seen in historical photos).	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	high	+0370297.5411054 0370340.5411108 0370404.5411119 0370421.5411199 0370417.5411261+ (to Magnet West Township?)	512 518 522 533 538	 
MMN	T2 (& F5, T1)	**Track**: C.4-5' wide, well benched track that starts from the main contouring track (T1) N of the main MMN area and sidles down the slope to SE for c.160m to the spur nose, then bends sharply N and down (*but could not be followed beyond this*); is intersected by, or is the end/start of, at least 4 other tracks; there is a scatter of domestic artefacts (N end of F5) on the track at GR c. 0370433.5411157. Interpreted as a bridle/pack track connecting the MMN area with the valley and township.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	high-medium	0370421.5411199 0370434.5411169 0370433.5411157 0370442.5411102 0370443.5411085 0370462.5411057+	533- 524- 522- 505- 502- 498	
MMN	T3 (& T2)	**Track**: Small (c.3-4' wide) benched track leading down to the NW from T2 (*not followed*). Interpreted as a foot or bridle/pack track.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	low	0370434.5411169	524	

MMN	T4 (& F1, T2)	**Track**: Small (c.2-3' wide) benched track that sidles SW upslope from Adit MN1 (F1) to cross T2 then head up onto the spur nose (*not able to be followed beyond this*). Interpreted as a foot track.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370457.5411123 0370442.5411102-?	496 - 505 - ?	
MMN	T5 (& T2)	**Track**: Small (c.3-4' wide) benched track leading up to SW from T2 onto the nose of the spur to F4 (& possibly F5). Interpreted as a bridle/pack track.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	medium-low	0370443.5411085- 0370438.5411049	? - 502	
MMN	T6 (&T2)	**Track**: Small (c.2-3' wide) benched track that sidles NE downslope from T2 (*not followed*). Interpreted as a foot track.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	low	0370462.5411057	498	
MMN	T7	**Track**: C.6' wide track that runs NW up the spur nose from F14 which is just above the main track (T1); it is slightly benched at the lower end (*not followed*). Interpreted as a major track (too steep for a tramway), possibly accessing the old Corinna – Waratah track.	by 1900 (possibly late 1890s) [presumed to be associated with the North Magnet Mine workings]	high-medium			
MMV	F1	**Mill Area – Main Mill Building (lower level)**: large level rectangular area c.20m E-W x 15m N-S; former main mill building; cut into the slope on the E side; comprises remnant flooring, including timber planking, the majority of structural timber posts (but these and roof beams have been burnt), brick rubble (from chimney?) and a small amount of mill equipment (eg, grinding pans & drums). One set of 2 grinding pans were made by *The Austral Otis Engineering Company, Melbourne*. Set between T1 and T2, and on the lower level with T1; structural remains suggest the mill was at least 2 storeys on the W side (Weekly Courier image (23/7/1914), shows that this building was 4-5 storeys high). Not built by 1902 (only upper level mill buildings extant at this time (Weekly Courier image 23/8/1902); but shown in a 1909 Weekly Courier image (11/3/1909), but as a smaller size building. By 1911 this building– appears to have reached is full size (Weekly Courier image 1/6/1911). Note – mill timbers are being removed for timber for campfires near the building.	by 1909 (not extant 1902) (enlarged to full size by 1911)	very high (as part of the full mill complex)	0370480.5410939	444	 

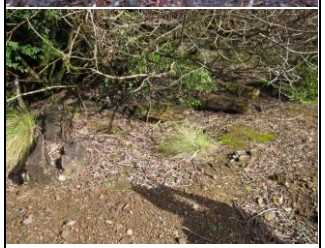
							
MMV	F2	**Mill Area – lower level building/s (2nd auxiliary steam engine shed?)**: Smaller building area adjacent to the main mill building (F1) on the S side and on the same level; minimal evidence of the footprint or structure remains (possibly was more than 1 building) – evident is are a set of massive above ground concrete engine beds, a cross arrangement of heavy timber partly buried in the ground and abundant rubble and fragmented metal and timber; there is a small mound of mullock adjacent on the S edge. The main building is noted as being the 'concentrating mill' in Godfrey (1984, 54), but this building is not named. Building not shown in 1902 or 1903 Weekly Courier images (23/8/1902, 3/10/1903). The building is shown in a 1909 Weekly Courier image (11/3/1909), and is also shown in a 1914 Weekly Courier image (23/7/1914).	by 1909 (not extant 1903)	high-medium (as part of the full mill complex)			
MMV	F3	**Mill Area – lower level building (magazine?)**: Single storey of fully concrete building located on the lower level of the mill area c.20m N of the man mill building and immediately to the E of T1a; c.8m N-S x 10m E-W; possible had second storey and/or roof in other material (that has not survived); the concrete construction and inner concrete walling suggest the building was designed and used as a magazine (or for storing other flammable or explosive materials). Building not apparent in images prior to 1909, but is shown in a 1909 (Weekly Courier image (11/3/1909). By 1914 this area is covered by a large skillion roof off main lower mill building that also houses steam engine (F4) (Weekly Courier image (23/7/1914).	by 1909 (not extant 1903)	high-medium	0370471.5410973	*(488)*	 

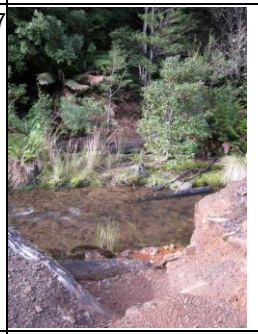
MMV	F4	**Mill Area – boiler & engine beds (lower level) (auxiliary power plant)**: On the NE side of the main mill building (F1) and E of F3 and at the same floor level is a large rectangular (long & narrow) in-ground concrete tank, and adjacent smaller approximately square in-ground concrete tank and associated 6" metal pipe – interpreted as a boiler and engine bed (respectively) – presumably to drive equipment in the main Mill building prior to the power station). Building not shown in 1909 Weekly Courier image (11/3/1909). The building is shown in a 1911 Weekly Courier image (1/6/1911), and is also shown in a 1914 Weekly Courier image (23/7/1914), where it is shown and covered by large skillion roof from main shed. Appears to be still extant in 1931 as an auxiliary (back up) steam engine (Webster (2007) notes that 'an auxiliary steam generating plant was installed as a standby power source' for the mill; and Godfrey (1984, 54) notes this area was one of 2 'steam auxiliary power plants'). Godfrey (1984, 62) notes the steam plant comprised 2 Badcock and Wilcox water tube boilers with superheaters and 1 steam turbine. Godfrey (1984, 61) also notes that 'the steam driven power plant' at the mine (possibly this plant), was purchased when the mine closed by Circular Head Amalgamated Timbers, and was used in a timber mill on the Stanley wharf.	by 1911 (not extant 1909) (probably still extant in 1931)	high-medium			
MMV	F5	**Power Station (below lower level mill)**: concrete foundations set c.10m to the SE and at a slightly lower level than the main Mill building; c.13m x 13m with four concrete equipment plinths on the ground floor and an arrangement of concrete walls underneath that allowed for water inflow and outflow. Information in Godfrey (1984, 54) suggests the inflow pipe was that along the N wall, which connected to three central plinths (housing the generators?) via separate pipes, with the outflow being via a central pipe (or pair of pipes) leading out underneath the plinths to the E (and feeding back into Magnet Creek) although Godfrey (1984, 61) also comments that two penstock pipes fed the power station; presumed to have had a timber framed structure on the upper level but there is no physical surviving evidence of this; no equipment survives. The Power Station was constructed in 1918, with most equipment sourced from the Cassilis Mine in Victoria (Webster 2007). The hydro-electric plant and the penstock pipes were obtained second hand from the Cassilis Mine, a gold mine, in the North East Highlands of Victoria. It was bought by the Magnet Silver Mining Company in 1916, dismantled, taken to the Magnet Mine are re-erected in 1918 (Godfrey 1984). A Weekly Courier image (7/12/1922) and a Spaulding image (no date, c.1918-1920) show the power station building to be an approx square building aligned similarly to the mill buildings, with a double gable roof and several doors and windows. Godfrey (1984, 62) notes the power station housed 1 '650 BHP water turbine' and 1 '150 HP Mitchell turbine'. The original power station was erected at Cassilis in northeastern Victoria, a mining town of over 500 people that existed from 1879 to 1950. The mining in this area was on the site of the first quartz reef discovered in Gippsland. The power station was erected on the Cobungra River just below the Victoria Falls, c.27 kms from the mine. The power station, which ran a pelton wheel, was erected in 1907 by the Cassilis Gold Mining Company to power a mine (or ore crushing and treatment works) in Power's Gully (& by 1909 all the steam engines at the mine had been	1918 [power station and penstock largely material and equipment from the power station of the historic Cassilis Mine in Victoria]	very high The power station site (concrete & stone foundations, a settling dam & the pipeline route) is regarded as having historical, scientific (technological) and archaeological significance. It is of historical signif-icance as the first (gold) mining related hydro-electric power station in Victoria, & is of technological importance as the remains demon-strate all aspects of the underlying technology', with no other examples of this period surviving (VHR Datasheet 2013). Its engin-eering significance has also been McCutchan (1995). The Cassilis area is also listed on the RNE as the	0370477.5410910	*(516)*	 

		replaced with electrical engines). The power station operated until the closure of the mine in 1916, when it was dismantled and taken to be re-built at the Magnet Mine. The Cassilis power station was Victoria's first significant hydro-electric scheme, and first gold mining related hydro-electric power station ((VHR Datasheet 2013[2], Wikipedia 2013[3]). The Cassilis power station is listed on the Victorian Heritage Register.		'Cassilis Historical Area', a 3,600 ha that recognises a range of late 1800 – early 1900s gold mining heritage (RNE Datasheet, Wikipedia 2013).			
MMV	F6	**Mill Area – Mine Manager's House (mid level)**: Evidence of this structure survives as two roundwood timber posts, an old tree, a stone line and a slightly raised plank edged rectangular area below T1a and on the edge of the creek at the S end of the main mill area. The posts are interpreted as house posts, and the other features are interpreted as garden features, with the rectangular raised area possibly being a former vegetable garden or chook run. Shown in a 1903 Weekly Courier image (3/10/1903), and in a number of later images. The historical images show this building to have been a single storey house at road (T1a) level built over a slope on posts. Noted as being the Mine Managers house in Godfrey (1984, 54).	by 1903	medium			
MMV	F7	**Mill Area –building (upper level) -- Railway Station**: Concrete house type foundations; multi room structure; has a gci shuttered small concrete room (c.2m x 2m) on the W side which has no windows and only 1 door (- strong room?); situated at the NW corner of the mill area just below the lower edge of the Adit 4 tailings/mullock (MMW F14). Understood to be the Mine railway station on the basis of Godfrey (1984, 54). Shown in 1902, 1914, and 1922 Weekly Courier images (23/8/1902, 23/7/1914, 7/12/1922). In 1922 a second house has been built on the S side (not present in 1914). This second building is noted as being the Mine Office in Godfrey (1984, 54).	by 1902 (still extant in 1922)	high-medium	0370449.5410976	481	 
MMV	F8	**Mill Area – drainage channel/continuation of T3**: A cut drain or tail race, c.5' wide, that runs NE from the NE corner of the lower edge of the Adit 4 tailings/mullock (MMW F14) along the base of the N valley slope to the junction T1a and T1b – possibly becoming the drain that runs N along the inside edge of T1.	unknown (probably between 1911 &1914 (see MMW F14)	high (as part of the Magnet-Waratah Railway and mill)	0370471.5410983	481	

[2] Victoria Falls Hydro-Electric Power Station – http://vhd.heritage.vic.gov.au/mobile/result_detail/10997.
[3] Cassilis, Victoria – http://en.wikipedia.org/wiki/Cassilis,_Victoria.

		Interpreted as a diversion channel for the creek in this valley that is blocked higher up by the Adit 4 tailings/mullock (MMW F14) (with the creek flowing underneath the F14 mullock). In 1911 it appears that water was piped along this alignment (and possibly over the railway) (Weekly Courier image 1/6/1911)					
MMV	F9	**Mill Area – plant/building site**: A large 2 level rectangular cutting back into the steep hillslope in this area, into bedrock, from T1 – with the lower floor level slightly above (c.0.5m) that of the T1 formation; c.9m (SE-NW and 10.5m NE-SW; the lower level is c.5.5m deep and the upper level is a bedrock cut bench which is c.2m above the lower level and 3.5m deep and has a c.4m high W rock wall; there is a pair of concrete mounting blocks (for an engine?) on the central part of the outer edge of the upper floor level – these are 8'8" apart and each is 2' long x 15"wide. The function of this feature is unknown and difficult to interpret – possibly related to the railway. It is possibly the site an auxiliary steam plant installed in 1931 with government financial assistance as a standby power source (Webster 2007).	unknown (possibly 1931)	*not assessed* (potentially of high to low significance)	0370509.5411003	458	
MMV	T1 & 2	**Track/Tramway/Railway – Main Magnet Mine Access (Lwr) and Magnet – Waratah Railway (W end)**: Major formation (currently the lower end of the Magnet Road); very gentle grade in this area; comes from i/s modern Magnet Road (poss old tramway) (GR 0370587.5411198) then runs along the W side of the valley c.5m above the present valley floor (now infilled with tailings to the main Mill area where it splits (at GR 0370504.5410990) into an upper track (T2) that runs to just above the level of the main Mill building where it connected to a track that ran up the valley then zigzagged back and up to Adit 4 (MMS T2), later possibly extended further up valley to the Southern Adit (MMS T1). Also linked to an upper level tramway to mill (T3) which joined T2 at the N end of the area of buildings (& N of the Station (F7) (theT3/T2 i/s is at c. GR 0370442.5410852). There is a lower track (T1) that runs E of the main Mill building and on the same level, and curve S onto the valley floor proper. Level T1 has some visible preserved timber sleepers. Built in 1902 (Webster 2007, also shown in 1902 Weekly Courier image (2/8/1902). Twelvetrees (1903, 31) notes the new railway to Waratah puts the Magnet Mine "in railway communication with the West Coast, with Burnie, and every other railway station in the State", and with a regular shipment of 1,000 ton of ore a month'. Removed when the mine closed and equipment and buildings were sold. A 1917 Plan shows the arrangement of tramways/railways at this time (in Webster 2007) [*Originally possibly a pack/bridle track from the S, later upgraded to a tramway, and then in the main mining period upgraded to a railway that came along the valley from Waratah and through the Magnet township*.[	1902 - 1939	very high	?-0370587.5411198 –0370529.5411112 –0370424.5410903 -0370442.5410852?	434-438-440-465-469 (N-S)	  

MMV	T3	**Track/Tramway**: Track formation running from the mill buildings area N below the major mullock dump associated with the Adit 4 workings (F14) N to the railway station building (F7). At the S end it appears to continue to the creek? where there is a wide landing (or may be creek sediment accumulation); formation is c.8'-10' wide and has an even low grade. A 1917 plan (in Webster 2007, shows this as a tramway that runs form the mid level mill buildings N around the W of the railway station then NE to connect with railway line T2, just S of where T2 and T1 connect. Presumed to have been built at the same time as the main line of the Magnet – Waratah Railway (ie, 1902; see MMV T1), also shown in 1902 Weekly Courier image (2/8/1902).	c.1902 (see MMV T1)	high (as part of the Magnet-Waratah Railway and mill)	0370449.5410976- 0370424.5410903- 0370442.5410852	(481) – 465 - 469	
MME	F1	**Power Station Pipeline & Penstock**: The Power Station (MMV F5) was fed by a penstock that ran down the steep E valley slopes to the valley bottom, then W across the valley floor to feed into the E side of the Power Station Building. (*Note - only the lower c.75m of the penstock was inspected*). *Penstock*: The pipes have been removed from the penstock, but are understood to have been two sets of parallel pipes (pers obsv); present day remains are an excavated channel c2-3m wide x 1-1.5m deep that runs directly up the E valley wall from just E of GR 0370517.5410909); the channel has piled spoil on both sides, but primarily the N side; the channel walls were straight and vertical, but have collapsed in many areas; there are a series of concrete pipe supports, few of which are in situ, spaced up the channel (unclear from the lower c.75m inspected whether these were double supports or a single support for two pipes; also some appear to have been removed?). *Pipeline*: The pipeline ran approximately horizontally for c.40m across the valley floor (bearing c.260º), crossing the creek c.5m W of the base of the penstock; there is no extant evidence of the valley floor pipeline other than a remnant set of timber bedlogs on the W bank of the creek (at GR 0370517.5410909) – presumed to be supports for the creek crossing of the pipeline; the pipeline is assumed to have been two sets of metal pipes (as per the Penstock). Various maps, plans, images and documents indicate that one pipeline ran down the slope in this location from the very early 1900s (by 1909, and probably 1904) to supply water for general mill and mine purposes, and that a second pipeline (possibly larger) was laid adjacent in c.1918 to provide water for the hydro-electric plant installed at this time. Evidence includes - 1 line of pipe can be seen coming down the E slope in this approx position and feeding into the lower S end of the main mill buildings in a 1909 Weekly Courier image (11/3/1909) and still shown in this location in another Weekly Courier image in 1914 (23/7/1914); a 'Pipe column' shown in this approx location in Survey Plan 10/3/13; in c.1922 the first images showing the new power station (Weekly Courier image 7/12/1922, and Spaulding (no date, c.1918-1920) show the original pipeline feeding the mill in the same location (& on S side of Power Station) plus a possibly slightly larger pipe feeding into (or possibly outflow?) the NE corner of the power station. Godfrey (1984, 61) however notes that two penstock pipes fed the power station. The penstock pipes come from the Cassilis Mine in NE Highlands of Victoria. The Cassilis power station was Victoria's first significant hydro-electric scheme, and first hydro-electric power scheme on a Victorian mine. It was bought by the Magnet Silver Mining Company	1918 (one pipeline to feed water to the mill & mine in place by 1909) [power station and penstock largely material and equipment from the power station of the historic Cassilis Mine in Victoria]	very high (*see MMV F5*)	0370517.5410909	494	   

		in 1916, dismantled, taken to the Magnet Mine are re-erected in 1918 (Godfrey 1984). [*A small number of pipes from the penstock/pipeline are stockpiled at the Waratah Siding near Waratah (N. Haygarth, pers comm)*]					
MME	F2	**Bridge?**: A c.6'-8' wide level formation raised slightly above the ground surface on the E side of the creek with possible track behind, and horizontal timber abutment, with a single horizontal timber log part buried in the tailings on the W bank (possibly the remains of the W bank abutment?). Interpreted as a possible bridge.	unknown	*not assessed* (potentially of medium to low significance)	0370566.5411025	457	
MME	F3	**Upper Valley Tailings**: Tailings from the Mine Mill have been spread across the valley floor from the mill area north to the Townsite; the total area of tailings to townsite (MTE F4) is c.360m down valley x c.40-60m across valley (ie, c.18 ha);most of the tailings area has been levelled following large scale removal of these tailings; the current tailings surface slopes gently down the valley (to N) from c.499m to 452m ; the remnant tailings at the S end of the valley and on the W valley slope suggests that c.2-3m depth of tailings have been removed across most of the valley floor. There are apparently unmodified tailings – 1. a c.30m x 30m area in the head of the valley (next to the Power Station) which have not been removed, but have been levelled (rehabilitated?) and 2.an originally lower area (?) along the E edge of the valley in the N half (GR 0370556.5410957 - 0370572.5411086). The S end of this area (GR 0370569.5411049 - 0370572.5411086) has a long line of end to end logs lying on the ground and partly buried with associated remnant hessian bags (sand bags) between the logs and creek at the S end; this feature is interpreted as a possible creek flood levee structure). The central part of the tailings, starting just below the southern higher unexcavated tailings area, is a swampy area with water from both main creeks on the W valley slope of the mine being impeded in this area by the tailings deposition and the lack of any channels. These tailings are presumed to relate to the main period of the Magnet Mine workings (ie, via Adit 4) once milling equipment was established at the mine, which occurred in at least 1902 (& possibly from 1899). Wellington 1975, 381) notes that the tailings were 'zinciferous and "stored in a number of contiguous dams along Magnet Creek below the mill". The tailings were not seen as being unsafe by the mine or workers, with a tennis court being established on them at one time ('Magnet tennis club' image held by Waratah Museum). A substantial quantity of mine tailings were removed in the 1970s (from 1975 (Wellington 1975) by the Electrolytic Zinc company for extraction of the zinc, In the 1990s MRT undertook rehabilitation of the tailings in the magnet Creek valley to alleviate acid drainage concerns (Webster 2007).	by 1902 (possibly c.1899) (see MMW F12) (1970s - top c.2+ m stripped) (1990s - levelled for remediation)	high - in situ historical features within the tailings are of medium significance			  

							
TOWNSITE							
MTE & MTW	F1	**Railway - Magnet to Waratah**: Gently graded formation that runs from Waratah (Waratah Siding) down into the Magnet Valley (in Tinstone Creek valley) then W up the valley through the full Magnet Township, then S to the Magnet Mine Mill where it terminates; from the Mill to the W part of the Township it runs on the W and N side of the valley, c.1.5-5+m above the valley floor, and E of this it runs initially across the valley floor on the S side (*only inspected to just beyond the creek crossing*). The formation is intact for all of its surveyed length except where it crosses Magnet Creek (c.GR 0370912.5411492) or tributary creeks or where it has been overprinted by later roading (mainly in the mine area); the only location where part of the bridging timbering is preserved and visible is at GR 0371056.5411535. Other features include a very steep section north of the centre of E Magnet Township where spoil (mullock?) has been dumped to help build the formation bench (c.GR 0370797.5411414 to 0370768.5411333); and stone walling along the inner side of the railway in the main part of the east part of the Magnet township (MTE F3). There is also a second bench with sleepers another railway/tramway line, or earlier formation of F1) above the main railway formation north of the centre of E Magnet Township (MTE F2). The railway to Waratah was built (and surveyed) in 1901 under the supervision of R.F. Waller and opened in January 1902. It was a 9.5 mile steam hauled 2' gauge with 30lb iron rails imported from America. The line was heavily ballasted and in places the sleepers were laid closer together than usual because of the soft ground. The railway ran from the mine (lower, mill area), down the Magnet Creek Valley to the Arthur River, then for 1.5 miles up the Arthur River (to south) then wound around the north side of a leading spur, up to a siding on the Emu Bay Railway line near Waratah (Rae 1986). Twelvetrees (1903, 31) noted the new railway to Waratah put the Magnet Mine "in railway communication with the West Coast, with Burnie, and every other railway station in the State", and had a regular shipment of 1,000 ton of ore a month'.	1901-2	very high	+0371153.5411443- 0371110.5411489- 0371078.5411526- 0371056.5411535- 0370942.5411554- 0370619.5411212- 0370587.5411198+	<408 (MTW) -435 (MTE) -440 (at Mill)	   

							
MTE	F2	**Weir?**: Long log lying across Magnet Creek c.30m S of F3 with a build up of sediment/tailings behind (upstream) – possible tailings/sediment weir.	unknown	medium-low	0370912.5411492	419	
MTE	F3	**Bridge (on the NE end of Low Street)**: Remains of a substantial timber bridge across Magnet Creek on the bend and taking off from the modern road (presumed to also be an historic track formation – possibly the continuation of MTW F4); the bridge is c.8' wide and bearers and some of the stringers survive, but few of the decking timbers survive (possibly washed out by flood waters?); appear to be remnant timber and stone packed abutments. A road (Low Street) is shown crossing the creek in this location and running to the railway line in a 1912 plan (MRT Plan). Also shown on Plan GSB33 (Nye 1923?) shown as crossing from S of Magnet Ck in this location to meet the Railway Line (F1).	by 1912	high-medium (as part of Low St)	0370913.5411523	418	 
MTE	F4	**Platform - Catholic Church**: Small, triangular to rectangular benched platform cut into spur adjacent to and c.2m above the valley floor track (MTW F4); platform is cc.5.5m x 4m (ie, 16' x 12'); the platform has drystone walling on the NW corner; there is a brick scatter on the platform in the SW quadrant (- remains of a chimney?) with a narrow cut bench behind – with a piece of gci sheet. Historical images and references show this to be the Magnet Catholic Church. A building shown in this location on a 1917 plan (in Webster 2007).	by 1917	high-medium	0370923.5411515	429	

							
MTE	F5	**Platform – house, & plants**: Flat benched platform cut into the more gentle valley slope on the S edge of the flood plain of Magnet Creek; c.8m E-W x 5m (N-S); has an intact square, vertical sided dry stone chimney butt (fireplace) at the E end, and 2 mature introduced garden plants, also at the N end, one of which is a large japonica bush.	unknown	medium	0371030.5411478	416	
MTE	F6	**Platform – School**: large platform on bend/spur immediately E of i/s of railway and MTW F6 (track); the main area of the platform is c. 15m E-W x 7.5m N-S with a narrow extension to the E which has a small rectangular concrete slab (- washrooms?); the main platform area has a brick scatter (- chimney remains?) and a very large holly tree; there is an associated benched ramp (footpath) with associated drystone walling on the lower side which leads up to the platform from the NE. Historical images and references show this to be one of three Magnet Schools. The earliest school is understood to have been in early Magnet Hall in the west part of the township (Godfrey 1984). A 1917 plan (in Webster 2007) shows a building ('school') in this location, and there appears to have been another purpose built school in place by 1910.[4]	by 1917	high-medium	0371100.5411456	(416)	
MTW (&MTE)	F1	**Railway - Magnet to Waratah**: *See MTE F1, above*		*See MTE F1, above*			
MTW	F2 (& F1)	**Railway – Magnet West Townsite**: A c.130m+ long section of benched 'track' immediately above the main Magnet – Waratah Railway (F1) and immediately N/E of the main part of the Magnet West Townsite; there is a c.15m+ section with exposed in situ timber sleepers (visible from F1) (c. GR. 0370768.5411333). Interpreted as an earlier railway/tramway formation in this area (possibly the tramway to the township prior to the establishment of the main railway line).	unknown	*not assessed* (potentially of high to low significance)	c.0370797.5411414 –0370768.5411333 –0370662.5411242	427 - 434	

[4] *A second school site, higher up the slopes is known, and has concrete foundations and two pine trees (N. Haygarth, pers obsv). This is believed to be the school shown in a 1910 Weekly Courier image which shows a large modern school house of weatherboard building with a gable roof and 3 banks of 9 pane double sash windows at one gable end and a bank of 4 similar windows along one side, a gci water tank, c.58 children (presumably students) and 2 adults (presumably teachers).*

							
MTW	F3 (& F1)	**Structure – stone walling**: A c.70m long x c.1.5m high dry stone wall which lines the vertical cut wall of the Railway (F1) bench; the drystone walling extends NE along the railway line from the centre of the Magnet West townsite (ie, i/s of the railway line (F1) and track across the valley (F4)); not clear if associated with the railway line or buildings above.	unknown	medium	0370674.5411250-0370619.5411212	431-435	
MTW	F4	**West to East Magnet Townsite Road (Low Street) & bridge abutments**: Track formation that starts from the railway line in the centre of the Magnet West townsite, then leads c.E across the valley, where from GR 0370715. 8541188 it is presumed to run NE along (just above) the break in slope of the E side of the Magnet Creek valley to the Magnet East townsite where there are other tracks; this NE section of track has been overprinted by bulldozing and there is no clear evidence of the historical track. In the well preserved section across the valley, the formation has an earth surface, is c.8' wide, and has a built up earth embankment were it crosses the creek (at GR c.0370680.5411203); the stone lined rock & earth abutments are c.3m high and are lined with stone; the actual bridging decking has not survived, but timber beams and posts lie immediately downstream in, and on the edge of, the creek. Low street is shown on a 1912 plan (MRT) where it is named 'Low street' and is shown as running from the centre of the Magnet West townsite E across the creek, then NE, then N to where it crosses the creek again and joins to the railway on the N side of the creek.	not by 1907? by 1903? (Weekly Courier image 6/2/1907) by 1912	high - the bridge is of high-medium significance	0370619.5411212 – 0370680.5411203 – (0370858.5411390)-(0370909.5411458)-(0370913.5411523) + ?	435 – 437 - 425 - 423 - 418	 
MTW	F5	**Workings – Crusher**: Remains of a small crushing operation located on the N side of the cross valley track (F4) on the E bank of Magnet Creek; comprises a small ore crushing bin (for a 2-stamper battery?) just below and c.3-5m from the road (makers mark – "Johnston & Sons Importers, Tyne Foundry, South Melbourne"); with a lower flat area benched into the bank of the road which has not intact equipment, but has a miscellany of metal and timber fragments (- presumably the remains of former equipment); total area of site is c.25m N-S x 6m E-W. Known to be a later period tribute operation (N. Haygarth, pers comm).	unknown	*not assessed* (potentially of high-medium to low significance)	0370699.5411201	442	

							
MTW	F6	**Platform – Building (House) & Plants**: Rectangular benched area set into the E valley slope and slightly above the break in slope (and c. 5m back from F4); the platform is c.10.5m NE-SW x 8m NW-SE and the rear cut is vertical and c.1m high; there is a scatter of artefacts on the platform – bottle glass, white domestic china and gci sheet; there are two mature introduced plants at the E end of the platform – a yucca and a privet-like bush; the platform has revegetated to native scrub & heath. Located on the S side of Low Street. Two houses shown in this area in 1909 (Weekly Courier image 11/3/1909).	by 1909?	medium	0370752.5411218	435	
MTW	F7	**Platform – Building (House)**: Rectangular benched area set into the E valley slope and slightly above the break in slope (and F4); the platform is c.9m NE-SW x 5.5m NW-SE and the rear cut is vertical and c.1m high; there is a scatter of artefacts on the platform (mainly bottle glass), and a brick scatter (possible chimney) at the back of the platform; has revegetated to native scrub & heath. Located on the S side of Low Street. Two houses shown in this area in 1909 (Weekly Courier image 11/3/1909)	by 1909?	medium	0370772.5411248	429	
MTW	F8	**Platform – Building (House/s)**: Long rectangular benched area set into the E valley slope and slightly above the break in slope (and c.0.5m above F4); the platform is c.20m long (E-W) x 6-7m wide (N-S) and the rear cut is vertical; there is a brick mound (probable chimney?) at the E end, and a foot track leads off and slightly uphill from the SE corner of the platform; the platform has revegetated to native scrub & heath. This platform possibly accommodated 2 houses. Located on the S side of Low Street. Two houses shown in this area in 1909 (Weekly Courier image 11/3/1909)	by 1909?	medium	0370793.5411254		 

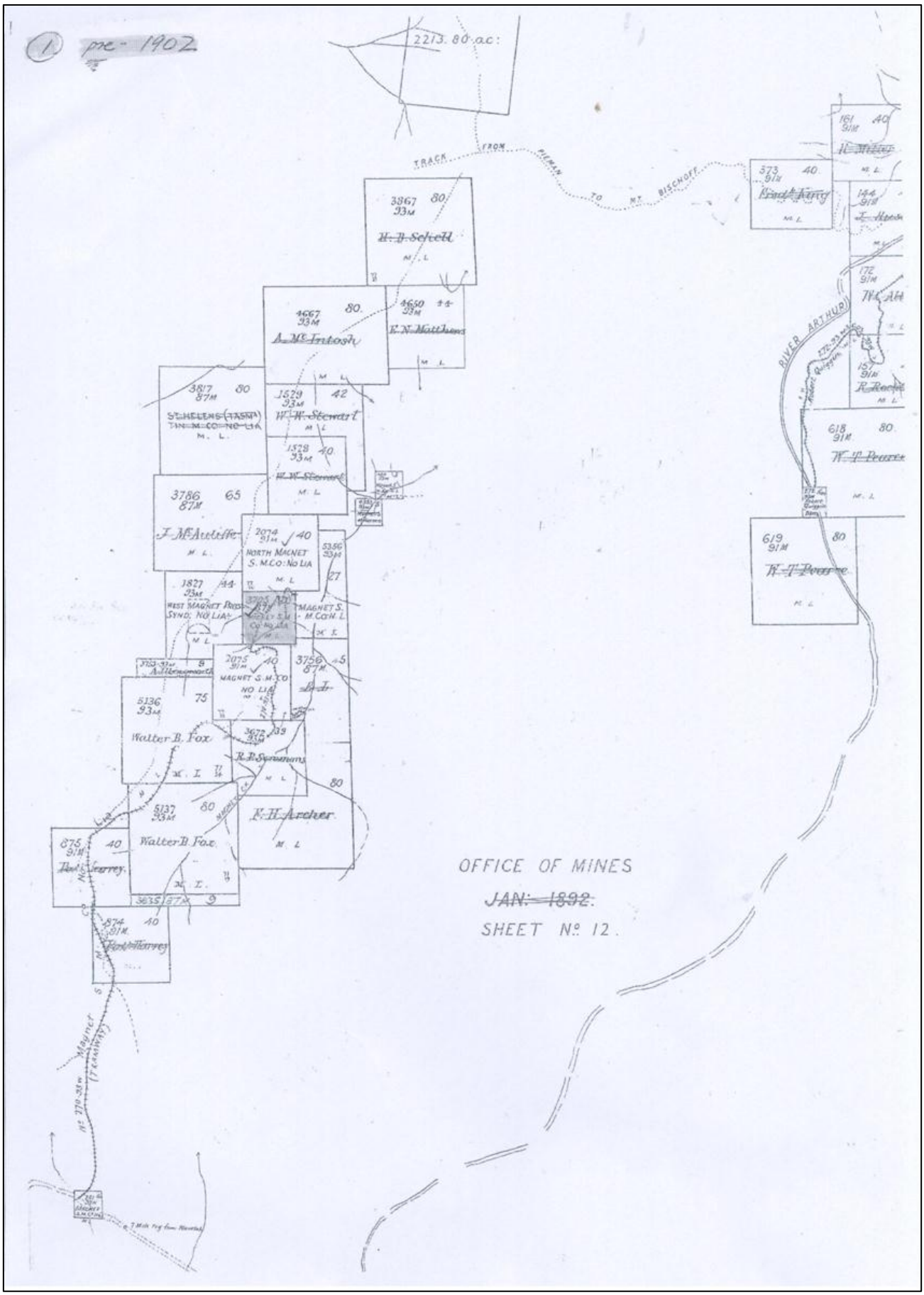
MTW	F9	**Platform – Building?/Garden?**: An approximately square area of shrubby regrowth vegetation c.15-20m SE of F8 (& connected by a footpath) and W of, and above a creek gully; gentle slope (no evidence of benching). Interpreted as a yard/garden for F8 or another house site. Located on the S side of Low Street.	unknown	*not assessed* (potentially of medium to low significance)	0370817.5411247	433	
MTW	F10	**Platform – Building (House or Hall?)**: Rectangular benched and built up area on the Magnet Creek valley floor approx half way between the E valley road (F4) and the creek; situated in an undisturbed area that also appears to have no tailings; the platform is c.10m NE-SW x 7.5m NW-SE; the rear cut is vertical and low (<0.5m) and the front of the platform is built up (c.0.5m high) and has drystone walling facing; the platform surface is heavily grassed with native tussock grass; there is a probable track (F12) that leads NW towards the creek from the NE side of the platform. Located on the N side of Low Street. Probably one of 7 buildings in area shown in a 1917 plan (in Webster 2007) – possibly the hall.	by 1917?	medium (or high medium if this is the early hall)	0370806.5411300	426	 
MTW	F11	**Structure - Building (House)?**: A square, vertical sided stone mound (- chimney butt?) located on the Magnet Creek valley floor between the E valley road (F4) and the creek, and c.5m from the creek; situated in an undisturbed area that also appears to have no tailings and which has shrubs and thick native tussock grass; there is a probable track (F12) that leads from F10 and past the W side of the stone mound; artefact scatter (dom glass) on open tailings on E side. Interpreted as the chimney of a house, with house to S. Located on the N side of Low Street. Probably one of 7 buildings in area shown in a 1917 plan (in Webster 2007)	by 1917?	medium-low	0370803.5411319	423	
MTW	F12	**Track** : A faint track alignment that runs from the NE side of F10, NW towards Magnet Creek and past the W side of F11; very faint due to thick tussock grass regrowth; possibly extends SE.	unknown	low	?-0370806.5411300 -0370803.5411319+	? – 426-c.423	
MTW	F13	**Weir?**: A c.20m+ long NW-SE line of single logs lying horizontally and end to end on the ground across the E Magnet Creek valley floor from the creek across the main area of tailings. Interpreted as a simple tailings weir/barrier.	unknown	medium-low	0370811.5411339	424	

MTW	F14	**Clearing – Building (House?):** C.15m x 20m open area on the gently-moderately sloping W bank of Magnet Creek in this area; the area has low grass (kangaroo lawn?) and no trees; there is no obvious evidence of landscape modification. Interpreted as a possible house site. Probably the building shown in this area in a 1917 plan (in Webster 2007).	by 1917?	medium-low	0370825.5411388	420	
MTW	F15	**Platform – Building (House)**: Very weakly defined rectangular area c.12m N-S x 5m E-W situated on a low, broad, rounded and grassed promontory extending N onto the valley floor from the E valley slope; there is a small box like timber structure at the S end and a c.5m x 5m scatter of artefacts at the NE end – sawn timber fragments, bricks, gci sheet, fragmented bottle glass, fragmented window pane glass, fragmented domestic china, with smaller fragmented material (mainly glass) on flat on NE side (washed off site?). Interpreted as a former house site. Located on the S side of Low Street. Probably the building shown in this area in a 1917 plan (in Webster 2007).	by 1917?	medium	0370850.5411404- 0370848.5411413	421-423	 

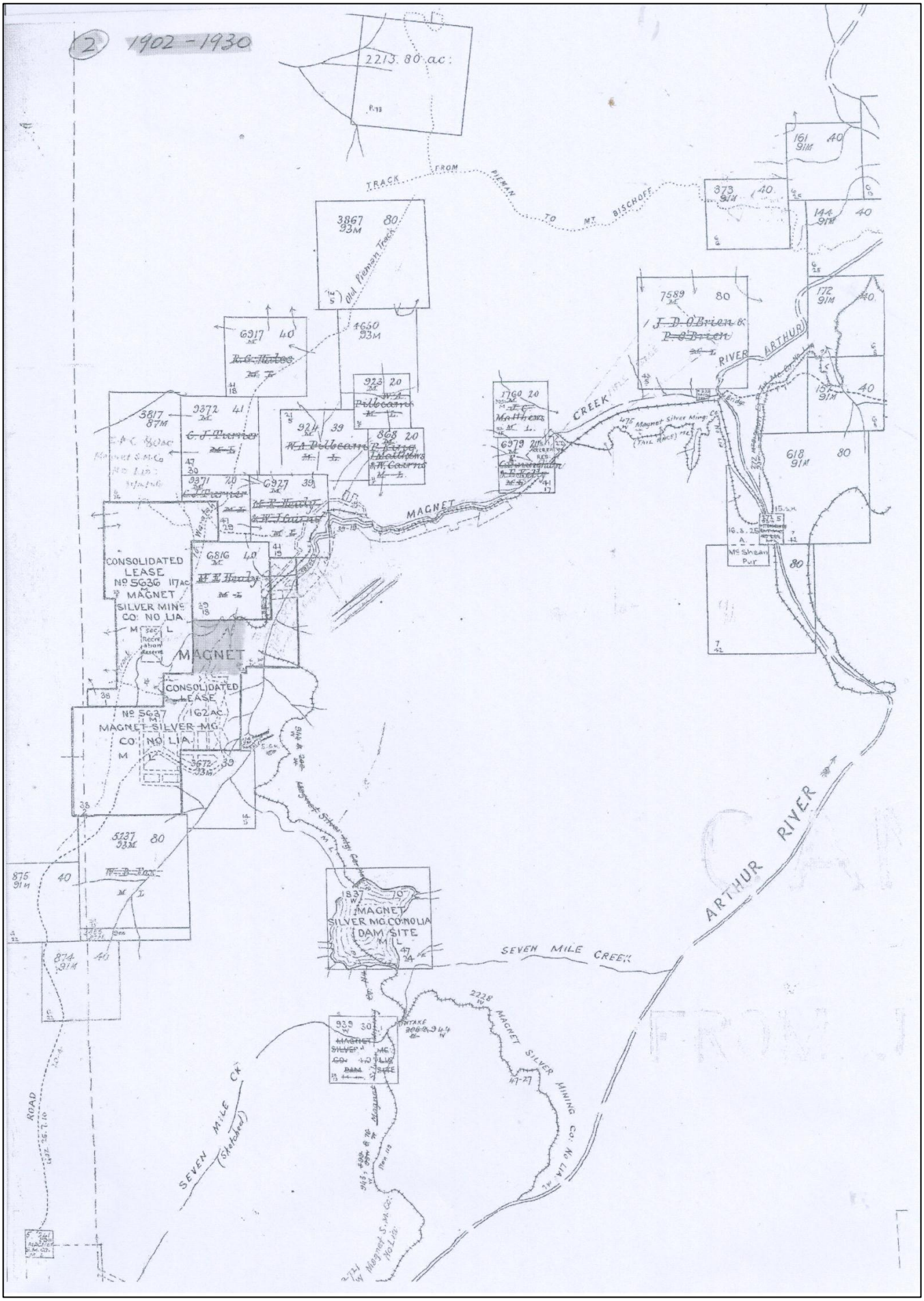
Appendix

ADDITIONAL HISTORICAL MAPS, PLANS & PHOTOGRAPHS

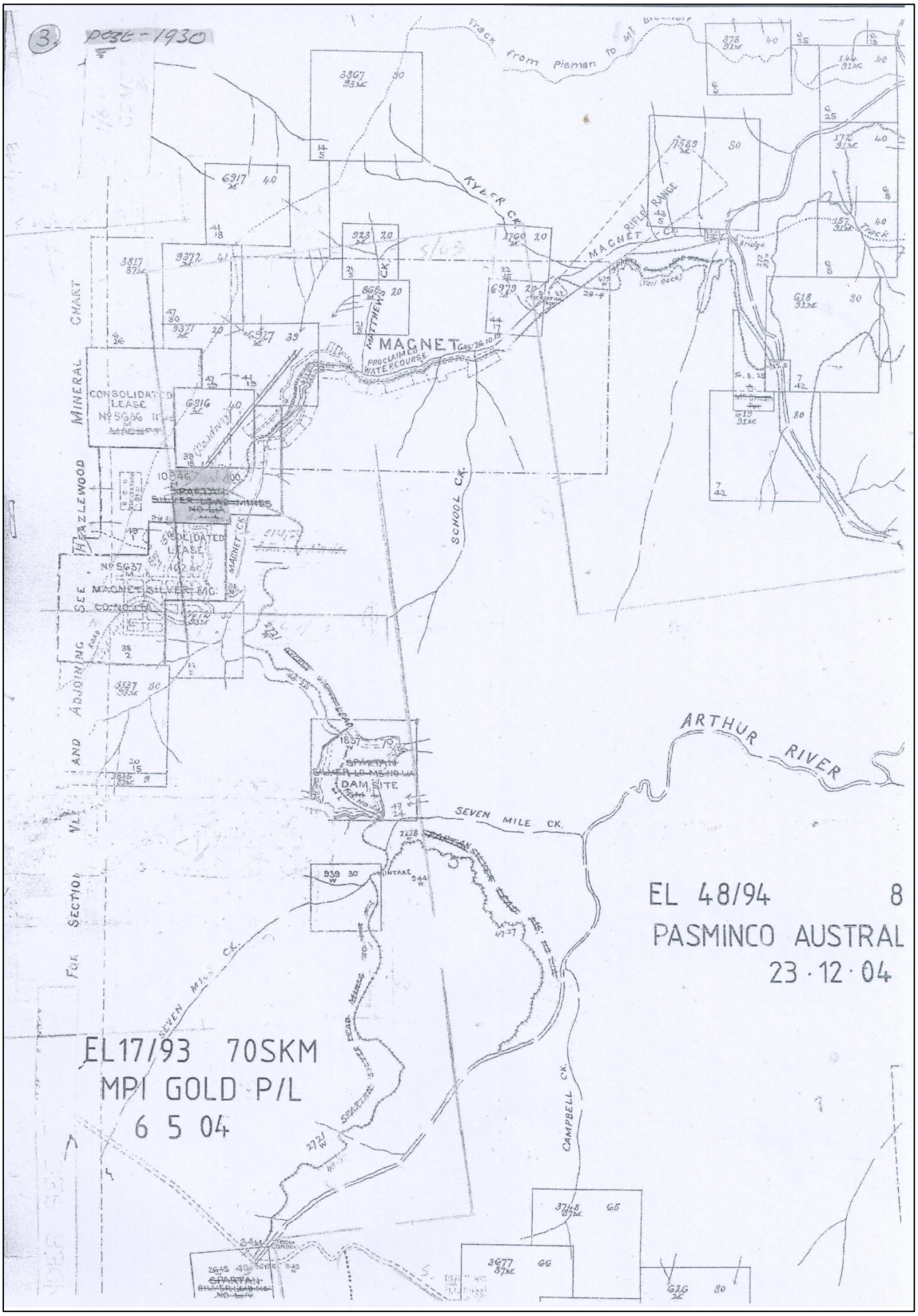
Magnet Mine: Mining Lease Plan of area to 1902 (MRT).



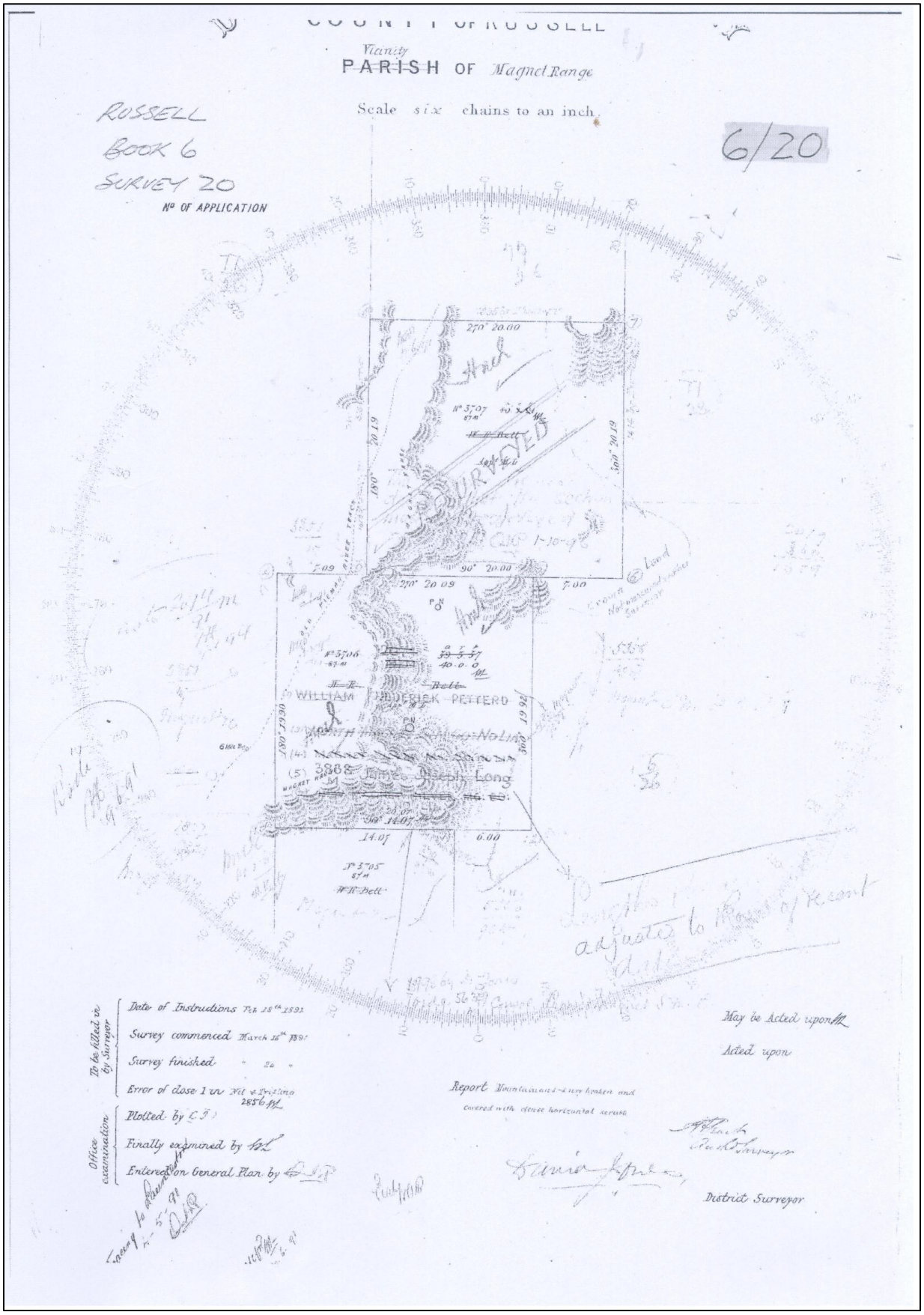
Magnet Mine: Mining Lease Plan of area to 1902 - 1930 (MRT).



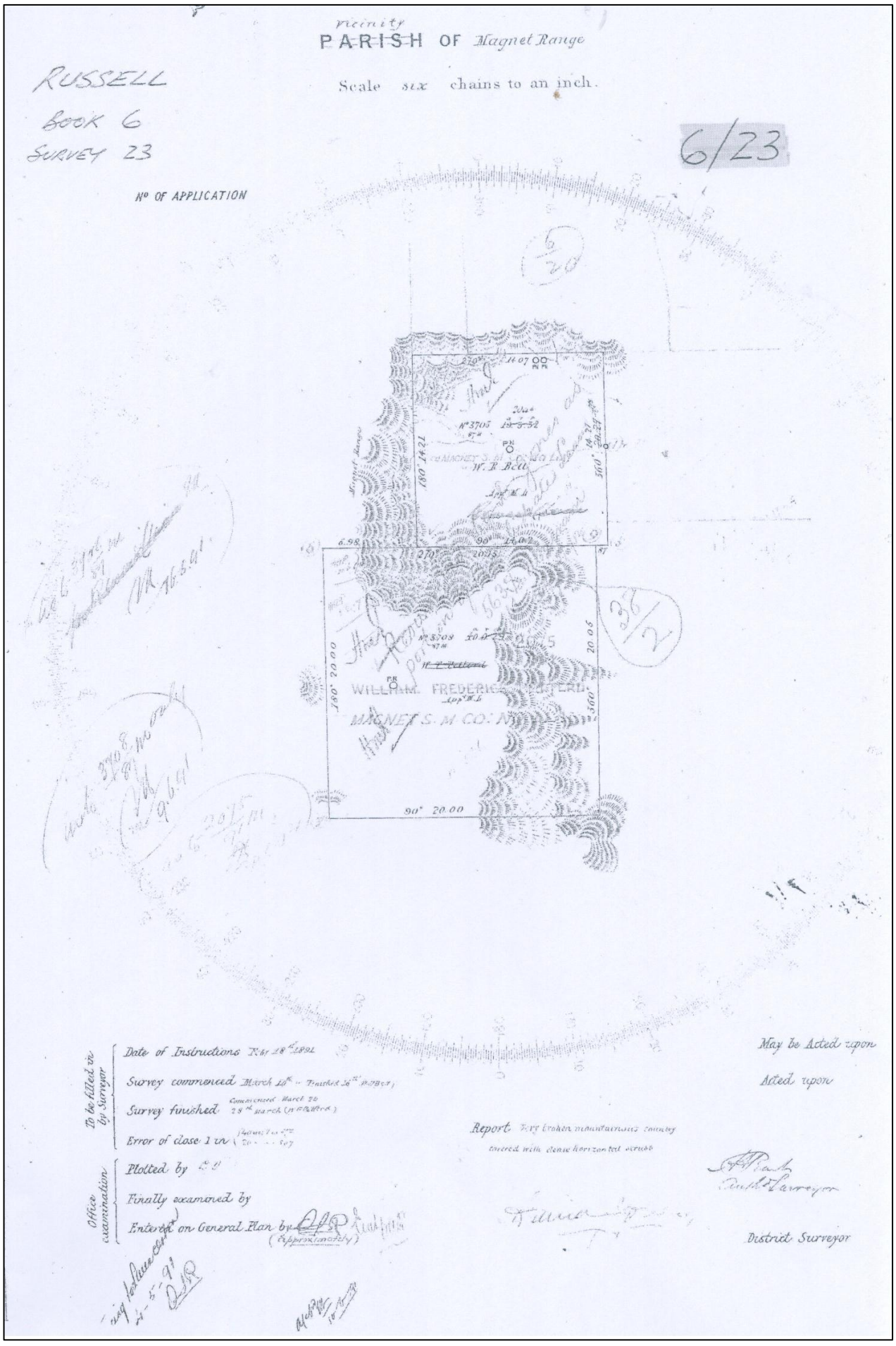
Magnet Mine: Mining Lease Plan of area post-1930 (MRT).



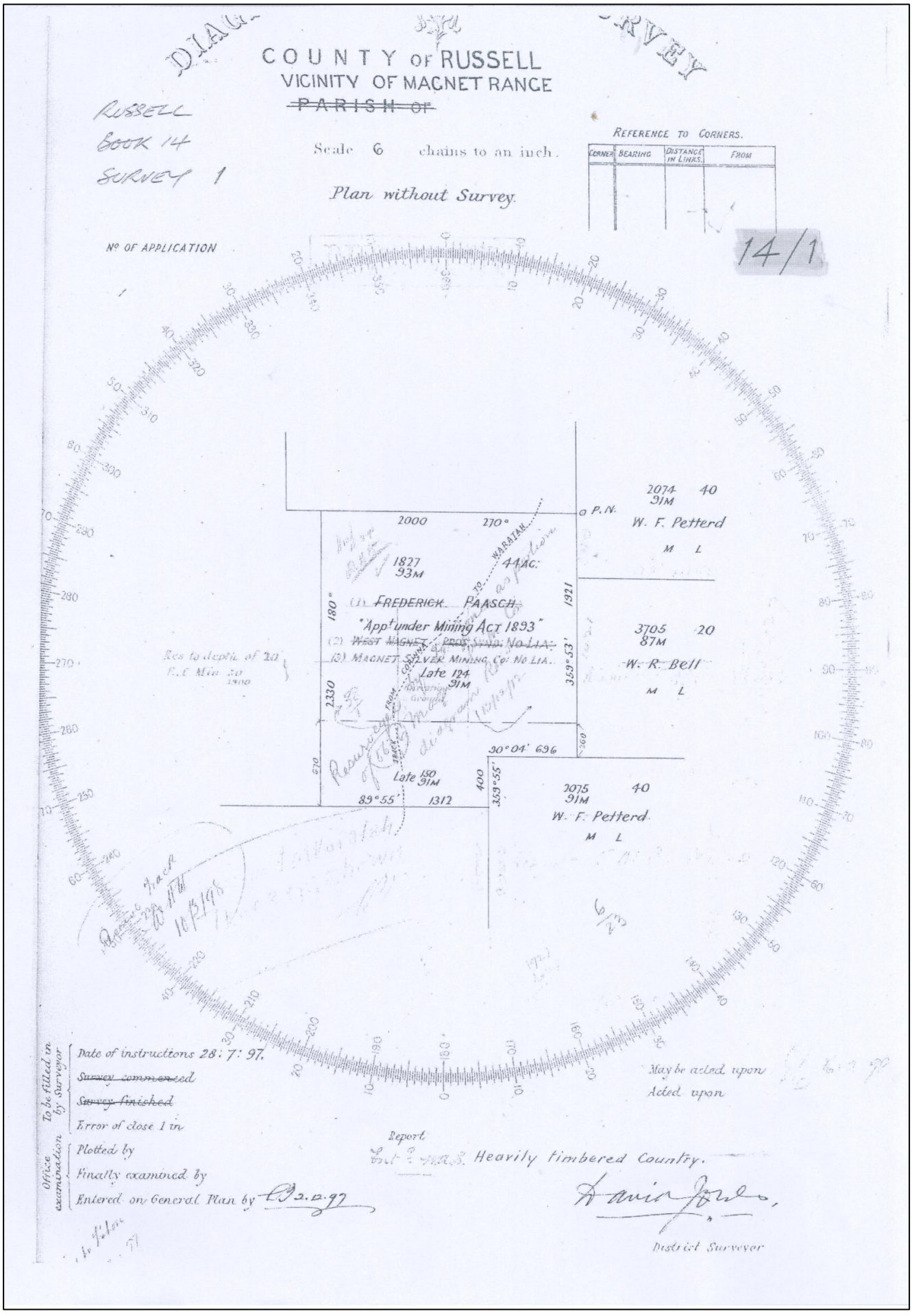
Magnet Mine: Survey Plan 1891, Russell 6/20 (MRT).



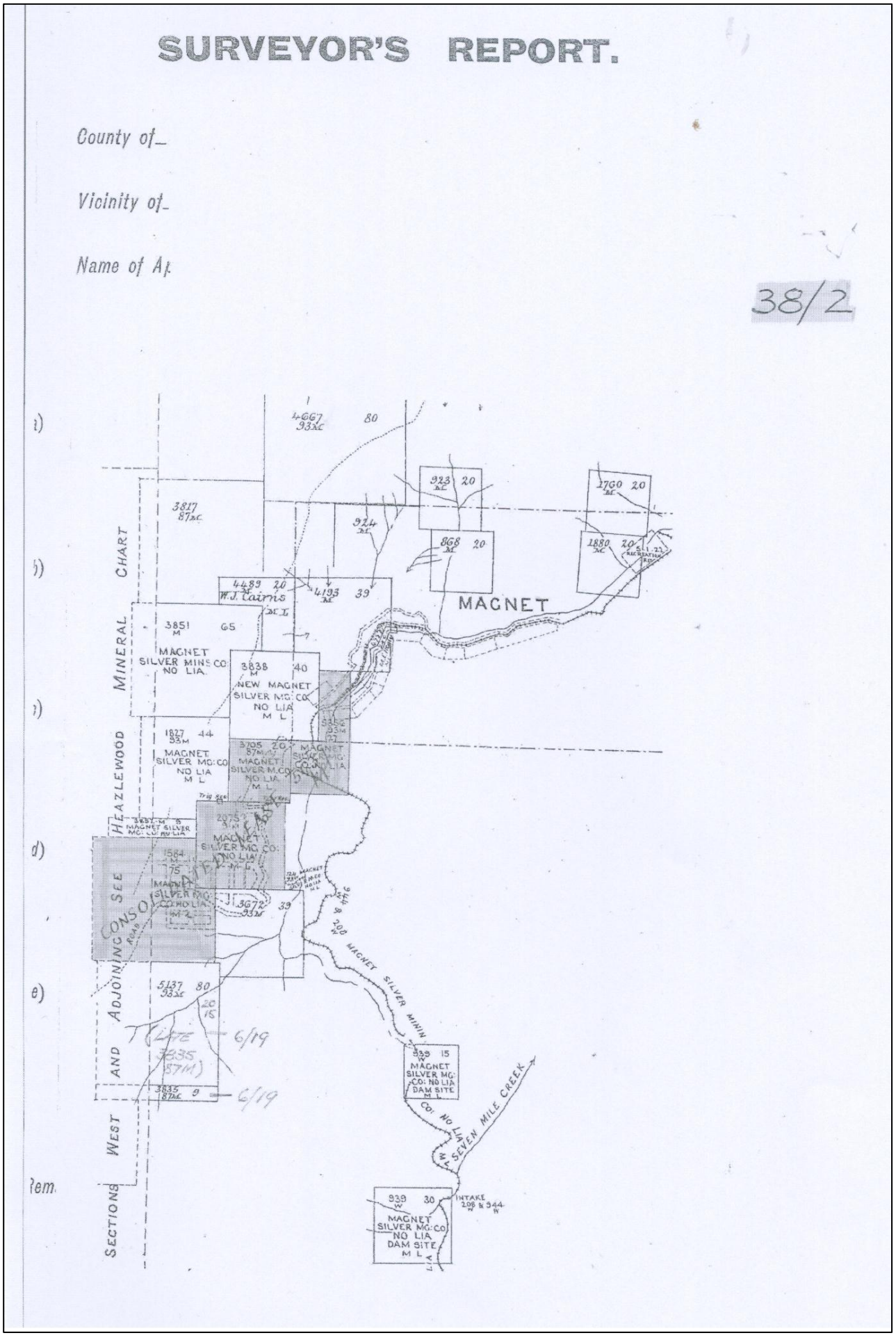
Magnet Mine: Survey Plan 1891, Russell 6/23 (MRT).



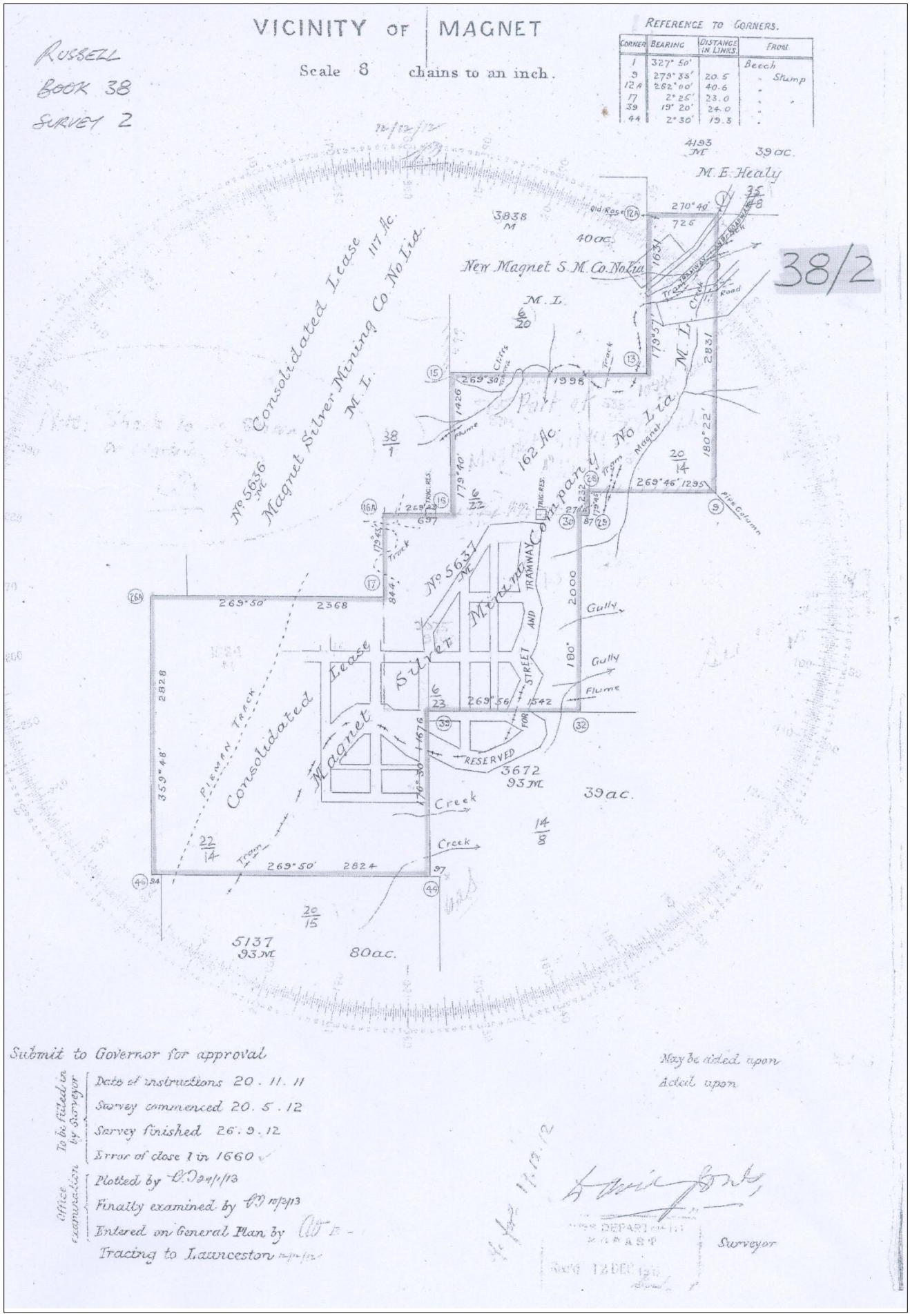
Magnet Mine: Survey Plan 1897, Russell 14/1 (MRT).



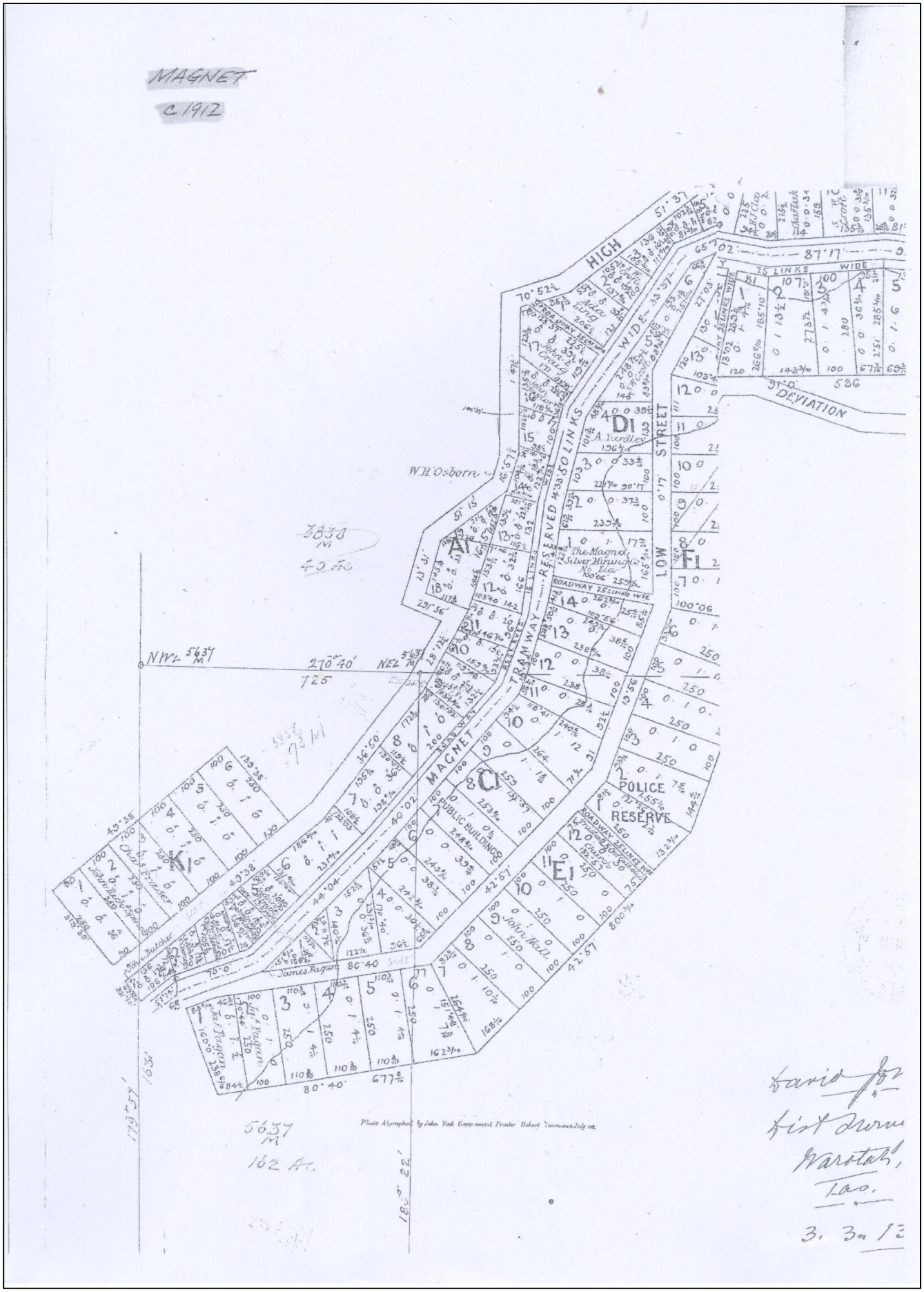
Magnet Mine: Surveyors Report Plan c.1911, Russell 38/2 (MRT).



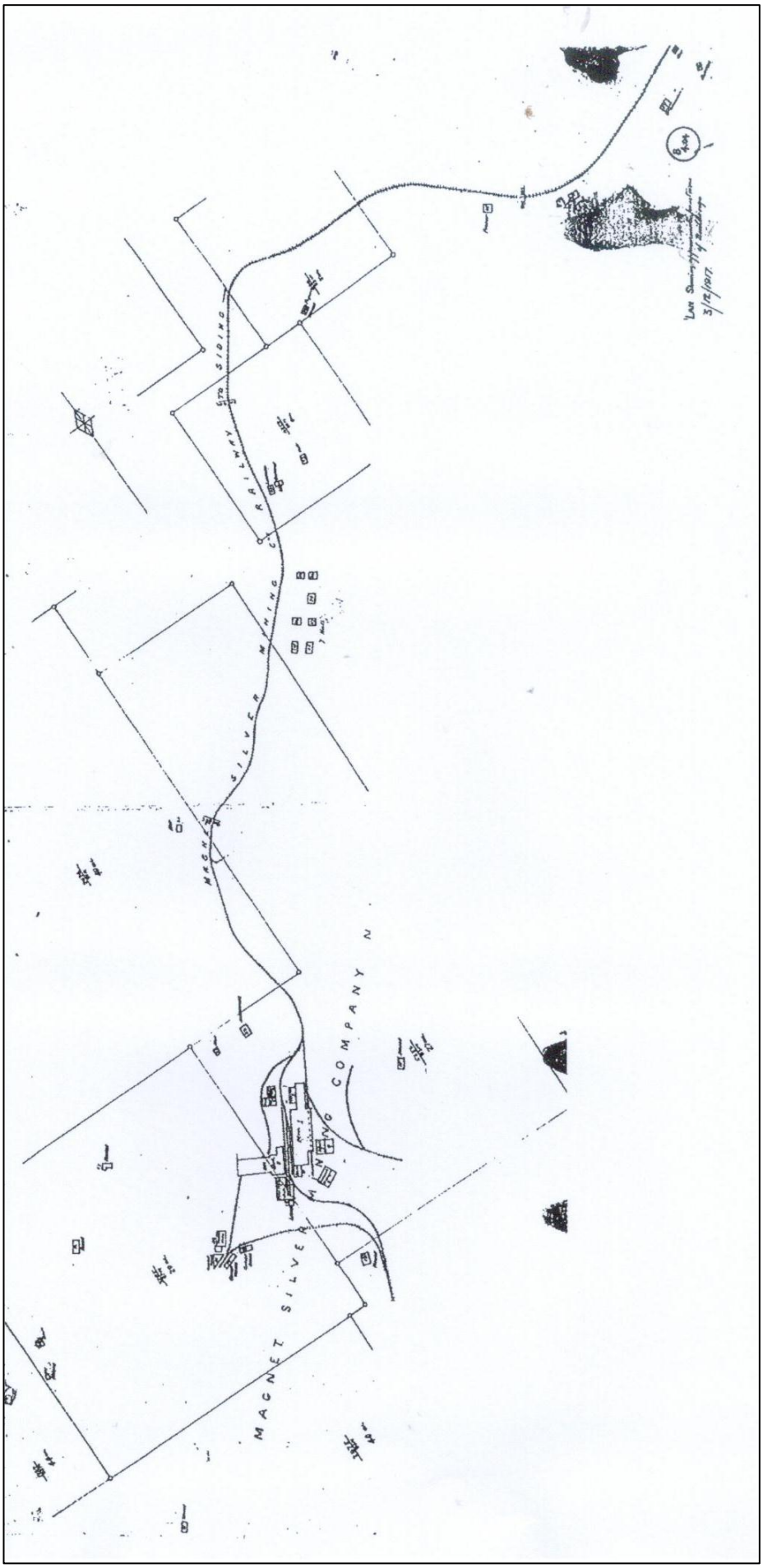
Magnet Mine: Survey Plan 1911, Russell 38/2 (MRT).



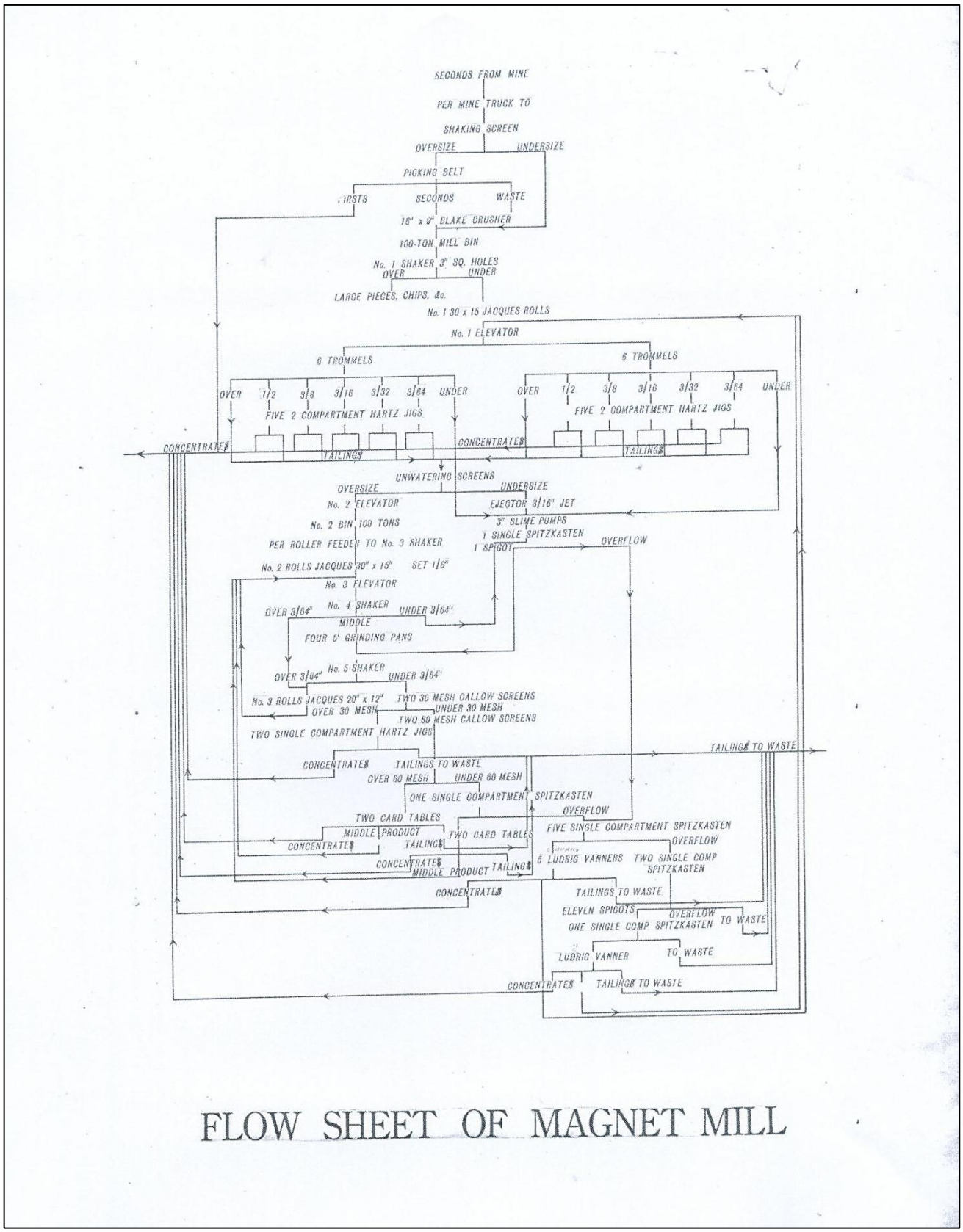
Magnet Mine: Plan of Magnet Township 1913 (MRT).



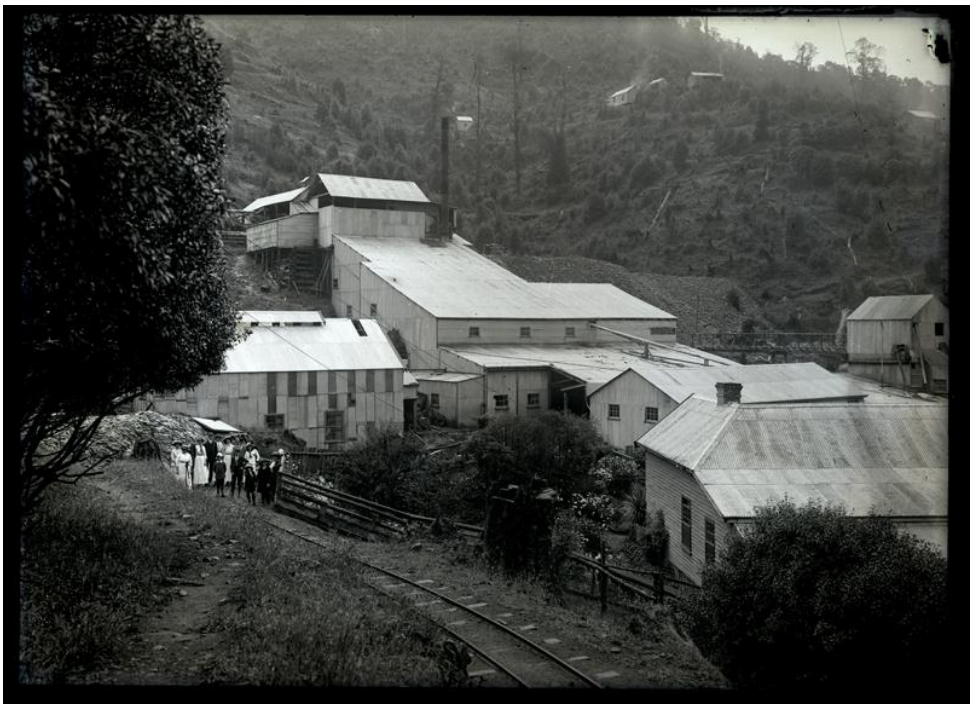
Magnet Mine: Plan of Mine & Township 1917 (3/12/1917)
(Webster 2007, Appendix 3 (source not noted)).



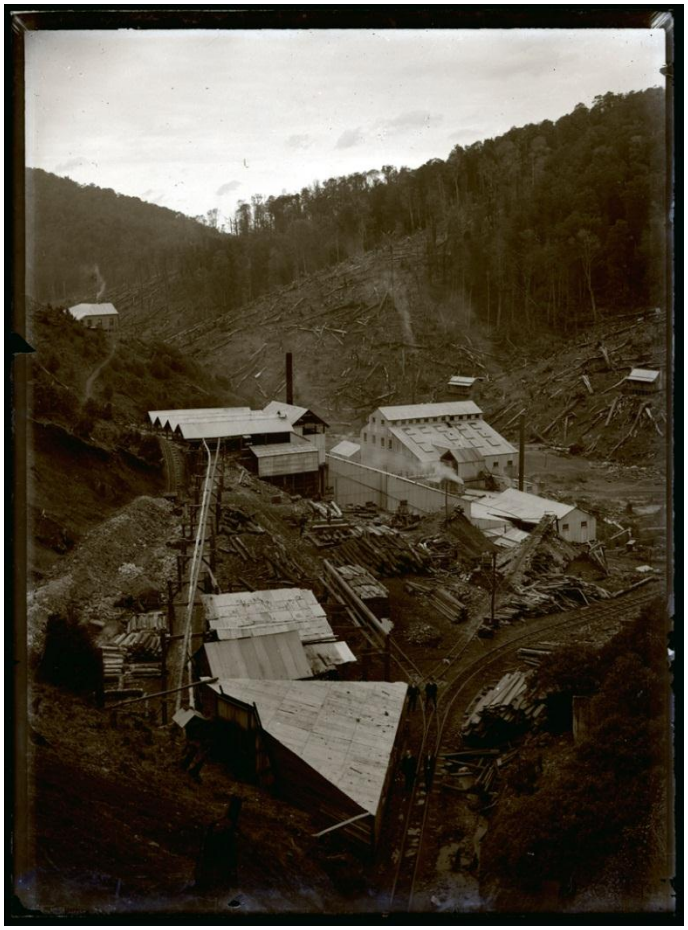
Magnet Mine: Mill Flow Sheet (no date) (MRT Plan 103P/35).



Additional Historical Photographs.

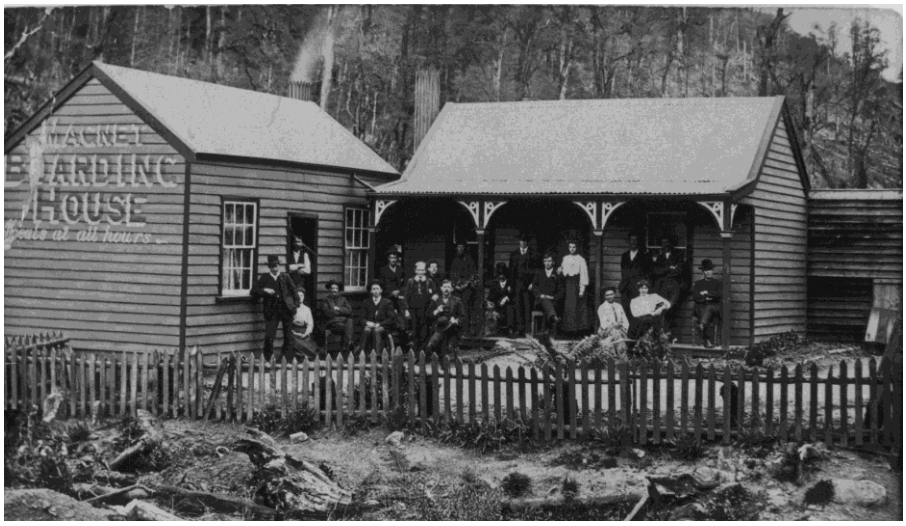


Magnet Mine - view NW to mill with mine manager's house on the extreme RHS, J.H. Robinson, no date, (source – Nic Haygarth).

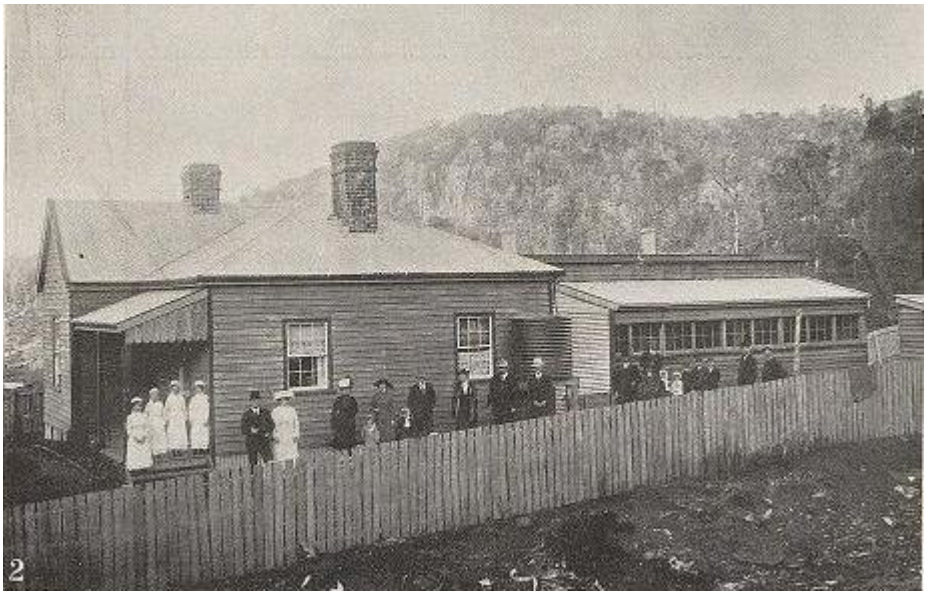


Magnet Mine - view from south spur northeast across the No.4 Adit to the mill and Magnet Creek valley, J.H. Robinson, no date, (source – Nic Haygarth).

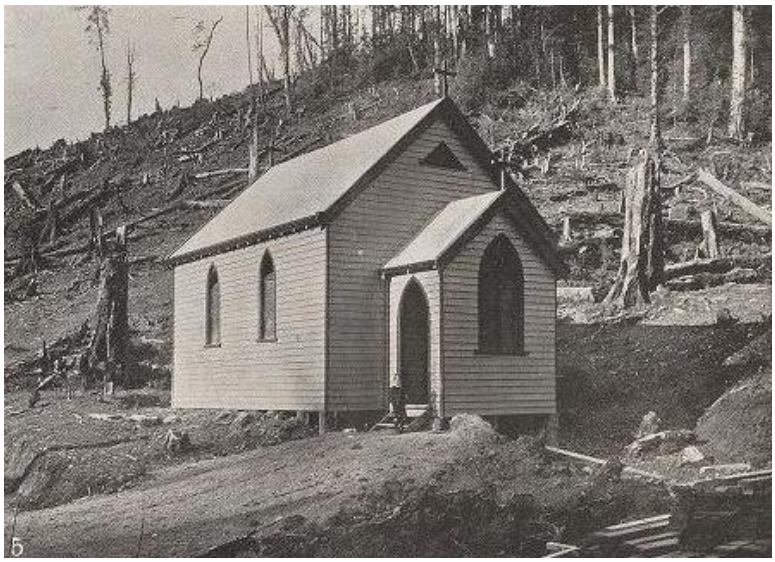
Magnet Hotel - view east from the west side of the railway line across the Magnet Creek valley, J.H. Robinson, no date, (source – Nic Haygarth, Oresome times website).



Magnet Boarding House, no date, (source – Olive Plapp, courtesy of Nic Haygarth).

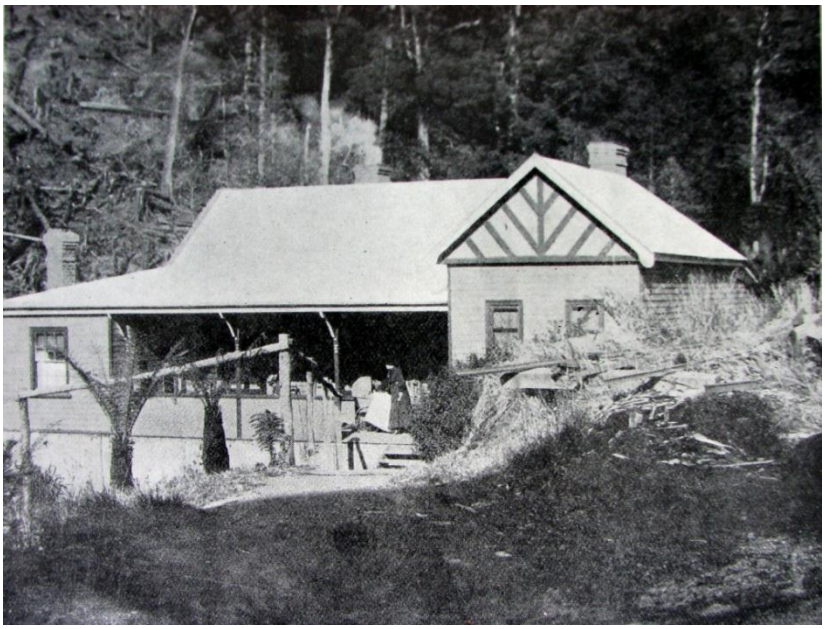


Magnet Hospital, 1914, (source – Weekly Courier 4/6/1914, courtesy Kim Simpson).

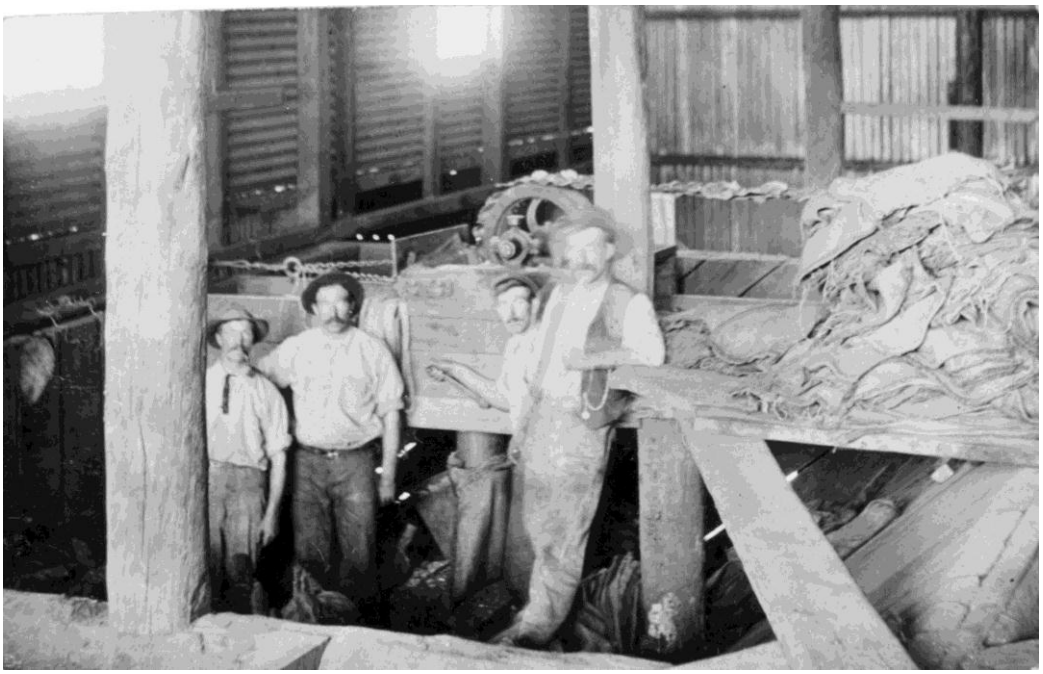


Magnet Roman Catholic Church, 1914 (source – Weekly Courier 4/6/1914, courtesy Kim Simpson).

Magnet School, 1910, W. Fairhall (source – Weekly Courier 27/10/1910).



Magnet Mine Manager's House, 1908 (source – Weekly Courier 20/2/1908).



Magnet Mine, workers on the bagging floor, no date (source – Nic Haygarth).

Magnet tennis club, no date (source –Nic Haygarth (original in the Waratah Museum)).