

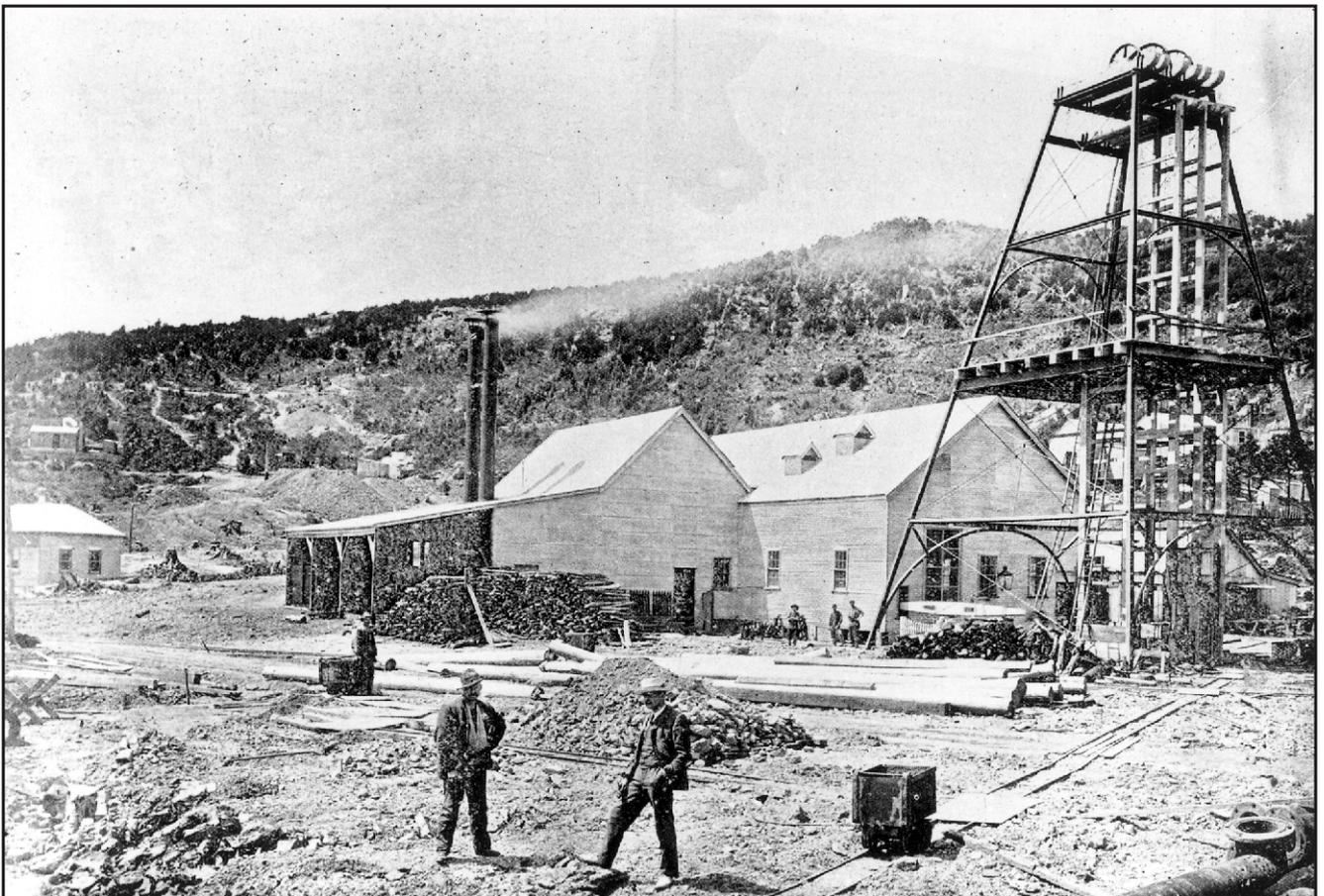


MINERAL RESOURCES TASMANIA

**Archaeological Survey Report  
1999/01**

**An archaeological survey  
of the historic Zeehan  
Queen Hill mine workings**

*By Parry Kostoglou*



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# 1.0 INTRODUCTION

## 1.1 Job brief

An acid mine drainage (AMD) remediation works programme for the Queen Hill vicinity near Zeehan has been proposed for the period 1999/2000, as a means of treating contaminated subterranean mine water which continuously discharges into the local water catchment. As the source of such contaminants, the historic Queen Hill mine workings will require modification in order to mitigate some of its more concentrated discharge. This archaeological survey was accordingly commissioned by Mineral Resources of Tasmania in order to record and assess the significance of several mines and their attendant archaeology which comprise part of the Queen Hill mineral field. This survey addressed all the requirements of the brief in recording and assessing the mine related archaeology in the vicinity of the Oonah, Zeehan Queen numbers 3 and 4 and Clarke's lode adits. This survey went beyond the requirements of the brief in further recording several other mines in the Queen Hill area including the northern Queen Extended, Silver Queen number 2, Bradshaw's open cut, and numerous independent adit prospects.

## 1.2 Methodology

An initial reconnaissance of the Queen Hill area was undertaken by the consultant over a two day period between 22–24 June 1998, during which an appraisal of the proposed scale of the remediation works and the number of resident historic workings, obtained. A field work programme was accordingly drawn up and subsequently implemented over a seven day period between 11–17 January 1999. This report tables the results of this field work programme, which located and subsequently recorded all known components of 16 separate mines in the Queen Hill valley. Only one mine deemed to be part of this field called the Junction, was not recorded as it was deemed to occur well north of all proposed components to the AMD remediation works programme.

## 1.3 Constraints

The principal problem in addressing the significance of these mine related sites related to compiling their

respective histories. Historic Mines Department records alluding to various workings in print, often failed to indicate the specific locations of these sites in map or survey form. Therefore, many historic descriptions could not be confidently attributed to contemporary remains. Additional research time to begin to peruse such non government sources as the *Zeehan and Dundas Herald* might have assisted in clarifying some of these matters in addition to furnishing further historic photographs of old workings for survey related interpretation.

## 1.4 Significance assessment criteria

The assessment of individual site significance involved the weighting of two main criteria:

- (1) Historic significance
- (2) Archaeological significance.

Historic significance considers a site's age, length of operation and economic importance to the parent mining field/community. Archaeological significance for the purposes of this survey considers a site's physical intactness, the capacity of its features to tell us what occurred at the site, or the presence of rare or unusual technology. Both criteria have then been combined to provide an overall grade or level of significance from one of three thresholds. High, Medium and Low. Application of either of the first two grade's renders the site worthy of some management consideration or protection from future development.

All sites have been weighted or compared to each other. The significance weightings therefore represent a site's perceived importance in relation to other sites within the Queen Hill minescape which were actually visited and surveyed. No attempt has been made to assign individual sites a level of significance in relation to other areas of the Zeehan field or other mining field in Tasmania, as this was not requested in the brief. The statement of significance below relating to the Queen Hill minescape as a collective whole, does however examine this area's significance in a regional and statewide context.

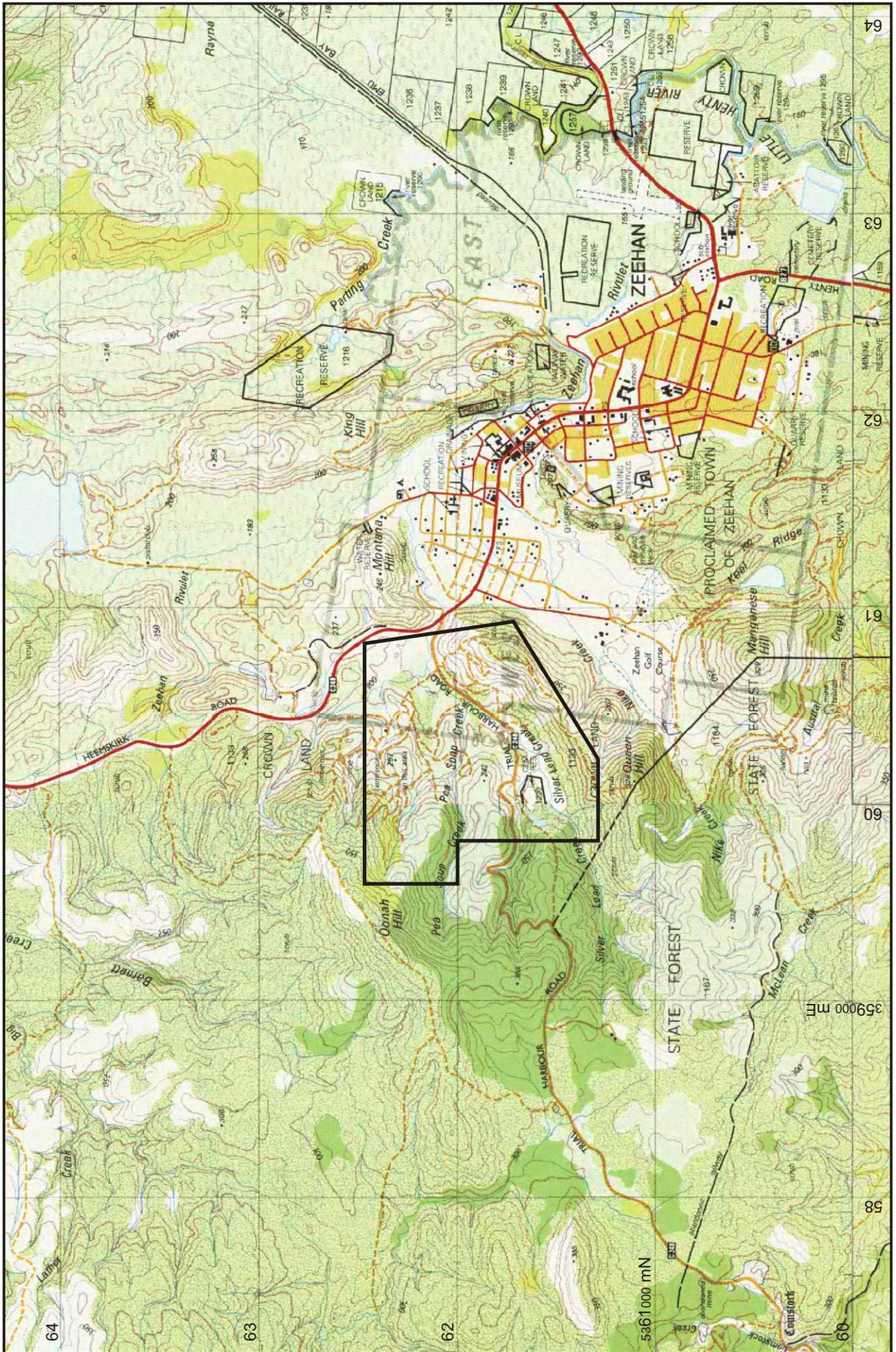


Figure 1. Map showing location and extent of survey area

## 2.0 STATEMENT OF SIGNIFICANCE

The Zeehan mining field is of undoubted national significance in regard to the mining history of this country. As a silver lead deposit, it is rivalled chronologically and technologically only by the Broken Hill mineral field in New South Wales, which was discovered shortly after the Zeehan field. In a Tasmanian context, this mineral field is all the more outstanding, given that between 1887 and 1915, it was all but pre eminent in the mineral economy of the state. That this field gave birth to a major regional township which survived the demise of its parent mines creates a substantial social as well as historical legacy.

The Queen Hill component may likewise be viewed as the premier component in the Zeehan field given that it contains the most substantial and largest producing mines such as the Zeehan Montana and Silver Queen workings. Many of the resident workings at Queen Hill have been damaged or destroyed over time by natural and man made agencies. However, enough survives to indicate both the scale of operations which once occurred here, and the manner in which they were conducted. It is the enduring capacity of the remains to tell such a story, which above all makes their selective retention worthwhile.

## 3.0 RECOMMENDATIONS

The six proposed acid mine drainage (AMD) remediation strategies proposed by Parr (1998) are discussed below/overleaf in relation to their impacts on the resident archaeology. Another section (3.8) provides a list of all significant sites recorded during this survey. Two final sections (3.9, 3.10) not directly related to the AMD project, provide an outline of potential further archaeological work in the Zeehan mining field in addition to a brief discussion of the area's tourist potential. Figure 2 overleaf shows Parr's proposed strategies in map form.

### 3.1 Capping of large waste rock piles at Zeehan Queen No. 4

These composite mullock dumps from the Silver Queen numbers 3 and 4 shafts and tailings dumps from the Silver Queen concentrating plant are now deemed to be of low significance (see site report numbers 5.3.18, 19 and 20). This is due principally to the great damage wrought upon these waste heaps by the deviation of the Trial Harbour Road and recovery/cartage of mullock for metallurgical retreatment. The capping of these dumps is not deemed to be problematic from an archaeological point of view.

### 3.2 Recontouring of old workings on Queen Hill

More disturbing is the proposal to recontour old workings on the northern slopes of Queen Hill (forming part of Clarke's lode workings) in order to minimize water entry. Several well preserved adit workings in association with their mullock dumps are deemed to be of Medium significance along this hillside, and are therefore deemed to be worthy of protection from development. Collectively these sites further form a unique hillside minescape at the Queen Hill field. More surgical methods of water containment should be discussed before this type of

activity is in any way implemented and these sites damaged.

### 3.3 Construction of SAPS alkalinity ponds and flow diversion works

The construction of four large Successive Alkalinity Producing Systems (SAPS) systems on the flats both sides of the Trial Harbour road appears to potentially impact on only one significant site; the unknown concentrating mill site (Report No. 5.5.28). This concentrating mill is a highly significant site, and as such must not be damaged by the proposed development. It should be noted that flow diversion links between these ponds could potentially impact upon the Oonah tramway embankment by Trial Harbour Road (Report No. 5.1.9) and the mullock dump from Bell's adit (Report No. 5.1.3). As these sites are deemed to be of Medium and High significance respectively, it is recommended that such works be diverted around these significant features.

### 3.4 Construction of settling ponds in Sven's swamp

These flow control settling ponds, proposed for swamp land north of the Trial Harbour/Oonah roads junction, do not appear to potentially impact any significant archaeological sites.

### 3.5 Removal of small waste rock piles in Sven's swamp

This proposal entails the removal of three mullock dumps within the Sven's swamp system on the north side of the Trial Harbour road. Only one of these dumps is deemed to be significant, this being the mullock dump associated with Road tunnel number 6 (Report No. 5.5.32). In conjunction with its parent adit and the adjacent Oonah tramway embankment, this feature forms a well preserved and highly visible

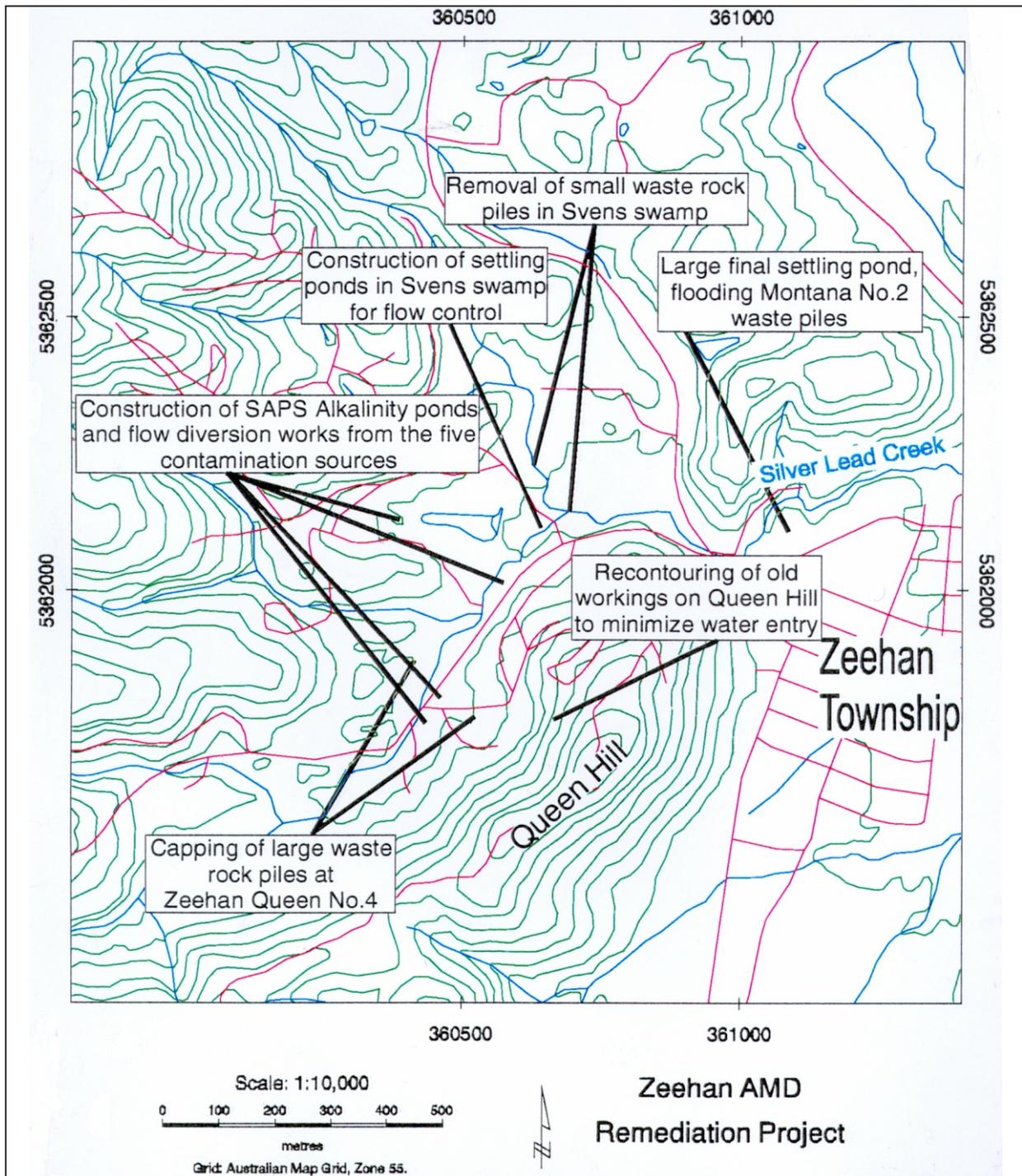


Figure 2  
 Map by Parr (1998) showing type and location of proposed AMD remediation works, Queen Hill area

roadside remnant of mining archaeology. It should therefore be neutralized using some other technique.

### 3.6 Large final settling pond flooding Montana No. 2 waste piles

Although the Zeehan Montana Number 2 mine is highly historically significant, the remaining mullock dumps appear to have been extensively disturbed. Flooding of these features by a settling pond is not deemed to be an issue.

### 3.7 Clay sources and storage locations for relocated waste rock

Although not provided specific locations in Parr's report, the locations where collected mullock will be stored, and clay capping material excavated, will require clarification, as these activities could impact on significant sites. Such clarification will require comparison with archaeological data in this report to avoid such damage.

### **3.8 Significant mining sites in the Queen Hill area**

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The following sites located/recorded during this survey were found to be of Medium to High local significance, and are therefore deemed to be worthy of consideration for protection from present and future developments. Reference should be made to Figure 3 which shows the location and extent of all these sites. A further summary of each site's details is provided in gazetteer form as Table 1.

- 5.1.2 Oonah galena lode workings
- 5.1.3 Bell's adit
- 5.1.4 Oonah stannite workings
- 5.1.7 Oonah concentrating mill
- 5.1.9 Oonah tramway embankments
- 5.2.14 Leatherbarrow's adit (Bradshaw's lode)
- 5.2.15 Bradshaw's mill? and tailings dump
- 5.2.16 Oonah mine dam
- 5.3.18 Silver Queen No. 3 mullock heaps
- 5.3.19 Silver Queen No. 4 shaft
- 5.3.20 Silver Queen concentrating mill
- 5.3.21 Silver Queen Outcrop No. 4 lode workings
- 5.4.25 Silver Queen Extended gossan lode
- 5.5.28 Unknown concentrating mill site
- 5.5.31 Dunn's tunnel No. 7 adit
- 5.5.32 Road tunnel No. 6 adit
- 5.5.34 Dunkley's No. 1 adit
- 5.5.37 Unknown No. 2 and 3 adits
- 5.5.38 Ward and Fairfield's adit
- 5.5.40 Northern Clarke's lode workings
- 5.5.41 Clarke's lode south adits 1 and 2
- 5.7.45 Zeehan Montana No. 2 slide (roadside adit)

### **3.9 Work on other mining precincts in the greater Zeehan mineral field**

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Other major mine precincts occur in the Zeehan mining field which are of equal potential significance to the Queen Hill north area described in this report. These other mine precincts include:

- The Argent, Florence and Queen Extended mines along the southern slope of Queen Hill;
- The Montana and New Mount Zeehan mines in North Zeehan;
- The Zeehan Western and Big Ben mines north of Zeehan;
- The Balstrup, Silver King, Spray and Manganese Hill mines in south Zeehan;
- The Tasmanian, Colonel North, Austral, Nubeena & Silver Bell mines south of Zeehan;
- The Comstock field.

Only further survey work on all these other fields will ultimately fine tune the significance of all mining sites in the greater Zeehan field and lead to best practice management of the most important ones, while allowing future mining etc. of the lesser workings.

### **3.10 The Queen Hill minescape as a tourism asset**

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Although beyond the scope of this report, the potential of the minescape around Queen Hill to draw visitors to the area cannot be ignored. A very valid cornerstone of the argument to preserve historic sites for posterity involves their visitation by members of the community for recreation and educative purposes. Many of the ruins around Queen Hill retain sufficient integrity to arouse curiosity from local, interstate and foreign visitors, who are visiting the West Coast of Tasmania in ever increasing numbers. Although issues of public safety would require considerable planning and stabilisation works, the potential social and financial rewards are considerable.

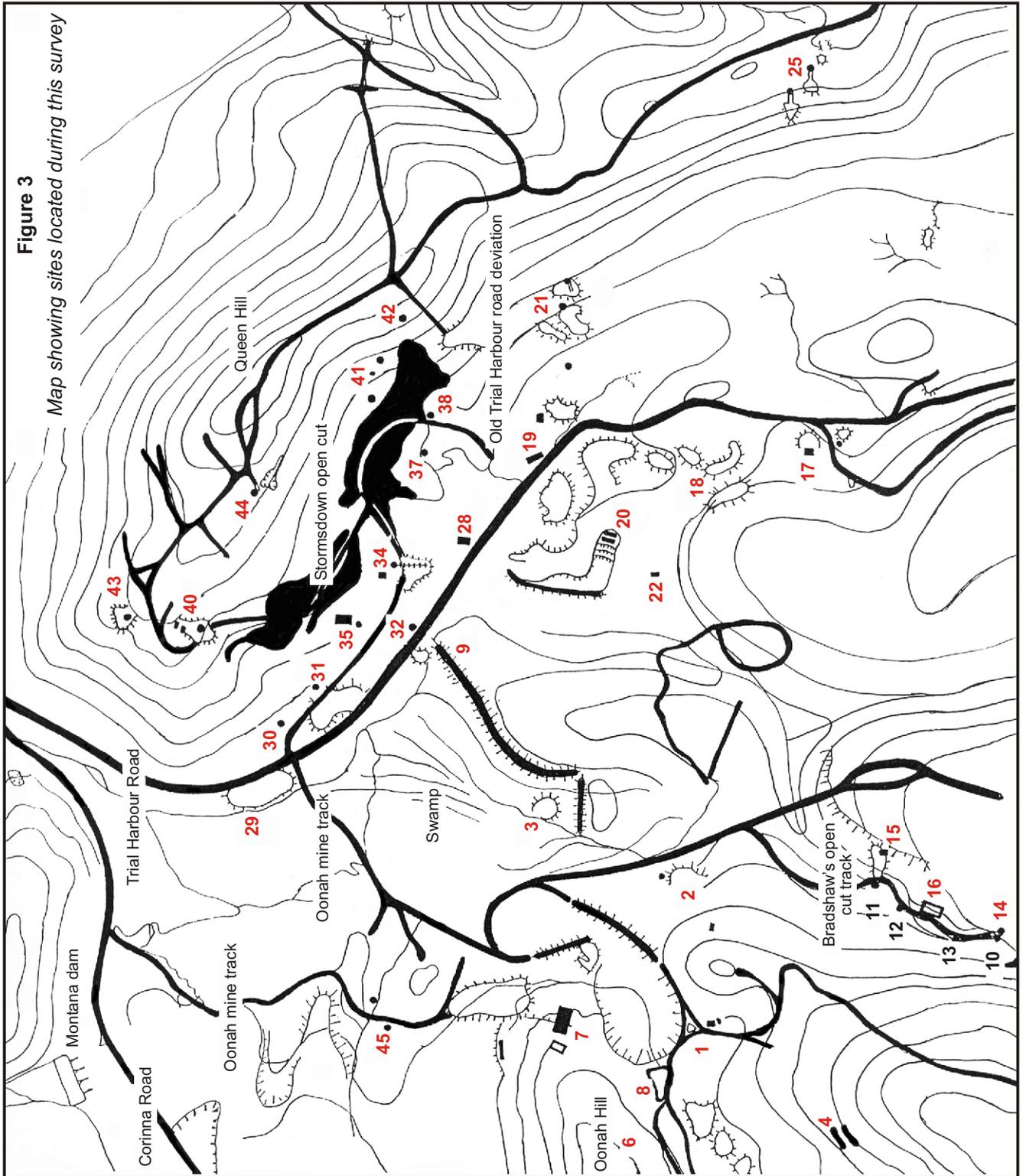
**Table 1. Gazetteer of sites in the Queen Hill area identified by this survey**

<i>Site number</i>	<i>Parent lode</i>	<i>Site name</i>	<i>Surveyed yes/no</i>	<i>Operation dates</i>	<i>Resident features</i>	<i>Significance rating</i>	<i>Recommendations</i>	<i>Features to protect</i>
5.1.1	Oonah lodes	Oonah main shaft	Yes	c1893–1924	Shaft, brick scatters, timber machine pad & mullock dump	Medium	Protect	Northern mullock
5.1.2	Oonah lodes	Oonah galena lode workings	Yes	c1892–1925	Shaft, adit and mullock heap	Medium	Protect	Shaft & adit mullock heap
5.1.3	Oonah lodes	Bell's adit	Yes	c1921–1925	Mullock heap	Medium	Protect	Mullock heap
5.1.4	Oonah lodes	Stannite workings	No	1897–c1925	Shafts and mullock dumps	Unknown	Survey	NA
5.1.5	Oonah lodes	Junction South Hanrahans adit	No	1896–c1909	Shafts and mullock dumps	Unknown	Survey	NA
5.1.6	Oonah lodes	Cassiterite lode	Yes	1910–1911	Unknown	Unknown	Survey	NA
5.1.7	Oonah lodes	Oonah concentrating mill	Yes	1897–1909	Mill footings, building cutting, water tank, tailings	High	Protect	Footings, cutting, water tank
5.1.8	Oonah lodes	Earthen dam	Yes	c1909–1961	Earthen dam	Low	None made	NA
5.1.9	Oonah lodes	Oonah tramway	Yes	1896–1924	4 x earthen embankments	High	Protect	Embankments
5.2.10	Bradshaw's	Bradshaw's open cut (Bruce's tribute)	Yes	1894–1924	Open cut workings	Low	None made	NA
5.2.11	Bradshaw's	Brice's tunnel	Yes	1910–1924	Mullock dump only	Low	None made	NA
5.2.12	Bradshaw's	Bradshaw's tunnel	Yes	1910–1924	Adit only	Low	None made	NA
5.2.13	Bradshaw's	Walshe's adit	Yes	1910–1924	Adit only	Low	None made	NA
5.2.14	Bradshaw's	Leatherbarrow's shaft	Yes	1910–1924	Stope, timber posts and mullock dump	Medium	Protect	Stope, posts & some mullock
5.2.15	Bradshaw's	Bradshaw's mill?	Yes?	1910–1924	Concrete footings, timbers and creek-side tailings dump	Medium	Protect	Mill features and all tailings
5.2.16	Bradshaw's	Oonah mine dam	Yes	c1900–1924	Concrete dam, spillway and reservoir	High	Protect	All dam features
5.3.17	Silver Queen	Silver Queen No. 2 shaft	Yes	c1890–1909	Shaft, flattened mullock and cemetery track adit/ mullock	Low	None made	NA
5.3.18	Silver Queen	Silver Queen No. 3 shaft	Yes	c1893–1910	4 x mullock dumps	Medium	Protect	Mullock dumps
5.3.19	Silver Queen	Silver Queen No. 4 shaft	Yes	c1895–1929	Shaft collar/pump house site	Medium	Protect	Pump house precinct, shaft
5.3.20	Silver Queen	Silver Queen concentrating mill	Yes	c1895–1915	Mill footings, tramway & tailings	High	Protect	Mill footings and tram
5.3.22	Silver Queen	Number 5 lode workings	Yes	c1898–1905	Collapsed adit and trenches	Low	None made	NA

<i>Site number</i>	<i>Parent lode</i>	<i>Site name</i>	<i>Surveyed yes/no</i>	<i>Operation dates</i>	<i>Resident features</i>	<i>Significance rating</i>	<i>Recommendations</i>	<i>Features to protect</i>
5.3.23	Silver Queen	Silver Queen tramway	Yes	1893-1924	No remains	NA	NA	NA
5.4.24	Silver Queen Ext.	Waterwheel lode	No	c1904-1914	Unknown	Unknown	Survey	NA
5.4.25	Silver Queen Ext.	Gossan lode	Yes	c1896-1914	Adit portals, stope & mullock	Medium	Protect	Stope, adits and mullock
5.4.26	Silver Queen Ext.	Fahey's lode	No	c1892-1914	Unknown	Unknown	Survey	NA
5.4.27	Silver Queen Ext.	Silver Queen Ext. tramway	No	1896-c1924	Unknown	Unknown	Survey	NA
5.5.28	Clarke's lode	Unknown concentrating mill site	Yes	c1905-1925	Footings, water tank, embankment	High	Protect	Footings, water tank embankment
5.5.29	Clarke's lode	Unknown tailings dump	Yes	c1895-1910	Tailings dump	Low	NA.	NA
5.5.30	Clarke's lode	Unknown adit	Yes	c1900-1925	Adit drive, mullock dump	Low	NA	NA
5.5.31	Clarke's lode	Dunn's tunnel (No. 7 adit)	Yes	c1900-1938	Adit and mullock dump	Medium	Protect	Adit & mullock
5.5.32	Clarke's lode	Road tunnel (No. 6 adit)	Yes	c1900-1938	Adit and mullock dump	Medium	Protect	Mullock dump
5.5.33	Clarke's lode	Dunkley's No. 2 adit/ open cut	No	c1900-1962	Unknown	Unknown	Survey	NA
5.5.34	Clarke's lode	Dunkley's Number 1 adit	Yes	c1900-1962	Water tank, adit, mullock dump and tramway	High	Protect	Water tank, adit mullock & tram
5.5.35	Clarke's lode	Dunkley's mill	Yes	c1960-1966	Mill remains, adit drive, trench	Low	NA.	NA
5.5.36	Clarke's lode	Clark's Number 4 adit	NA	c1893-1929	NA (destroyed by open cut)	NA	NA.	NA
5.5.37	Clarke's lode	Unknown No. 2 & 3 adits	Yes	c1900-1925	Gated entrance, portal and mullock dump	Medium	Protect	Gate, adit, portal/mullock
5.5.38	Clarke's lode	Ward & Fairfield's No. 1 adit	Yes	c1899-1930	Adit, portal & mullock dump	Medium	Protect	Adit & mullock
5.5.39	Clarke's lode	Stormsdown open cut	Yes	c1937-1970	Hillside benched open cut	Low	NA	NA
5.5.40	Clarke's lode	Northern. Clarke's lode workings	Yes	c1900-1930	Workings on 3 levels and mullock dump	Medium	Protect	All workings and mullock
5.5.41	Clarke's lode	Clarke's lode southern adits 1 & 2	Yes	c1910-1924	2 x adits, stope & mullock	Medium	Protect	2 x adits, stope and mullock
5.5.42	Clarke's lode	Clarke's lode south adit 3	Yes	c1910-1930	Adit portal, incline & mullock	Medium	Protect	Adit portal, incline/mullock
5.6.43	Taylor's lode	Northern Taylor's lode workings	Yes	c1914-1919	Adit drive and mullock dump	Low	NA	NA
5.6.44	Taylor's lode	Southern Taylor's lode workings	Yes	1914-1919	Adit, stope and mullock dump	Low	NA	NA
5.7.45	Montana lode	Zeehan Montana No. 2 slide	Yes	1892-1924	3 x adits and costeans	Medium	Protect	Trackside adit

Figure 3

Map showing sites located during this survey



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- 5.1.1 Oonah main shaft
- 5.1.2 Oonah galena lode workings
- 5.1.3 Bell's adit
- 5.1.6 Oonah cassiterite lode
- 5.1.7 Oonah concentrating mill
- 5.1.8 Earthen dam
- 5.1.9 Oonah tramway
- 5.2.10 Bradshaw's open cut
- 5.2.11 Brice's tunnel
- 5.2.12 Bradshaw's tunnel
- 5.2.13 Walshe's adit
- 5.2.14 Leatherbarrow's shaft
- 5.2.15 Bradshaw's mill?
- 5.2.16 Oonah mine dam
- 5.2.17 Silver Queen No. 2 shaft
- 5.3.18 Silver Queen No. 3 shaft
- 5.3.19 Silver Queen No. 4 shaft
- 5.3.20 Silver Queen concentrating mill
- 5.3.21 Silver Queen Outcrop No. 4 lode workings
- 5.3.22 Silver Queen No. 5 lode workings
- 5.4.25 Gossan lode
- 5.5.28 Unknown concentrating mill
- 5.5.29 Unknown tailings dump
- 5.5.30 Unknown adit
- 5.5.31 Dunn's tunnel (No. 7 adit)
- 5.5.32 Road tunnel (No. 6 adit)
- 5.5.34 Dunkley's No. 1 adit
- 5.5.35 Dunkley's mill
- 5.5.37 Unknown No. 2 and 3 adits
- 5.5.38 Ward and Fairfield's adit
- 5.5.39 Stormsdown open cut
- 5.5.40 Northern Clarke's lode workings
- 5.5.41 Clarke's lode south adits 1 and 2
- 5.5.42 Clarke's lode south adit 3
- 5.6.43 Northern Taylor's lode workings
- 5.6.44 Southern Taylor's lode workings
- 5.7.45 Zeehan Montana No. 2 slide

## 4.0 HISTORICAL OVERVIEW

Various discoveries, most notably the Mount Bischoff tin lode by James 'Philosopher' Smith in 1871, had highlighted the economic potential of Tasmania's west coast geology. As isolation proved this region's paramount obstacle to development, the State Government charged its Survey Department with the responsibility of traversing the area in a systematic fashion, so that private prospecting parties might be furnished with the most reliable intelligence regarding its geography. In 1876, one such party led by surveyor C. P. Sprent, left the mining township of Waratah and after crossing the Pieman River, discovered traces of gold and tin near Mount Heemskirk. This information was precisely what the government had sought, and several privately sponsored prospecting sorties followed shortly in their wake. Only a year later the first leases had been pegged and worked in the Mount Heemskirk vicinity, culminating in the discovery of substantial vein tin deposits in 1879. The ensuing speculative bonanza saw many new companies floated and expensive equipment hurriedly installed, before many miners learned the hard way that the tin at Mount Heemskirk was shallow, scattered and a long way from market. By 1884, insecurity in this field culminated in a major collapse of confidence and the cessation of mining. Many investors of the day might have justifiably wondered if Mount Bischoff wasn't unique after all.

However, during this speculative preoccupation with Mount Heemskirk, another discovery had been quietly made on 8 December 1882 further to the east. A party of four men consisting of Frank Long, James Healy, William Monks and 'Comet' Johnston, had found a silver lead ore body near an unprepossessing rivulet called Peasoup Creek. During their encampment there, Long pegged an 80 acre lease for his syndicate known as the Arthur and Long Plains Prospecting Association, while Healy pegged a neighbouring 80 acre parcel for his own concern titled the Despatch Company. Other leases were also pegged by Johnston while the other three returned hurriedly to Launceston. Their discoveries were duly validated, but flushed with success, the prospectors demanded prices for their leases deemed larcenous by the most avaricious of Melbourne mining companies. The discovery of a similar silver lead lode at Broken Hill in New South Wales saw investment interest in the Tasmanian discovery plummet. A coincidental fall in silver prices however, saw the values of the mining leases fall also, and only twelve months after the initial claims had been registered, barely three leases remained valid. In his final report for that year, the Secretary of Mines bemoaned that:

*The Silver-Lead claims near Mt Zeehan have remained dormant during the year; and I have not been able to ascertain the fate of the 16 cwt. of ore obtained from the Colony for assay last year (Secretary of Mines Report, 1885).*

Just over a year later a new prospecting party led by G. Bell discovered another silver lead lode nearby in Queen Creek, and the public's passion for west coast geology, was re-ignited. The formation of the Silver Queen Prospecting Association to exploit the new find made by Bell and Co. was followed by a deluge of new enterprises with listed interests in the new mining field since dubbed Zeehan. In contrast to his previous gloom-laden report to Parliament, the Secretary of Mines in 1888 trumpeted that:

*At Mount Zeehan alone no less than 24,000 acres have been applied for for silver mining; the deposit of metal is described as practically unlimited, and the assays as exceptionally rich. In the absence of roads through the dense wild forests of our western country, but little has yet been done to open up this field; but if one tithe of what is said of it be true – and there is no reason to doubt it – ere many months elapse a scene of life and activity will arise that will revolutionise that portion of the Colony. A company is now being formed for the purpose of constructing a railway from Mount Zeehan to the seaport at Strahan, a distance of some thirty miles. (Secretary of Mines Report for 1887–1888).*

Unfortunately the optimism engendered by good press and speculation, denied several fundamental realities not lost on some more sober minded public servants.

*The slow progress made at most of the mines has been severely animadverted upon, and I must say, on very good grounds; for, as it has been officially announced that some twenty-five thousand acres of mineral land have been applied for and probably surveyed, the number of miners in actual work or employed as caretakers did not, on my late visit, exceed 70 men – rather less. It appears, however, that most of these parties have not yet got their leases; others who have them, have twelve months allowed under the Act before starting actual work: still, remembering the time since which this land was pegged out, there must be a considerable number of lease holders who do not observe the labour covenants. Now this appears to be very detrimental to the best prospects of the field in and outside the Colony, and is solely due to the greediness of individuals or companies in taking up lands I am perfectly certain they will never be able even to develop or work on the scale requisite for obtaining profits etc. (Thureau, 1888, page 6).*

In addition to avarice, the miners were blithely ignoring periodic torrential rain which could become catastrophic once exploratory workings became established deep lead mines. The transport problem was also proving a persistent bugbear to development, as the cost of moving equipment by ship to Trial Harbour and then moving it to Zeehan overland was exceeding 8 pounds a ton. The more astute mine owners were seeking to cut these costs by awaiting the completion of the railway from Strahan, thus

compelling many promising operations to remain idle. Other follies were also threatening the field's long term viability. For example, good tonnages of clean ore were being bagged and sent to market, fostering the illusion that the Zeehan mines would not require concentrating mills to treat second class ore at this time being discreetly stockpiled or discarded altogether. Even those mine managers who were competent enough to realise the necessity of such mechanisation, were working in the main for companies with insufficient cash flows to purchase such necessities. Privately those seeking to foster a long term viability in the field must have wished for a downturn of sufficient magnitude to liquidate all but the most reputable of lease holders. On 3 August 1891, their prayers were answered when the Bank of Van Diemen's Land crashed, and 27 mines at Zeehan closed down their operations overnight.

Only a handful of mines remained in operation long enough to load their product onto the ore wagons dispatched along the newly completed Strahan-Zeehan railway line on 25 April 1892. With freight prices now slashed, investment returned to the field and mine productivity at Zeehan soared. In 1893, ore production totalling 14,000 tons effectively doubled the previous years tonnage. This in turn led the major mines to invest in the concentrating mills required to better refine their ore. Four concentrating mills and two smelters were hurriedly erected to treat the Zeehan ore locally, and thereby frustrate the monopoly currently held by offshore entities such as the Queensland Smelting company and the Hamburg Metal Company. Although the mills performed efficiently, the smelters soon failed as they were unable to compete in a constant bidding war with the mainland and foreign ore buyers. In 1898, the Tasmanian Smelting Company established another smelter at Zeehan and at first it fared well. Its success in turn encouraged several mines to increase their production, and an upsurge in commodity prices generated a true boom. Zeehan's population swelled accordingly. By 1901, the town boasted 5014 residents, whereas in 1889, it had harbored only 130.

Ore production peaked shortly after, but then it inexorably declined, and along with it, the fortunes of Zeehan. A two year strike between 1905 and 1907 at the Hercules mine near Mount Reid hamstrung operations at the Zeehan smelter, which relied on the former's ore now that production at the Zeehan mines was diminishing. The reason for the decline at the Zeehan field was now becoming only too obvious. The big

mines were now operating below 500 feet and the resident ore lodes were bottoming out. The final chapter of mining at Zeehan would entail a losing race to find new ore bodies. Unfortunately diminishing returns could no longer fund the requisite exploration. Such vital prospecting was increasingly left to tribute miners, who although highly motivated, were financially unable to keep the deep lead mines free of water and systematically sample untapped parts of the field.

In 1914, the State government belatedly sought to save the mining field by undertaking its own prospecting campaign in addition to the outright acquisition of its own mine. Over 4,000 feet of exploratory trenching was dug on most of the now defunct major mines, including the Britannia, North Zeehan, Queen and Oonah workings, while the Argent number 5 mine was re-opened as the State Argent Flat mine. Despite their best efforts, Zeehan's prospects grew worse. The closure of the Montana mine, on 16 May 1914, must have proved to many the futility of prolonging large scale mining there. The Montana had been the deepest and most profitable mine in the field, and it had also been the last to go under. The State-sponsored Argent Flat mine fared little better, and it too had closed by 1917.

Likewise the smelters, Zeehan's only remaining mining infrastructure of any substance, were also in dire straits. Previously forced to close between 1909-1911, the smelters again lay idle soon after war was declared in 1914, its foreign clients effectively cut off by allied embargoes. One final scheme to save the smelters was hatched in 1916 which would allow it to electrolytically treat zinc sulphide ore from the Rosebery mine. However, a merger between the Rosebery mine and the Electrolytic Zinc Company of Australasia saw this treatment removed to Risdon, Hobart. After the end of the First World War, very little was heard of the Zeehan mines again. Some limited tributing in the 1920's saw all workings cease by the end of that decade. Limited prospecting was undertaken at the end of the depression, but even the wartime boom during the early 1940's did not yield any new ore lodes. In 1948, the Zeehan smelters unceremoniously closed down for the final time, and the last active mining was undertaken in the 1960's. Prospecting in subsequent decades using new technology has been no more successful in re-establishing Zeehan as a mining centre, and its glories for the moment, remain firmly in its past.

## 5.0 SITE REPORTS

The various sites located and recorded during this survey have been separated into five sections corresponding to the five principal mineral lodes which occur beneath the Queen Hill north vicinity. Figure 3 shows the locations of all sites located and recorded during field work.

### 5.1 THE OONAH LODES

The workings comprising the Oonah mining lease actually tapped a number of related, though geologically separate, mineral lodes. The two most economically valuable were the stannite and galena lodes in the vicinity of the main shaft workings. A cassiterite lode discovered on the west side of Oonah Hill proved unviable, while the copper lode attributed to Bradshaw, is described separately.

#### 5.1.1 Oonah Main Shaft

##### LOCATION

This site was historically situated in the north eastern corner of lease number 1110/87M. Today the former main shaft is best accessed by means of a track which commences at the north western corner of the main mullock pit at the Oonah site (see fig. 3). From this corner, the shaft lies only 30 or so metres up the track.

##### HISTORY

These two adjacent leases, which would become the Oonah workings, were originally pegged in 1888, and listed on Crown surveys as the leasehold property of a Mr F. R. Evans<sup>(1)</sup>. Another source suggests that Mr Evans shared these assets with up to eight partners, including Messrs. C. H. Curtain, and a Mr. James Adams<sup>(2)</sup>. Between 1888 and 1889, a long surface trench and a 200 foot long adit were excavated near the boundary of the neighbouring Junction mine lease, and some high grade ore here encouraged further investment. In the closing months of 1890, these gentlemen divested the two leases which were then taken up by a newly formed company called the Oonah Silver Mining Company No Liability. This company was floated with a capital of 25,000 pounds in 100,000 shares of 4 shillings each. This company invested heavily in tunnelling and crosscutting from a newly established main shaft near the northern end of the lease, but failed to find any encouraging lode. When the Van Diemens Land Bank collapsed in August 1891, and the State of Tasmania found itself in a spiralling depression, the Oonah management balked at further investment, and leased the entire workings to the tributors Messrs. Wensley and McKay by 1892.

The mine's fortunes quickly lifted. During his 1893 visit to the Zeehan workings, geologist Montgomery noted that: A tribute party who took this mine have been lucky enough to find a very rich lode containing

rich oxidised ore in its upper portions, and good galena lower down...The mine promises to be a very good one, the main lode being strong and rich<sup>(3)</sup>. Unknowingly, the Oonah management had quit mining prematurely in 1892, being barely 13 paltry feet short of a prime patch of gossan ore. The tributors reaped a major reward, and the ore was sold for as much as 80 pounds per ton.

In 1894, the tributors lease had terminated, and the Oonah management returned to work their mine. When he also returned to inspect the mine in 1895, geologist Montgomery noted that:

*Up till near the end of 1894, the mine was worked by a tribute party with great success, a large amount of rich ore being obtained. The Oonah Company has now resumed possession, and are sinking the main shaft and preparing to open up the lode below the tributors workings, which have been pretty thoroughly cleaned out<sup>(4)</sup>.*

Returning yet again in mid 1896, Montgomery found the miners frantically chasing a lode which rose towards the southern boundary of the adjacent and rival Junction mine workings. They had also dug the lowest level number 4, to a depth of 260 feet below the mouth of the main shaft. In October that year, one source claims that the Oonah Silver Mining Co. acquired the adjacent Junction lease and lost no time in extending work on this lode over the old lease boundary<sup>(5)</sup>. Another source suggests that this takeover did not occur until 1901<sup>(6)</sup>, although research for the purposes of this survey would tend to substantiate the earlier takeover date.

In 1898, the Oonah management installed their own milling and concentrating plant (see site report No. 5.1.7). In 1899, the Oonah management let a contract to sink the main shaft a further 100 feet, which would make it 425 feet deep in total.

In 1900, the latest government geologist Mr Twelvetrees visited the Oonah workings and was guided by the current mine manager, a Mr Con Hy Curtain. Twelvetrees was informed that the mine had now fallen on hard times. Although the main shaft had reached a depth of 425 feet subsequent to completion of the contracted extension, and was now the second deepest at the Zeehan field, the bottom workings had proven a great disappointment. Even so, the company still employed 50 hands and 36 tributors at the workings. Twelvetrees also mentions that the company had opened up other surface workings on this property to intersect the main lode elsewhere (i.e. Allison's tunnel, Curtain's Winze). After departing the field, Twelvetrees would summarise the Oonah's plight accordingly.

*Though the work, on the whole, has had somewhat disappointing results, and the outlook, as things are going on now, is none too encouraging, it was quite evident to me that the Oonah has the makings of a good*

*mine: but it requires adequate capital and a more enterprising policy*<sup>(7)</sup>.

In 1901, the main shaft was closed by the Oonah management, as the upper levels were now devoid of galena ore and the lower galleries lacked any trace at all, suggesting that like several other Zeehan mines, the Oonah too possessed a shallow ore body. The company called tenders for expressions of interest in working the main shaft, but none came forward while the resident mine water continued to rise. Despite this partial flooding after closure, a party of tributers led by Mr. A. Hanrahan successfully worked stannite-rich pockets above the water table between 1902-1905, when these upper levels were also exhausted.

The mine remained idle for at least a year until c.1907 when a British company accepted an option on the mine and commenced work after dewatering it. A new company called the Oonah Mines Limited was also formed at this time by the British parent. This new operation concentrated on identifying the stannite lode in the previously flooded levels of the mine (4, 5, and 6). Metallurgical testing proved the viability of the lode contingent on the construction of a modified smelting plant, which was erected in south Zeehan.

In their 1910 inspection of the Oonah workings and new smelter, geologists Twelvetrees and Ward were told that the main shaft had reached a depth of 450 feet, and plans were being made to extend the depth of the shaft to 600 feet. The estimated galena lode reserve for the main shaft was further said to be in the vicinity of 17-18,000 tons<sup>(8)</sup>. Later that year the closure of most of the Zeehan mines by their British owners led to the departure of the bulk of the work force. The newly rejuvenated Oonah main shaft workings also proved a casualty of this act.

A year later in 1911, the Oonah leases were acquired by Mr A. E. Bruce, and for a decade or so tribute parties mined large quantities of pyritic and silver lead ore. By 1924 this activity had also declined and the main shaft was closed for the final time. In 1937, the largest lease containing the main shaft was re-pegged by a Mr A. D. Sligo. It was resold to a number of concerns until its final forfeiture in 1954<sup>(9)</sup>. Exploration activities including 7000 feet of bulldozing and 4045 feet of diamond drilling was last undertaken on the former Oonah lease by Apollo International Minerals NL in 1969<sup>(10)</sup>.

## DESCRIPTION

The main shaft precinct consists of the main shaft itself, several brick scatters and a timber machine pad. The large mullock dump from this mine is situated 30 m east of the shaft precinct. The Oonah mine's adjacent concentrating mill complex and its separate water supply, are described separately overleaf. Appendix plate 1 shows a historic view of the Oonah mine workings. The main shaft's head frame and related structures appear in the top left hand corner.

### *Chimney brick scatters*

At least two sets of orange brick scatters lie on the north side of the track opposite the main shaft. These scatters might be expected to constitute the remains of small domestic chimneys or industrial scale building upright foundations. A historic view of the Oonah workings (see Appendix plate 1), shows a pair of substantial corrugated iron-clad ore sorting sheds immediately north of the main shaft in the vicinity of these brick scatters.

### *Main shaft*

Located just south of the track in a crater some 30 m west of the main mullock pit, is what appears to be the only remains of the former Oonah main shaft. This consists of a pair of perpendicular offset logs forming an L shape, which may have comprised part of the shaft collar. These two timbers measure four metres each in length.

### *Timber machinery footing*

Located ten metres southwest of this main shaft are the remains of a timber machinery footing. This feature consists of three logs joined in a U shape formation, with at least eight rusted metal bolts and spikes attached to their upper surfaces. Measuring 5 3 m in extent, this feature is slightly off line to the main shaft, but still could have readily been used as a base to support a shaft winch.

### *Main pump house building scatter*

Situated immediately south of the timber machinery footing described above is a 15 30 m composite scatter of machine-made and sand stock bricks. This is obviously the remains of a substantial chimney or other structure, long since demolished by exploration/salvage activities after the mine's closure. Unfortunately the historic plate showing the main shaft area does not clearly indicate any structure immediately southwest of the head frame. It is likely that a pump house, servicing the underground workings, stood in this vicinity. Appendix plate 7 shows a contemporary view of this brick scatter.

### *Mullock dump*

Mullock from the Oonah main shaft was carted 30 m to the east where it was tipped over the side of the embankment into a gully. This gully was partially filled with mine waste rock, leaving an artificial valley measuring 150 90 5 m in height. Appendix plates 1 and 8 show both historic and contemporary views of this feature.

## SIGNIFICANCE/RECOMMENDATIONS

Although the Oonah shaft was one of the four principal mines at the Zeehan silver lead field and therefore historically significant, damage sustained from prospecting and salvage activities has lowered its archaeological value. All vestiges of other structures known from historic photographs to have stood beside the shaft, apart from those cited above, have been

completely destroyed, including the ore bins, power house and managers cottage. The upper mullock dump area between the main shaft and concentrating mill (described subsequently) should be left intact as it remains unaltered since the mine's abandonment. The site is therefore deemed to be of Medium overall significance.

## REFERENCES

1. Discontinued Mineral lease chart, August 1888 (Held by MRT).
2. *Cyclopedia of Tasmania*, 1900, page 493.
3. Montgomery, 1893a, page 8.
4. Montgomery, 1895, page xliii.
5. *Cyclopedia of Tasmania*, 1900, page 493.
6. Blissett, 1962, page 144.
7. Twelvetrees, 1900, page 21.
8. Twelvetrees and Ward, 1910, pages 128-129.
9. Blissett, 1962, page 144.
10. Cominco Exploration Pty Ltd chart, November 1971. (Held by MRT – TCR 71-0807).

### 5.1.2 Oonah main lode south (Galena lode) workings

#### LOCATION

These workings are located 100 m due south of the Oonah main shaft beside a track linking the Oonah main shaft/mill site to Bradshaw's copper workings (see fig. 3).

#### HISTORY

These workings were established to access the main galena lode further south of the Oonah main shaft during the early 1890's. Subsequent to his 1893 visit to the Zeehan workings, Government geologist Montgomery noted that:

*A tribute party who took this mine have been lucky enough to find a very rich lode containing rich oxidised ore in its upper portions, and good galena lower down; they have also found another small lode of pure high grade galena<sup>(1)</sup>.*

In 1900, Montgomery's successor, W. H. Twelvetrees visited these workings and noted:

*In the south workings on the main lode there is some rich gossan, with silver chloride and native silver. This is being stopped. Some of it has assayed up to 420 ozs, silver<sup>(2)</sup>.*

These workings were presumably re-prospected and periodically expanded until all tributing operations were suspended by c.1913.

#### DESCRIPTION

There are possibly two separate workings at this site.

- (1) The galena lode workings, and
- (2) Bell's adit. This site consists of a vertical shaft, mullock dump and intact adit.

The northernmost feature on site is a hill-side shaft and attendant 12 1.5 2 m deep trench. This trench commences in the northern vicinity of a 45 30 m wide mullock dump, which is the principal feature at this site (see Appendix plate 9).

An adit 40 m south east of this mullock dump on the edge of swamp land is most readily located by its characteristic acid mine drainage slick, which is seeping from the adit entrance (see Appendix plates 10 and 11). This adit may in fact be Bell's adit, which operated between c.1920-1922. A mullock dump attributed to the Bell operation is described in the next site report. It is possible, although unusual, that the mullock from this adit was carted 130 m for unknown reasons, to the dump site subsequently described.

## SIGNIFICANCE/RECOMMENDATIONS

This site is historically significant as a major find at the Oonah workings. It is also well preserved and therefore archaeologically significant. It is considered to be of Medium significance and should be protected from future impact. Some attempt at revegetating the mullock dump has been undertaken using staked seedlings. This is quite acceptable.

## REFERENCES

1. Montgomery, 1893a, page 8.
2. Twelvetrees, 1900, page 19.

### 5.1.3 Bell's adit mullock dump

#### LOCATION

This site is situated on the edge of swamp land between the Trial Harbour Road and the Oonah main shaft/mill precinct. Access is via the old Oonah tramway embankment leading from the north side of the Trial Harbour road (see fig. 3).

#### HISTORY

In the Secretary for Mines annual report for 1921, there is a reference to small scale mining activities on the Oonah mine lease undertaken by the Bell Brothers. More specifically it stated:

*Bell Bros., in driving and rising on the formation, cut the previous year, have won some nice ore during the latter portion of this year, and the prospects are encouraging<sup>(1)</sup>.*

Ominously, the Secretary's report for the next year (1923) read:

*Bell Brothers have continued working their tribute, and for a time were doing very well<sup>(2)</sup>.*

There are no known subsequent references to this operation, and it is likely that the Bell Brothers had sought new mining prospects elsewhere by 1925.

#### DESCRIPTION

This site consists of a well defined finger-shaped mullock dump and adjacent earthen wall. The mullock

dump measures 40 25 3 m in height, and retains its well defined finger shape (see Appendix plate 12). It should be noted that the actual adit responsible for the resident mullock here is possibly the one located beside the galena lode workings dump described on the previous page. The adjacent earthen wall, measuring 55 5 3 m in height, remains something of a mystery. Although it resembles closely the nearby earthen tram embankments built to carry the Oonah mine tramway, it is in the wrong location to do this, given that the tram negotiated a more gradual curve to the west. This feature is therefore most likely a retaining wall for a dam which would have collected water from the resident creek. If such a dam existed, it would have serviced either Bell's workings or the Galena lode workings to the north west described previously.

## SIGNIFICANCE/RECOMMENDATIONS

Although of limited historical significance, the site's state of preservation recommends it to be of Medium significance. Both the well preserved mullock fan and the adjacent embankment should therefore be protected from future threats.

## REFERENCES

1. Report of the Secretary for Mines for year ending December 31, 1921, page 14.
2. Report of the Secretary for Mines for year ending December 31, 1922, page 16.

### 5.1.4 Stannite workings

#### LOCATION

This mining operation was historically located in the southern portion of lease number 819-87M. More specifically, the principal stannite lode outcrop is situated 230 m northwest of the Oonah main shaft (see fig. 3).

#### HISTORY

The lease containing these workings had originally been held by the Junction Silver Mining Company NL as of 1888. This company sold out to the Oonah Silver Mining Company in August 1896<sup>(1)</sup>. In 1897, a stannite lode was discovered on the former Junction property which not only bolstered the Oonah mine's flagging reputation, but would subsequently prove a boon in later years when the traditional galena reserves at the Oonah mine would become exhausted. The lode was first described in detail by Government geologist Twelvetrees in 1900. During his inspection, he noted:

*The stannite lode, which came to the front at the end of 1897, besides being a mineralogical curiosity, is a valuable asset of the mine; in fact, it is not too much to say that it has, practically, saved the company from the ill effects of shallow mining. It was being mined at the time of my visit by two tributes on the south section in*

*two parallel veins. Allison's tunnel crosscut, called the No. 1 lower stannite tunnel, has its entrance in slate...This drive is 115 feet long...<sup>(2)</sup>*

It was also hoped that this stannite lode continued further east, which would allow it to be accessed from the main Oonah shaft No. 3 level workings. Indeed Twelvetrees intimated as much when he stated in the same report that:

*The number 3 level is about to come below the stannite workings, and there is every reason to believe that the veins of this mineral are persistent in depth. The metal has already been struck in the No. 3 workings, and, if the development turns out to be satisfactory, the Oonah mine will get a substantial lift. The lower levels of the mine will enable the stannite lode to be attacked in depth, and it will infallibly be met with at those levels. This is a very encouraging feature of the mine<sup>(3)</sup>.*

In 1901, operations at the main Oonah shaft ceased, although work on the stannite lode from this shaft appeared to be continuing, as the Secretary for Mines report for that year noted that: *From the stannite lode regular parcels of ore are being won<sup>(4)</sup>.*

A year later it was further reported by the same source that 30 men working on the stannite lode had raised 422 tons of ore worth 2964 pounds. The same report also caustically noted that: *From the proceeds of the tribute, the company erroneously, in the opinion of many, paid one or two threepenny dividends<sup>(5)</sup>.* In 1907 it was reported that work had commenced on the erection of a plant to treat large bodies of stannite ore which have been opened up<sup>(6)</sup>. Indeed a new smelting plant was being built at South Zeehan which attempted to process this ore. Unfortunately it proved short lived and after opening in June 1909, had closed by 1911.

In 1910, geologist Twelvetrees was given a more exhaustive tour of the stannite workings by the current mine manager. He was warned that the stannite lode would have to be mined at depth to realise the greatest profits, and that this would be done in conjunction with further work on the galena lode in the Oonah main shaft<sup>(7)</sup>. Grave financial problems plaguing the entire Zeehan field also claimed the Oonah mine by 1915, and only patchy tributing until the early 1920's would have seen its attendant stannite lode mined to any extent. This ore body was last quantified in 1969 by Apollo International Minerals NL, which appears to have dug two test holes<sup>(8)</sup>.

#### DESCRIPTION

Only the southwestern-most edge of the resident mullock dumps were briefly inspected, given that this site is deemed to be well out of the proposed development area for AMD remediation project. A geological survey plan drawn by geologists working for CRA Exploration Pty Ltd in 1981 shows this site as a complex of mullock dumps scattered over a 100 60 m area, which attend at least four mine shafts.

## SIGNIFICANCE/RECOMMENDATIONS

Although the Oonah stannite lode was a major geological boon to the Zeehan field, the extent to which this body was mined from these workings, as opposed to the Oonah main shaft, remains unclassified. This unproven historical significance and the unclarified archaeological level of the site therefore makes a significance assessment impossible without further work. This site should therefore be surveyed in the event of future development.

## REFERENCES

1. *Cyclopedia of Tasmania*, 1900, page 493.
2. Twelvetrees, 1900, page 20.
3. Ibid.
4. Report Secretary for Mines for 1900–1901, page xxxi.
5. Report Secretary for Mines for 1901–1902, page cxv.
6. Report Secretary for Mines for 1907, page 16.
7. Twelvetrees and Ward, 1910, pPages 128–129.
8. Cominco Exploration Pty Ltd chart, November 1971 (Held by MRT – TCR 71-0807).

### 5.1.5 Junction south workings and Hanrahan's adit

#### LOCATION

This site was historically situated in the southeastern portion of mining lease number 819-87M. More specifically, it occurs 120 m due north of the Oonah main shaft on the western side of a track linking the two complexes (see fig. 3).

#### HISTORY

This 80 acre lease was initially acquired in conjunction with another 80 acre parcel by a Mr A. N. Allison in 1888<sup>(1)</sup>. These were both transferred to the Junction Silver Mining Co. NL a year later in 1889. When visiting the Junction property in the early months of 1896, geologist Montgomery noted that although work was at the time confined to the main shaft at the northern end of the lease; a small shaft has also been lately sunk in the south of the section near the Oonah boundary, from which it was intended to crosscut for the Oonah lode<sup>(2)</sup>. This activity was temporarily curtailed when the Junction lease was acquired in October that year by the rival Oonah Silver Mining Company<sup>(3)</sup>.

In c.1903, a tributor named J. Hanrahan had been prospecting between the old Junction main shaft and the old Junction south workings, when he discovered a lode of pyritic ore carrying argentite and pyrargerite (ruby silver) within 40 to 50 feet of the old Junction south workings<sup>(4)</sup>. Mr Hanrahan was duly granted tribute rights to the lode, and commenced work on a gossan tunnel also referred to subsequently as Hanrahan's adit. This was ultimately excavated to a length of 332 feet, in which Mr Hanrahan found a rich shoot of the ruby silver he had sampled during prospecting<sup>(5)</sup>. Work appears to have ceased on this

tribute by c.1909, when the entire lease covering the Junction workings was suspended.

#### DESCRIPTION

Only the southernmost section of this minescape was surveyed, as the bulk of it falls well north of the area proposed for AMD remediation works. This southernmost component comprises a 50 30 4 m high sequence of mullock dumps west of a metal pipe dug into a creek outfall. A walk further northwest yielded much larger mullock dumps for 200 m in that direction. This would further suggest the presence of substantial shafts and other deep lead activities in this vicinity.

## SIGNIFICANCE/RECOMMENDATIONS

The mullock dump which was examined is of Low significance, and no recommendations regarding its future management are made. However, the rest of this field may be of greater significance, and should be surveyed in the event of proposed developments for this area.

## REFERENCES

1. Discontinued mineral lease chart, August 1888 (Held by MRT).
2. Montgomery, 1896, page xxiv.
3. *Cyclopedia of Tasmania*, 1900, page 493.
4. Waller, 1904, page 58.
5. Ibid.

### 5.1.6 Cassiterite lode

#### LOCATION

The short-lived Oonah cassiterite lode workings are situated on the eastern slopes of Oonah Hill 200 m due east of the Junction south workings described above (see fig. 3).

#### HISTORY

In 1910, Government geologist Twelvetrees noted the discovery of cassiterite on the eastern slopes of Oonah Hill adjacent to the Oonah company's main shaft. He wrote:

*An unexpected discovery on the Oonah property has been that of a small lode of cassiterite on the hill east of the gully near the mine. It runs west into the hill, and dips north... This lode is perhaps too small to be workable, but it is interesting as being a unique occurrence of tin oxide on the Zeehan field... <sup>(1)</sup>*

Blissett (1962) claims that: *in 1913, an adit was driven on the lode for 117 feet, revealing up to 2 feet of siliceous gossan and pyrite. A bulk sample of 15 tons assayed only 0.25% tin<sup>(2)</sup>. No further works appear to have been undertaken here.*

#### DESCRIPTION

Given its location well out of the proposed AMD remediation area, this adit was not surveyed.

## SIGNIFICANCE/RECOMMENDATIONS

Due to its apparent lack of exploitation, this site's historical significance is deemed to be low. Its archaeological significance was not assessed, although from the records it would appear to be minor. An overall significance grading cannot be made without clarifying the latter criteria on the ground. This site should be surveyed in the event of future development.

## REFERENCES

1. Twelvetrees and Ward, 1910, page 131.
2. Blissett, 1962, page 145.

### 5.1.7 Oonah concentrating mill

#### LOCATION

This substantial former mill site is situated 60 m due east of the Oonah main shaft on the eastern slope of the Oonah mullock pit (see fig. 3).

#### HISTORY

As the stockpile of secondary ore grew at the Oonah mine, management were compelled to make a decision as to the venue where this would be treated. In his 1896 inspection of the mine, government geologist Montgomery noted:

*The concentration of the second class ore from this mine has now become a matter of consequence, and at the time of my visit it had not been certainly decided what was to be done. The proposal which seemed to me the best was one to make a tramway round by the Junction mine to the Western mill, and have the concentration done there<sup>(1)</sup>.*

The resident Mines Commissioner for the West Coast, Mr Hall then reported to the Secretary of Mines in 1897 that the Oonah and the Montana mines were both erecting concentrators which were expected to be operational in three to four months<sup>(2)</sup>. Presumably, the Oonah concentrating mill was working by c.1898. When geologist Twelvetrees visited the Oonah workings in 1900, he observed that: *The dressing floors are fitted with a Luhrig (concentrating) plant. It is a pity it cannot be kept running continuously<sup>(3)</sup>.* That same year another source noted the construction of a concentrating plant for the Oonah mine which had been further connected to Zeehan by a timber tramway<sup>(4)</sup>. This mine-side concentrating plant appears to have operated continuously until 1901, when the Oonah mine was closed. It remains uncertain if the mill was re-used by the tribute party who re-opened the mine workings between c.1902 and 1905.

In 1907 a British company acquired the rights to the Oonah mine, and finding further extensions to the valuable stannite lode, chose to exploit it as a new company called Oonah Mines Ltd. Metallurgical tests indicated that a modified smelting process was required, and construction was accordingly begun on

a new smelting works south of Zeehan. Given their exclusive interest in the stannite material, it is extremely likely that the old mine-side mill plant was probably abandoned at this time. In 1910 Twelvetrees noted that the Oonah mine's ore was being treated "*in their smelting works at the south end of Zeehan*"<sup>(5)</sup>. The life of the South Zeehan smelter appears to have been short lived, since it closed in late 1910, a victim of a more widespread industrial malaise at the Zeehan field.

#### DESCRIPTION

This site consists of:

- (1) a form concrete water tank;
- (2) a five-tiered sequence of concrete foundations formerly comprising the concentrating mill floor;
- (3) a pair of form concrete tanks adjacent to the lowest mill floor; and
- (4) a large excavated building cavity immediately west of the tiered mill floors.

These four structures have been dug into the southern slope of Oonah Hill in such a way as to allow the resident mill to process the ore downslope or gravitationally. During the mine's operation a tramway would have linked the uppermost tier of the mill with the main shaft workings. Reference should be made to Figure 4, which shows a scaled plan of the mill site. Appendix plate 1 shows an historic view of the mill site.

#### Concrete water tank

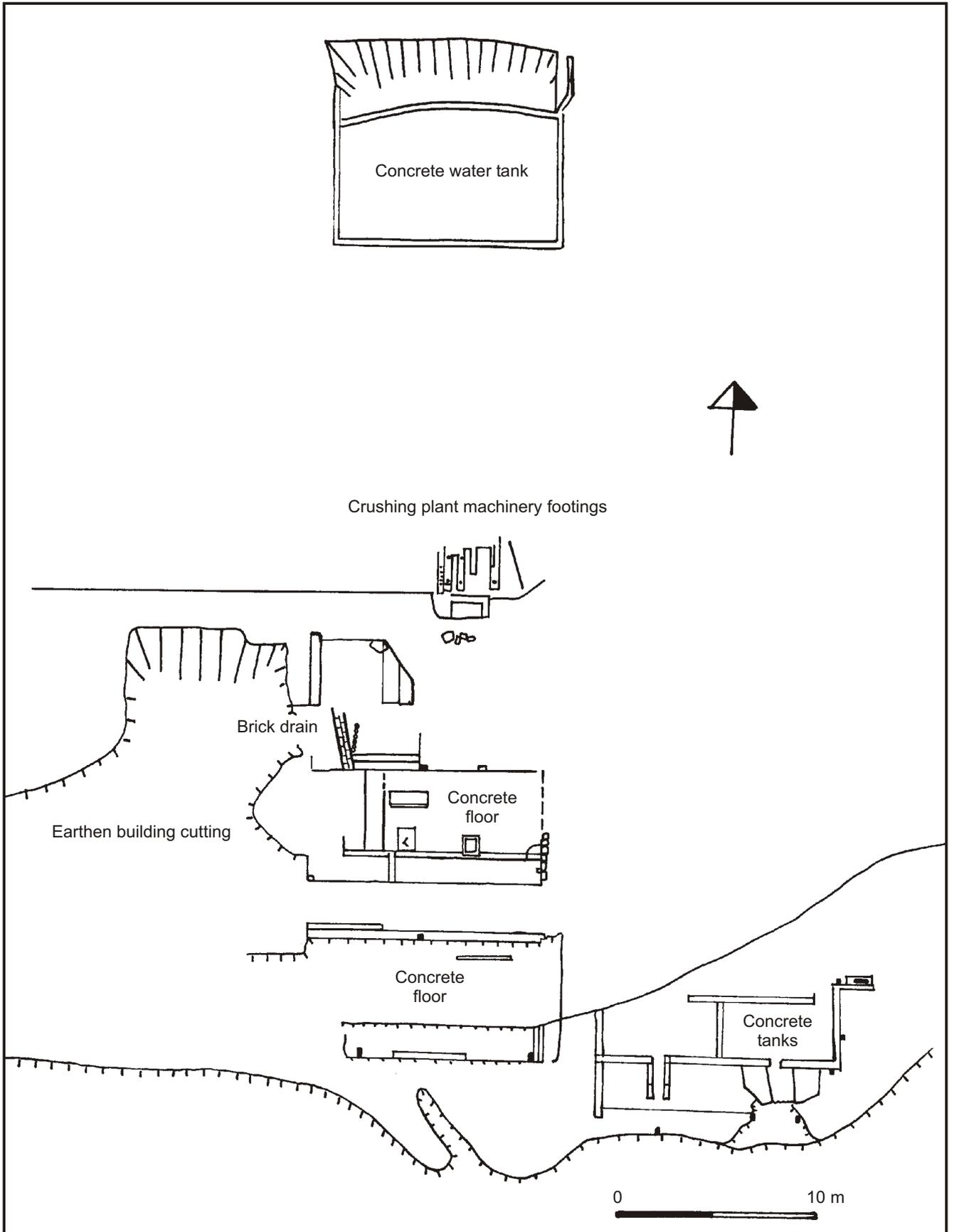
This structure is a form concrete rectangle with two offset wings on its northern/upper side to key the structure into the hill side. The actual rectangle measures 10.5 6.5 2 m in height. The upper main wall has been built using rubble capped and rendered with a concrete skim coat, whereas the lower three walls bearing the weight of the captive water have been built using solid form concrete. The water tank still retains up to half a metre of water, and numerous tea trees are now growing out of the tank floor to a height of 30 m. Appendix plate 15 shows the central dividing wall in this structure.

#### Former ore bins

A set of timber ore bins evident in an historic plate of the mill (Appendix plate 1) formerly stood immediately north of the concentrating mill in order to receive ore offloaded from the tramway. There are now no tangible remains of this feature.

#### Concentrating mill floors

This multi-level configuration of four concrete floors has been built on steps of native rock quarried into the hill side to support the Oonah mine's concentrating mill shed (see Appendix plate 13). The uppermost level consists of a 20 m long concrete retaining wall built to hold back soil slippage from the hillside behind. At the eastern end of this wall is a 3 4 m set of four concrete



**Figure 4**  
*Scaled plan of the Oonah mine concentrating mill*

engine footings and a small concrete vat (see Appendix plate 14). These footings may have supported the power plant for the rock crushing plant which carried out the first process in the ore concentration regime.

The second level below this, measuring 12 6.5 m in extent, contains a three-sided concrete wall opening onto a concrete floor area. A shallow brick trough commencing at the wall bisects the concrete floor. Traditionally, this level would contain secondary crushing equipment such as various types of mills to turn the coarse crushed rock into seconds.

The third level, measuring 12 6 m, contains very few internal features now, although impressions in the concrete indicate where substantial pieces of plant once stood. The southern wall of this section is an impressive 1.5 m in thickness. This level would probably have hosted machinery such as jigs and vanners for converting the middlings into fines.

The fourth and lowest level of the former mill shed, measuring 12 6.5 m, now has a bulldozer-created vehicle track running over it, leaving only the southern retaining wall and a 12 2 m concrete pad intact along its southern edge.

#### *Concrete tanks*

Two bonded 6 4 1.5 m high rectangular form concrete shells stand immediately southeast of the fourth/lowest mill level. Two form concrete buttresses formerly supported the southern wall/s of these tanks, although one has since fallen over.

#### *Excavated building cavity*

A rectangular cutting measuring 16 8 m in extent and up to 3.5 m in height at its northern aspect is situated immediately west of the concentrating mill remains. A historic photo of the mill building (Appendix Plate 1) also shows a narrow roofed structure west of the mill. A tubular metal chimney protruding from this other structure might imply that this building, adjacent to the mill, served as the power house for the milling operation. One or more bedded boilers, a steam engine and dynamo plant would be expected to be housed in such a structure.

#### *Tailings dump*

Waste tailings from the concentrating mill were discarded from each successive level in the mill down chutes to the east of the mill shed. Substantial tailings heaps now occupy this precinct over an area measuring some 100 50 m in extent.

#### SIGNIFICANCE/RECOMMENDATIONS

This is the best preserved mill complex at the Queen Hill mining field, and can still be readily interpreted archaeologically. As such this site is deemed to be Highly significant. It is therefore recommended that all the structural components to this site, excluding the tailings heaps, be protected from any development.

#### REFERENCES

1. Montgomery, 1896, page xxiv.
2. Report of the Secretary for Mines, 1896-97, page 13.
3. Twelvetrees, 1900, page 22.
4. *Cyclopedia of Tasmania*, 1900, page 494.
5. Twelvetrees and Ward, 1910, page 128.

#### 5.1.8 Earthen dam

##### LOCATION

This dam is located beside a track junction 80 m northeast of the Oonah main shaft.

##### HISTORY

The history behind the excavation of this dam remains unknown. Its location would have been perfect for the supply of water to the Oonah concentrating mill, although a historic description of the mill's dam suggests a larger structure such as that described as site number 5.2.16. Therefore, it seems likely that this dam was excavated by machinery between c.1969 and 1981, when the last substantial prospecting activities were undertaken.

##### DESCRIPTION

Situated 100 m northeast of the concentrating mill's hillside water tank is this tear-drop shaped earthen dam measuring 35 25 6 m in depth. The dam is fed by a creek flowing from the northeast, which was regulated through a large diameter cast iron pipe section now lying on the bottom of the dam floor. Appendix plate 16 shows a contemporary view of the dam.

##### SIGNIFICANCE/RECOMMENDATIONS

This earthen feature has low archaeological significance, and a dubious historical pedigree. It is therefore deemed to be of Low significance and no recommendations regarding its future management are made.

#### 5.1.9 Oonah tramway

##### LOCATION

The tramway linking the Oonah main shaft and its mill complex to the Zeehan Tramway Company line ran in an exaggerated S-shaped formation from the north side of the Trial Harbour Road and around a swamp to the southeastern flank of Oonah Hill (see fig. 2).

##### HISTORY

In 1896, the Oonah Silver Mining Company NL laid a 2 foot gauge, 43 chain long tramline connecting their main shaft and concentrating plant to the Zeehan Tramway Company's main line to the southeast<sup>(1)</sup>. This tramline was operational intermittently until the final closure and salvage of the Zeehan Tramway Company line in 1924<sup>(2)</sup>.

## DESCRIPTION

Formerly measuring 900 m to one kilometre in extent, this tramline was thoroughly salvaged at the end of its operational lifespan. A number of substantial earth works relating to the line's right of way still survive.

### *Trial Harbour road embankment*

This embankment is the most accessible section of the former tramway, given that it commences immediately north of the Trial Harbour road (see fig. 3). Approximately 50 m of the embankment is plainly viewable from the road, although another 150 m of earthworks is also evident in the swamp regrowth beyond the timber line. At the 150 m mark, the tramway embankment loses height, and becomes difficult to follow in the *junkus* grass around the perimeter of the resident swamp. The roadside section of the embankment is 3.5 m wide at its base, 1.5 m wide on its summit and approximately two metres in height. These specifications concur with Whitham's (1971) statement that the tramway was a 2 foot narrow gauge line. Appendix plate 17 shows a recent view of this feature.

### *Original line embankment*

The original 1896 tramline meandered in a lazy curve around the southern slope of Oonah hill to the Oonah main shaft. This orientation is plainly evident on an old survey of the Zeehan mine leases completed near the turn of the century (Appendix figure 10), and in an historic photograph of the Oonah mill (Appendix plate 1). The principal surviving remnant of this original orientation is a 50 m long section of two metre high embankment located 50 m due south of the concentrating mill remains. A five metre section of steel rail lies on the top of this embankment. Subsequent prospecting and sampling operations in the mullock pit between the main shaft and the mill have removed all other traces of the tramline beyond this embankment.

### *Spur line embankment*

At the tramway's 450 m mark, a branch line appears to have been built to better access the main shaft and the concentrating mill beyond. Although it is not marked on the c.1900 survey of the Zeehan mining field, the impressive scale of the embankment described here could only have been justified if it was built to carry a tramway rather than horse-drawn traffic. The Oonah mine had likewise closed down before vehicular traffic would have required access.

The surviving embankment commences at the 450 m mark of the main line and deviates northwesterly for approximately 250 m to the southern vicinity of the main shaft. The embankment measures four metres wide at its base and up to three metres in height. A number of dog spikes were found littering the right of way, further implying its function as a tramway foundation.

## SIGNIFICANCE/RECOMMENDATIONS

As the best preserved remnants of mine tramways in the Queen Hill mining field, these earthen embankments are highly significant, and should be protected from all proposed developments.

## REFERENCES

1. Whitham, 1971, page 73.
2. Whitham, 1971, page 78.

## 5.2 BRADSHAW'S COPPER LODGE

This ore body is a discrete lode of pyrite containing various constituent metallic minerals on the western side of the Oonah mineral lease. This lode strikes northeast and measures some 30 feet in width (Blissett, 1962). A number of discrete deep lead mines tapped this lode at various intervals in addition to one substantial open cut operation.

### 5.2.10 Bradshaw's Copper lode (Bruce's Tribute)

## LOCATION

This mine was located on the northwestern side of mineral lease number 1110-87M, which also contained the Oonah main shaft and allied workings. Today, this site is isolated from the rest of the Queen Hill field by vegetative regrowth. It is accessed by an old drill rig track which passes the Oonah galena lode workings (described previously) and heads northwesterly for approximately 400 m to a creek (see fig. 3). The main open cut described below is situated 150 m up this creek.

## HISTORY

Lease number 1110-87M, which ultimately included this set of workings, was acquired in 1888 by the Oonah Silver Mining Company, which shortly established the Oonah main shaft in the northeastern corner of this same lease. Mining in the northwest corner of this lease was commenced in c.1894. In 1895, Government geologist Montgomery inspected a newly discovered copper/pyrites lode, which he duly noted:

*Towards the north western angle of section 1110-87M a big lode of pyrites cut in the side of a creek has been driven along for 70 feet, running a little to the east of north. The lodestar is mostly iron pyrites with a little copper, and as yet there has been no valuable quantity of silver or any other metal found in it; still it is worth prospecting<sup>(1)</sup>.*

This appears to be the humble birth of what would become Bradshaw's/Bruce's workings. In 1900, the next Government geologist, Twelvetrees, visited this enterprise now titled "Bradshaw's copper workings" and noted briefly:

*Nothing is being done at Bradshaw's... but there is room for exploration<sup>(2)</sup>.*

In 1904, Government geologist Waller inspected Bradshaw's workings and described it as a pyrites lode six feet in width which carried a good deal of copper...*The copper is leaching out of the lode, and is being deposited as an encrustation of sulfate of copper on all exposed surfaces.* In addition to this lode, Waller noticed:

*on the footwall, a seam of an earthy looking substance 2 or 3 inches wide, which Mr J. Burden examined under the blowpipe. He found it to be rich in copper and subsequent assays proved that it contains 25 per cent of that metal. This is probably mostly black oxide of copper, and is certainly worth testing. It is not an ore which will be found to live in depth, but there might be very considerable concentrations in the upper levels... and 3 inches would pay to mine<sup>(3)</sup>.*

Waller was shown two drives which had been made on this lode, and he reiterated that there were excellent opportunities to mine this lode cheaply to a depth of 200–300 feet.

Geologist Twelvetrees was the next commentator to visit in 1910, and he noted a new type of operation which he duly described to his masters:

*The pyrite deposit on this section is being exploited for the supply of material for the manufacture of sulphuric acid<sup>(4)</sup>.*

Twelvetrees briefly described four adits and a shaft excavated at various levels into the main pyritic formation here by a number of separate tributors in addition to a substantial open cut on the top of the lode. These operations are described separately below. No cessation date for mining here is given by available sources, however, the nomenclature of the workings sometimes referred to as 'Bruce's Tribute' would suggest that Mr A. E. Bruce, a known tributor on the Oonah lease, worked this site. He is known to have worked on various parts of the Oonah lease between 1911 and 1924. It seems likely that the former Bradshaw workings involved at least some of his time.

## DESCRIPTION

Over a period of time involving several operators, this mine came to consist of an open cut, a shallow shaft and four adits on three levels. Only the open cut and shallow shaft are described here, as the four adits are dealt with separately. This open cut consists of two separate excavations. The smaller and easternmost workings lie immediately east of Leatherbarrow's adit (see site 5.14) and consists of an ovoid pit measuring 20 15 7 m deep.

The principal open cut operation commences immediately west of Leatherbarrow's adit. It consists of a substantial elongated pit running up the slope of a hill side measuring some 110 m in length, 45 m in width and up to six metres in depth. It is oriented at 250°. An adit/stope has been driven in to the summit of the hill at the top of this main pit. Three small ferrous machinery components litter the general vicinity of the open cut. Various views of the open cut and its features appear as Appendix plates 18 to 20.

## SIGNIFICANCE/RECOMMENDATIONS

Although these workings relate to an unusual mining technology (ore recovery for sulphuric acid production), the archaeology at the mine in no way suggests this. The open cut workings here are therefore deemed to be of Low archaeological significance. No recommendations regarding their future management are made.

## REFERENCES

1. Montgomery, 1895, page xliii.
2. Twelvetrees, 1900, page 21.
3. Waller, 1904, pages 59–60.
4. Twelvetrees and Ward, 1910, pages 131–132.

### 5.2.11 Brice's tunnel

## LOCATION

This was the lowest of the four adits which sought to penetrate the resident pyritic formation. It is presumed to occur in the vicinity of a hill-side clearing and steep mullock/scree slope some 120 m northwest of the Oonah dam (see fig. 3).

## HISTORY

Geologist Twelvetrees' 1910 report on the Zeehan mining field described this working:

*Brice's tunnel is an adit driven west for 700 feet in, the tunnel passed through a galena vein, and at 90 feet further a formation was crossed, which has been tested by a short drive north. At 280 feet from the entrance the country changed from tuff into hard slate, and at 50 feet behind the end, the lode formation was met with, and has not been cut through yet...<sup>(1)</sup>.*

This operation was presumably abandoned when the larger open cut operation ended in the mid 1920's. It should be noted here that the Twelvetrees report cited above may have contained a typographical error, and that Mr Brice may have more probably been Mr Bruce, a well known tributor at this site and the nearby Oonah workings.

## DESCRIPTION

The mullock heap proceeds south-westerly down the hillside for some 30 m towards the supposed site of Bradshaw's mill and its characteristic white tailings dump. A five metre long progression of upright timbers protruding through the mullock is the only structural feature at this site. Despite a search of the track-side slope at the top of this mullock heap, no adit portal could be found. Appendix plate 21 shows a view of the mullock and its timbers.

## SIGNIFICANCE/RECOMMENDATIONS

This site's limited lifespan and extent of operation, in conjunction with its modest physical remains, recommend that it is of Low significance. It would however be interesting to clarify the ultimate source of this mullock by locating the adit source.

## REFERENCES

1. Twelvetrees and Ward, 1910, page 132.

### 5.2.12 Bradshaw's tunnel

#### LOCATION

This site is located at a boggy patch on the track to Bradshaw's open cut some 50 m northwest of Brice's tunnel (see fig. 3). The most obvious site marker is the orange coloured acid mine drainage stain emanating from this adit.

#### HISTORY

In his 1910 report Twelvetrees describes this operation as being 60 feet higher than Brice's. More specifically he stated that *Bradshaw's tunnel passes through vesicular spilite to within a few feet of the lode... The lodestuff is being taken out for a width of 25 feet<sup>(1)</sup>*. This operation was presumably abandoned when the larger open cut operation ended in the mid 1920's.

#### DESCRIPTION

The site consists of a 2.5 x 1.2 m wide adit portal and attendant AMD discharge.

#### SIGNIFICANCE/RECOMMENDATIONS

This site's limited period of operation and extent deem it to be of Low significance. No recommendations regarding its future management are made.

#### REFERENCES

1. Twelvetrees and Ward, 1910, page 132.

### 5.2.13 Walshe's adit

#### LOCATION

This site is situated beside a former drill pad at the end of the track from the Oonah galena lode workings (see fig. 3).

#### HISTORY

In his 1910 report on the workings comprising Bruce's Tribute, Government geologist Twelvetrees fleetingly alluded to Walshe's tunnel, which was 60 feet above Bradshaw's. It was described as being situated in the course of the lode<sup>(1)</sup>. This operation was presumably abandoned when the larger open cut operation ended in the mid 1920's.

#### DESCRIPTION

This site consists of a five metre long drive and 2 x 1 m wide adit portal (see Appendix plate 22).

#### SIGNIFICANCE/RECOMMENDATIONS

This site's limited period of operation and extent deem it to be of Low significance. No recommendations regarding its future management are made.

## REFERENCES

1. Twelvetrees and Ward, 1910, page 132.

### 5.2.14 Leatherbarrow's adit

#### LOCATION

This site separates the two pits comprising the open cut workings of Bradshaw's lode described previously (site 5.2.10). It is located beside a creek flowing approximately 100 m easterly down to the drill pad/Walshe's adit (site 5.2.13).

#### HISTORY

In his 1910 report on the workings comprising Bruce's Tribute, Government geologist Twelvetrees fleetingly alluded to Leatherbarrow's tunnel, which was 60 feet above Walshe's. It was likewise described as being situated in the course of the lode<sup>(1)</sup>.

#### DESCRIPTION

This site consists of a 2 x 2 m stope and the remains of five 1.5 m high timber posts. Only three of these remain upright. All of these posts have numerous rusted bolts inserted into them to anchor cables/couplings. The stope is surrounded by small mullock dumps. Appendix plate 23 shows a view of the stope's surface timbering.

#### SIGNIFICANCE/RECOMMENDATIONS

Although of low historical significance, this site is the most archaeologically significant of the four adits associated with Bradshaw's lode, retaining its intact surface timbering. The site is deemed to be of Medium significance and should therefore be protected from future impacts.

#### REFERENCES

1. Twelvetrees and Ward, 1910, page 132.

### 5.2.15 Bradshaw's pyrites mill

#### LOCATION

The site deemed to most likely have hosted this milling complex is situated 200 m due west of the Oonah galena lode workings. It occurs mid-way up a slope covered in fine tailings, and is best accessed from the drill rig track leading to Bradshaw's lode workings (see fig. 3).

#### HISTORY

While describing Bradshaw's mining operation in 1904, Government geologist Waller gave two alternative treatment techniques for the ore won from these workings.

*It is too poor to export, and the lode is not big enough to warrant the erection of smelters. Is there then, any other method by which such ore could be profitably treated? There are I think, two possible processes, one or other of which might be applicable. They are the processes of*

*natural and artificial cementation, as employed at Rio Tinto in Spain and elsewhere. The success of natural cementation depends principally upon the rapidity with which the pyrites oxidises in the air, different samples of pyrites differing very greatly in this respect. The ore is crushed in an ordinary jaw crusher and spread out on floors in the open air in heaps varying from 15 to 40 feet in thickness. In Spain the rainfall is small, and the heaps have to be sprinkled artificially with water at intervals. In Zeehan this could probably be dispensed with during a large part of the year, the natural rainfall being sufficient. The drainage from the heaps is led into precipitating launders, in which is placed a quantity of scrap iron, which precipitates the copper in the metallic state. The precipitate usually contains about 66 per cent of metallic copper and is readily saleable. The process occupies from six months to three years to complete according as the pyrites weathers quickly or slowly. It would not cost much to make an experiment with a few hundred tons of the ore from Bradshaw's lode. The precipitating launders are very simply constructed, and may be seen in operation at the Mount Lyell Mine, where the copper contained in the mine water is saved by this process.*

*I think it is probable, however, that artificial cementation would be more likely to succeed in the case of the Oonah ore. In this process the ore is roasted in heaps before leaching, either with or without the addition of salt. The leaching and precipitation is carried on in the same way as described above. This heap roasting is a very simple and cheap process. No fuel need be used except in starting, as the burning sulphur of the pyrites is sufficient to supply all the heat required<sup>(1)</sup>.*

In his 1910 report, geologist Twelvetrees alluded briefly to the actual milling process used to treat the output from the open cut and related adits described previously. He stated that:

*The whole of the output has to pass through the mill, as there are numerous bands of country rock in the pyritic formation; even in the solid pyrite a certain amount of clay is always in associate. Despite the obvious difficulties of mining and concentrating, over 100 tons of pyrites a week are sent away from this mine<sup>(2)</sup>.*

The closure of mining at Bradshaw's open cut by c.1924 would have also seen an end to operations at this mill site.

## DESCRIPTION

This site consists of a possible milling site and extensive surrounding tailings dump. The location of the mill which treated the ore from Bradshaw's workings remains in some doubt. It must surely be located in the vicinity of the 130 m long deposit of fine white tailings which occurs along the western bank of the creek flowing southeast from Bradshaw's workings (appendix plate 24). These characteristic fine black/white tailings are most likely a residue from the pyrites milling activity at Bradshaw's. Unfortunately a search of the upper west bank where the tailings appear to be emanating from yielded no mill site. The

only structural site located in the vicinity of the tailings was some sort of machinery site built in the midst of these tailings 30 m north of the creek. This site sits on a tailings mound measuring 40 x 25 m in dimension and consists of five modest features. A one metre long concrete slab with two metal bolts protruding from it is the principal structural feature. Immediately east of this slab is a progression of timber sleepers at one metre intervals. Similar sleepers occur on the summit of these fine tailings further south. Two pieces of broken ceramic water pipe lie between the concrete slab/sleepers and an earthen bench/timber landing. A sequence of eight timber posts occurs immediately north of the landing.

## SIGNIFICANCE/RECOMMENDATIONS

As a well preserved residue of an unusual technological process (production of pyrites for sulphuric acid), the resident tailings are archaeologically/technologically significant. The possible mill site is also deemed to be significant. Collectively this site is deemed to be of Medium significance and should be protected from future development.

## REFERENCES

1. Waller, 1904, pages 59–60.
2. Twelvetrees and Ward, 1910, page 132.

### 5.2.16 Oonah mine dam?

#### LOCATION

This substantial dam site is located in the creek on the southern side of the drill rig track some 250 m northwest of the Oonah galena lode workings (see fig. 3).

#### HISTORY

The precise identity of this dam remains in some doubt. Geographically, it is closest to Bradshaw's workings, although this operation could have more conveniently tapped water further upstream/closer to its mining/milling plant. The substantial size of this dam would therefore suggest its construction as part of the Oonah mine, on which lease this dam is situated. In regard to the Oonah mine's water supply, one source stated in 1900 that: *A dam has been made, which conserves the water coming through the property, and supplies the concentrating plant. It is capable of holding about 400,000 gallons<sup>(1)</sup>.* This dam is situated 400 m west of the Oonah mill site, which would have necessitated a large scale piping/fluming installation, of which there is now no sign. The Oonah dam would have been utilised until the final closure of the Oonah mine in the mid 1920's.

#### DESCRIPTION

This dam consists of a 32 m long dam wall and spillway separating two excavated rectangular catchments. The dam wall has an earth/rubble core capped with ashlar stone and cement. It has been

breached in the centre. The northern/upstream catchment measures 40 32 m in dimension, and was built to actually store water for use at some mine. The southern excavation is merely an overflow system which has been dug out symmetrically.

## SIGNIFICANCE/RECOMMENDATIONS

This dam site is archaeologically significant as the most substantial and best preserved of its type at the Queen Hill field (the Montana mine dam beside the Corinna Road was outside the survey area). If it is in fact related to the Oonah workings, the dam's historical significance is also high. As such it is deemed to be Highly significant and should be protected from future impacts.

## REFERENCES

1. *Cyclopedia of Tasmania*, 1900, page 494.

## 5.3 SILVER QUEEN LODES

The Silver Queen lease hosted five separate ore lodes; the Queen 2, 3, 4, 5 lodes and Clarke's lode. The latter is dealt with separately in the following section. Blissett (1962) described these lodes as fissure veins up to 4 ft 6 in. wide containing argentiferous galena associated with some sphalerite in a gangue of siderite and pyrite at depth. These lodes tended to strike northwest and north/northeast. Each of the Silver Queen lodes boasted its own deep lead mine (i.e. the No. 4 lode was tapped by the No. 4 shaft).

### 5.3.17 Zeehan Silver Queen Number 2 shaft/workings

#### LOCATION

These workings were located in the northeastern corner of mining lease number 1638M. Today these workings are situated at the junction of the Trial Harbour road and the Zeehan cemetery track (see fig. 3).

#### HISTORY

When Government Geologist Montgomery visited here on 3 October 1890, the Silver Queen Company's original shaft closer to Zeehan (Silver Queen Number 1) was idle due to flooding. Company spirits remained high however, because the floods had:

*... been compensated for by the discovery of a new and very rich lode on Section 1638M. This was first cut on the side of the main road, 2.64 chains from the west and 7 chains from the south boundary of the section, as a mere seam of whitish clay, but on following it, it increased in width and soon showed carbonate of lead rich in silver... I saw several bags from this, consisting mostly of galena crusted with cerussite (the carbonate of lead). It was very pure ore, and, according to the Company's bulk essays, very rich in silver<sup>(1)</sup>.*

Revisiting these workings three years later in 1893, Montgomery noted that the galena and siliceous

ore-rich upper levels of this lode had enabled the company to declare some dividends, which were now being re-invested in extending the underground workings. Montgomery noted that:

*The number 2 shaft is about 170 feet deep, and has two levels opened from it at 115 feet and 155 feet. From No. 1 level to surface the ground has mostly been stoped out for a length of 225 feet. All this ground was very good, the ore being rich galena and siliceous pulverulent matter carrying carbonate and oxide of lead and chloride of silver. At the bottom level the lode was poor, but appeared to be improving a little in both the north and south ends. Here as in No. 1 workings the only policy to pursue is to drive and sink on the lode in the hope of again coming upon good ore<sup>(2)</sup>.*

By 1895, Number 2 shaft had been sunk to a depth of 220 feet, and its considerable ore stockpile made many company personnel reflect as to the best way to treat this ore. As government geologist Montgomery summarised after his 1895 inspection:

*It is becoming a question whether to put a tramway to connect the workings in the neighbourhood of No. 2 shaft with the mill at No. 1, or to shift the dressing-works up to No. 2; a good deal may be said on both sides<sup>(3)</sup>.*

In 1902 all Silver Queen Association assets, including the No. 2 shaft, were sold to the Zeehan (Tasmania) Silver Lead Mines Ltd, which established the Zeehan Queen Company to control all of the Queen Hill related assets. The Secretary for Mines report for 1909 recorded the final closure of the Zeehan Silver Lead Mine Co's Number 2 shaft, which is almost certainly this operation<sup>(4)</sup>.

#### DESCRIPTION

This site consists of two sets of workings on opposite sides of the Trial Harbour road.

##### *Queen number 2 shaft*

The site of the number 2 main shaft is situated 40 m northeast of the junction of the Trial Harbour/cemetery roads. The main shaft is now only five metres deep with a timber collar at this level. A rivetted iron ships water tank lies concealed under ferns in a small gully 20 m to the north of the shaft. The shaft precinct is flanked to the south by a flattened 50 30 m wide mullock dump which is evident from the Trial Harbour road.

##### *Cemetery track workings*

The second set of workings in this area consists of another smaller mullock dump and neighbouring adit immediately west of the Trial Harbour/cemetery roads intersection.

## SIGNIFICANCE/RECOMMENDATIONS

Although a major mine at the Queen Hill field and therefore historically significant, both the main shaft and its attendant mullock dump have been badly damaged by subsequent earthmoving activities. The

site is deemed to be of Low overall significance and no further recommendations regarding the future management of this site can therefore be made.

## REFERENCES

1. Montgomery, 1890, page 27.
2. Montgomery, 1893*b*, page 15.
3. Montgomery, 1895, page xli.
4. Secretary of Mines Report for 1909, page 17.

### 5.3.18 Zeehan Silver Queen Number 3 shaft

#### LOCATION

This site was situated on mining lease number 1638M. Today, the former main shaft and its mullock dumps lie on the north side of the Trial Harbour road 130 m east of the Queen Number 2 shaft (see fig. 3).

#### HISTORY

This shaft was dug to better exploit the number 3 ore lode on the Silver Queen lease. This lode appears to have been discovered by the time of geologist Montgomery's visit to the Zeehan field in 1893. While visiting the previously established Queen Number 2 mine nearby that year, he happened to note that:

*A few chains east of the main shaft another lode running N.15 degrees W. has been cut in some trenches and prospecting holes ... it seems good for a considerable supply of concentrating ore. There are altogether more than twelve known lodges in the Silver Queen Company's property, and several of them very promising ones...<sup>(1)</sup>.*

By 1895 this shaft had reached a depth of 117 feet, and it appeared that this was the bottom level of the ore lode also<sup>(2)</sup>. In 1902 all Silver Queen Association assets including the No. 3 shaft were sold to the Zeehan (Tasmania) Silver Lead Mines Ltd, which established the Zeehan Queen Company to control all of the Queen Hill related assets, including this shaft. Operations here appear to have continued under the new regime because by c.1904, this shafting had reached 200 feet and payable ore was being extracted from numbers 2 and 3 levels<sup>(3)</sup>. When the Zeehan Silver Lead Co. ended its Queen Hill operations by c.1910, the Number 3 shaft appears to have died a quiet death.

#### DESCRIPTION

This site consists of four substantial linear mullock heaps surrounding a backfilled shaft and several minor exploratory pits. The largest mullock heap measures 60 15 3 m in height (see Appendix plates 25 and 26.). The former Number 3 shaft has been filled in.

#### SIGNIFICANCE/RECOMMENDATIONS

These mullock dumps are the best preserved examples of large scale mining residues in the Queen Hill field, because all the other big mine mullock dumps appear to have taken for retreatment. Due to this rarity factor,

these mullock dumps are deemed to be of Medium significance, and should be protected from future development.

## REFERENCES

1. Montgomery, 1893, pages 15-16.
2. Montgomery, 1895, page xl.
3. Waller, 1904, page 62.

### 5.3.19 Zeehan Silver Queen Number 4 shaft

#### LOCATION

This site was located in the eastern corner of mining lease number 1638M. Today, the former shaft, its plant site and mullock dumps lie on both sides of the Trial Harbour road 200 m east of the Queen Number 3 site (see fig. 3).

#### HISTORY

The Silver Queen Prospecting Association was ultimately formed from an alliance between a number of prospectors arriving at the newly discovered Zeehan mineral field in 1886. Subsequent negotiations and the pegging of several leases culminated in the formation of this prospecting association in 1888. One of the leases pegged at this time was lease number 1638M, which had originally been prospected in 1887 by G. Bell, W. Bell and W. G. Barker<sup>(1)</sup>. This lease would come to host the Silver Queen Number 4 shaft in subsequent years, and therefore become one of most prized leases in the entire Zeehan mineral field. However at the time of the association's formation, prospecting and mining principally occurred on leases to the north/east (leases 1636M and 1637M). When the Silver Queen leases were reinspected on 11 October 1890, a big find on lease 1638M was reported, which related principally to the newly established Queen Number 2 workings. In the process of clarifying the direction of the lode there, it seems likely that exploration in the vicinity of the future Queen Number 4 shaft was initiated at this time or soon after. In c.1893, this lease was taken over by a party of tributors led by Messrs. Aird and Lamb, who undertook large scale surface stripping and trenching on the lease, in preparation for limited deep lead mining.

By 1895, the tributors had definitely established shaft number 4 and were close to the maximum depth allowable under the terms and conditions of their tribute agreement with the Silver Queen syndicate. As geologist Montgomery explained subsequent to his 1895 inspection of the Zeehan field:

*No. 4 shaft is a new main shaft that was being sunk on the lode on which is Aird and Lamb's tribute... The tribute party have a small steam plant, but their right to work does not extend below the 70 foot level, and the Company propose to go on working the lode themselves. The tributors are said to have sold over 600 pounds worth of ore<sup>(2)</sup>.*

A year later, the tributors reached the 60 foot level and were prematurely bought out by the Silver Queen syndicate which was concentrating almost exclusively on this shaft at the apparent expense of their main workings at the Number 1 mine closer to Zeehan. With new parts of the Number 4 lode exposed, the Silver Queen syndicate once again became the largest producer at the Zeehan field, and during the six month period between June and December 1895, the Number 4 mine yielded 1850 tons of first class ore which was sold for 20,991 pounds<sup>(3)</sup>. The second class ore was stockpiled while the syndicate, now buoyed by the growing yield from this mine, took the decision to dismantle the concentrating plant currently erected beside the Number 1 mine, and remove it to the Number 4 workings. This was subsequently undertaken, as the Number 4 shaft became the undisputed champion on the Silver Queen leases.

By 1899, the company was employing 80 men of which 55 were working on the tribute system<sup>(4)</sup>. As the mixed workforce chased the Number 4 lode further south in c.1900, it became evident that this lode continued southward beyond the boundary between the Silver Queen and the Silver Queen Extended. In 1902, this potential clash between rivals was averted when the British-owned Mt Zeehan (Tasmania) Silver Lead Mines Ltd acquired all of the Silver Queen leases and part of the Silver Queen Extended holdings. A new company was floated called the Zeehan Queen Co. Ltd, which now concentrated its efforts on the Number 4 shaft. Extensive refurbishment was undertaken in 1903, which the local mines inspector dutifully described.

*Under the management of Mr T. Vincent, jun., the machinery has been put in thorough repair, new boilers and steel poppet heads placed in position, and the work of unwatering the mine is now being proceeded with. When this is done arrangements will be made to start sinking<sup>(5)</sup>.*

Despite the refit and extensive prospecting, the payable ore lode became exhausted and the entire enterprise was ignominiously shut down. The British-owned Zeehan Tasmania Co. leased the mine to tributors before quitting their assets permanently in c.1910. Another exploration programme, sponsored by the government in 1914, yet again failed to locate any new ore bodies. Tributors may have worked the unflooded upper galleries running off Number 4 shaft until its final closure in 1929.

## DESCRIPTION

This site consists of four related precincts which have since been separated by a realignment of the Trial Harbour road and Queen Creek. Reference should be made to Figure 5, which shows a scaled plan of the entire site. Appendix plates 2 and 3 show historic views of the shaft precinct in c.1900 and 1903 respectively.

### *Former No. 4 shaft*

This precinct is located immediately south of the Trial Harbour road where Queen Creek has been diverted through a double pipe culvert. The Number 4 main shaft has been all but filled in. The only remains consist of a three-sided timber shaft collar measuring 3 2 m in dimension (see Appendix plate 27). Given that older surveys of the site indicate that the resident shaft was serviced by three cages, this collar once must have been at least double its present size. A pair of matching timbers immediately north of the shaft supported some item of machinery, and is close to the location indicated in an historic photo (Appendix plate 2) where the pump rocker arm was arrayed from the pump house. A 1.5 m square concrete pad located ten metres northeast of the main shaft may have been a footing for one of the steel uprights supporting the shaft's head frame.

### *Pump house precinct*

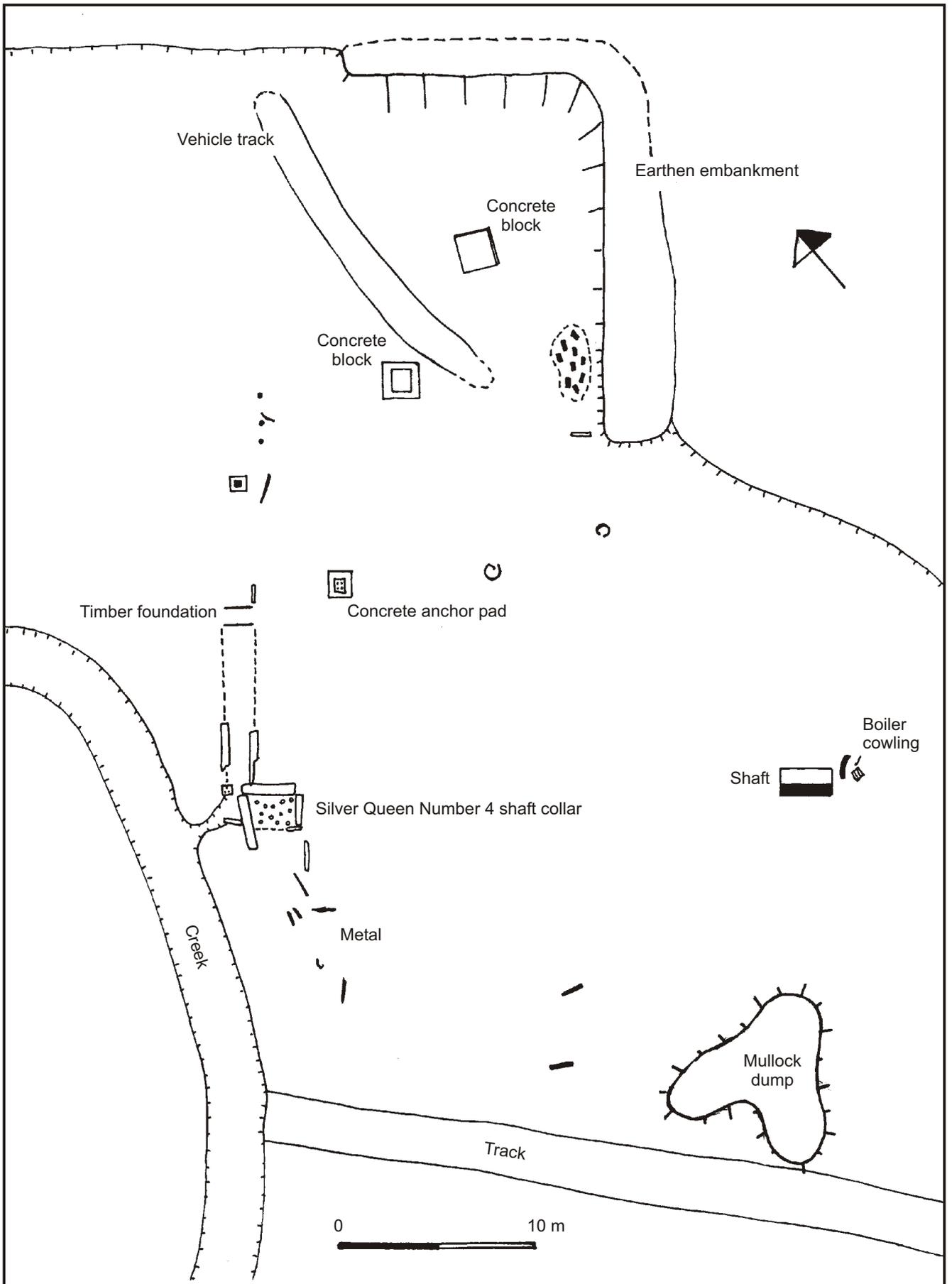
This area is immediately northeast of the former Number 4 shaft precinct. The most eye-catching features here are the two matching concrete blocks, each measuring two metres square (see Appendix plate 28). These were presumably footings for the pumping engine plant, which was housed at this location. A 5 2 m scatter of orange bricks occurs five metres east of these blocks. An L-shaped earthen embankment measuring 18 12 2 m high partially surrounds these blocks and the brick scatter. The pump house building was erected within these earth works. A cemented timber upright standing 15 m north of the main shaft may possibly mark the southwestern corner of this former building.

### *Southern shaft and mullock dump*

This smaller set of workings is located 25 m east of the Number 4 main shaft. Its direct alignment with the main shaft on the line of the Number 4 lode indicates that it serviced the same workings. The shaft resident hole measures 2.5 1.5 m in dimension. A boiler cowlings lies immediately east of the shaft (Appendix plate 29). A clover-shaped mullock fan measuring some 10 15 m in dimension lies ten metres south of the shaft, and the two are presumably related. This shaft may be the working referred to by Waller as Mace's shaft, which was then described as an old working which the Queen Number 4 was at the time tapping into<sup>(6)</sup>.

### *Remnant No. 4 mullock dump*

Extensive re-alignment of the Trial Harbour road and the creek beside the Number 4 shaft has destroyed part of the shaft's associated mullock dump. Other sections of the dump to the north of the road also appear to have been subsequently carted away for re-treatment at some time. As a result, only one small 35 15 5 m high mullock island now survives to mark the location of the Number 4 shaft's waste dump (Appendix plate 30).



**Figure 5**  
*Scaled plan of Zeehan Silver Queen Number 4 shaft remains*

## SIGNIFICANCE/RECOMMENDATIONS

The northern end of this highly historically significant mine has been extensively disturbed by road and creek re-alignment activities. A core group of features relating to the shaft precinct, have however survived. Deemed to be of Medium significance, it is recommended that the earthen embankment/concrete blocks comprising the pump house precinct, in addition to the surviving shaft collar, be protected from future impact.

## REFERENCES

1. Blissett, 1962, page 150.
2. Montgomery, 1895, page xi.
3. Montgomery, 1896, page xxv.
4. Secretary for Mines report for 1898–99, page 32.
5. Secretary for Mines report for 1903, page ixvi.
6. Waller, 1904, page 61.

### 5.3.20 Zeehan Silver Queen concentrating mill

#### LOCATION

This site is concealed by regrowth 100 m north/northwest of the former Queen Number 4 main shaft precinct (see fig. 3).

#### HISTORY

The Silver Queen Prospecting Association built its first concentrating mill beside the Number 1 shaft in 1893. At this time the Number 1 mine was the biggest mine in the Zeehan field, and its future looked equally promising. The mill erected here was designed and built on site by Messrs May Brothers of Gawler, South Australia. In 1893, government geologist Montgomery visited the Silver Queen mill in association with another mill at the nearby Mt Zeehan Co. mine, which was also being built by the May Brothers. In his report to Hobart, Montgomery was plainly impressed with the design of these plants, although he cautioned that to date they only treated a percentage of ore sources.

*The two mills erected by Messrs May Bros., at the Mount Zeehan and Silver Queen mines, are very compact and well arranged plants, but are by no means complete. The material, after being crushed by stone breakers and rolls, is jigged on sets of four sieved jigs and is not then further treated, no attempt being yet made to concentrate the sands and slimes. Only the first stage of dressing has thus been reached, and the mills will require many additional appliances before they will be able to extract the maximum possible amount of silver and lead from the ore. They have answered their immediate purpose by returning to the companies owning them a large quantity of clean marketable galena from their accumulated piles of second class ore, but it appears to me that the loss in doing so has not been seriously enough considered<sup>(1)</sup>.*

The growing tonnage of such treatable second class ore being removed from the Queen Number 4 shaft, in

contrast to the diminishing stockpile at the Queen Number 1 workings, encouraged the Silver Queen Syndicate to dismantle their newly erected concentrating mill at the latter site and rebuild it near the Number 4 shaft in c.1895. A network of elevated tramlines was also built at this time which connected the newly relocated mill to the Silver Queen numbers 2 and 3 shafts. During his inspection of the Zeehan field in the early months of 1896, Government geologist Montgomery noted that:

*The concentrating plant belonging to the mine is being taken from its old site at No. 1 main shaft and re-erected near No. 4, and the mill is to be greatly improved by the addition of vanners and other appliances to deal with the sands and slimes which cannot be treated by the jigs. In its new position, the mill can easily be connected with Nos., 2, 3, and 4 main shafts, all of which are in its vicinity. The Zeehan tramway is being extended up to the new mill, which will be a great advantage<sup>(2)</sup>.*

In c.1900, another source boasted that; *the company has also a very complete concentrating plant, capable of treating about 80 tons per day of crude ore, and saving nearly all the metallic contents<sup>(3)</sup>.*

The various sources do not specifically allude to the mill after this date. Tributors working the surrounding Silver/Zeehan Queen shafts between c.1904 and 1929, may have initially used the mill, as some mine tonnage returns indicate that they were also quarrying flux. In 1924, the tramway linking the mill, mine and related works was torn up, and the site at this time would have been permanently abandoned.

#### DESCRIPTION

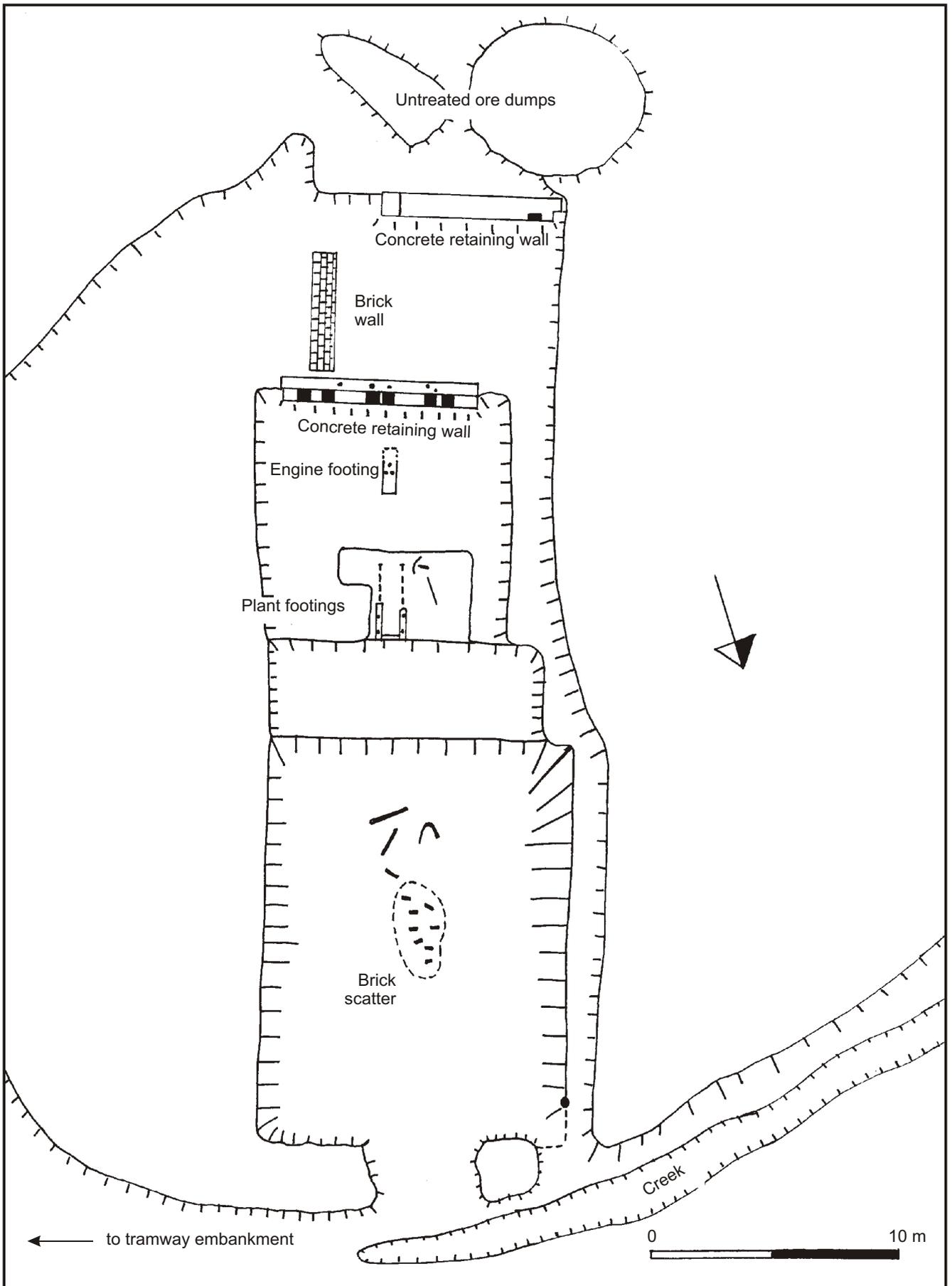
This site consists of a multi-level mill foundation complex, tram embankment and tailings dump. A plan of the mill site appears as Figure 6. Appendix plates 4 to 6 show historic photographs of the mill/precinct in between 1900 and 1903.

##### *Mill cutting*

The Silver Queen concentrating mill was erected on the northern slope of a hillside conveniently equidistant between its three principal mines. Although the mill plant and building fabric has long since been salvaged, the stepped rectangular earthen excavation on which the gravitationally driven mill machinery was erected still survives. Measuring 45 14 9 m with a total fall of approximately 12 m, this cutting has six separate levels (See Appendix plates 31 and 32).

Two piles of unrefined ore at the top level were presumably awaiting treatment when the mill closed for the final time. This feed floor area is divided from the second level by a 7 1 3 m high concrete retaining wall. Measuring 10 8 m in dimension, the second level is devoid of internal fixtures apart from a 5 1 1.5 m high brick wall on its eastern side.

The second and third levels are separated by an 8 4 m high concrete retaining wall with linear cavities indicating where upright beams supporting the mill



**Figure 6**  
*Scaled plan of Zeehan Queen concentrating mill site*

shed roof were formerly embedded (see Appendix plate 33). There is one set of timber footings used to anchor machinery on this level. The fourth level measures only 5 3 0.5 m, and contains more timber footings and a trough.

The fifth level measures 11 4 x 2 m, and is devoid of any internal fixtures. The sixth and lowest/ground level measures 16 12 4 m in dimension. A scatter of bricks and boiler staves litter the ground here.

#### *Tram embankment*

From this sixth/ground level at the mill, waste tailings were removed to the tailings dump by means of a narrow gauge tramway. This entity survives as an earthen embankment leading from the mill to the tailings dump which measures 70 4 3 m in height. Two parallel sequences of upright timbers occur on the right of way near the mill (see Appendix plate 34). A small tailings deposit occurs at the tram embankment terminus.

#### *Tailings dumps*

There are two tailings dumps on the eastern and southern side of the mill. The eastern dump is situated at the eastern end of the tramway near the Trial Harbour road and measures 40 30 m in extent. The southern dump is actually a composite deposit of tailings dumped on top of an older mullock heap. It measures 50 30 m in extent.

### SIGNIFICANCE/RECOMMENDATIONS

This mill site is highly significant historically as an artefact of one of Zeehan's most significant mines. The relatively high physical integrity of the resident earthworks makes the site highly archaeologically significant also. It should therefore be protected from all future developments. The large tailings dumps to the south of the site are not considered highly significant and can be impacted upon.

### REFERENCES

1. Montgomery, 1893, page 7.
2. Montgomery, 1896, pages xxv-xxvi.
3. *Cyclopedia of Tasmania*, 1900, page 498.

#### **5.3.21 Silver Queen and Queen Extended (outcrop No. 4 lode) workings**

### LOCATION

These workings were situated on the eastern corner of a boundary between mining leases 1638M (Silver Queen Co.) and 187-87M (Silver Queen Extended Co.). Today these composite workings are situated 130 m south/uphill of the Queen No. 4 shaft (see fig. 3).

### HISTORY

This set of workings represents the activities of two rival operations at a common boundary. Both the Silver Queen Prospecting Association and the Silver

Queen Silver Mining Company held adjoining leases in this vicinity. In 1888/89, the Silver Queen Prospecting Association discovered and better clarified the extent of one of its best assets, the Number 4 ore lode, which ran from the southern end of their lease near the Trial Harbour road towards the Silver Queen Extended lease to the south. In addition to beginning work on the Number 4 main shaft, they also subsequently prospected the lode further south to gauge its extent in the vicinity of the lease boundary.

Meanwhile, the rival Silver Queen Extended Mining Co. were doing precisely the same thing on their side of the lease, as Government geologist Montgomery observed on October 30, 1890:

*In section 187-87M, a great deal of prospecting has been done in the endeavour to pick up a continuation of the Silver Queen lode in section 1638M... Just south of the south east corner of 1638M, a tunnel 192 feet long has been driven due west nearly to the boundary of the section<sup>(1)</sup>.*

In 1892, the Silver Queen Extended Company apparently ceased work and their leases were henceforth worked by tributors. In visiting the mine the following year, Government geologist Montgomery concurred, noting that the *party of tributors are getting a little ore, the Company having ceased work.*<sup>(2)</sup> These workings were now being worked on the easternmost tribute block headed by a Mr Tanner. The tribute parties working from this time until the forfeiture of the lease worked veins of galena in adits and shallow shafts at depths of no more than 40 feet.

In 1902/03 the takeover of both rival leases and their amalgamation into a 258 acre extended lease by the Zeehan Queen Co. ended the rival diggings here, and for a short time work would have been undertaken freely without regard for its latitude. When this company wound up its operations in c.1910, subsequent tributors appear to have limited their work to the Number 4 shaft further north and Clarke's Lode to the east. This site was therefore probably abandoned at this time.

### DESCRIPTION

This site consists of two neighbouring workings each possessing a collapsed adit and adjacent mullock dump.

#### *Northern collapsed tunnel and mullock*

This site consists of an adit portal and 20 m long tunnel which is open at both ends. This short tunnel was presumably an exploratory activity. This tunnel is associated with numerous costeans and small mullock heaps in the immediate vicinity. Being the northernmost working on this point in the Number 4 lode, it is assumed that this working was undertaken by the Silver Queen association and its successor/s.

#### *Tanner's adit and mullock*

Fifty metres due south of this collapsed tunnel is a much larger pair of mullock dumps measuring 40

50 m collectively. A well preserved adit and stope is evident on the southern periphery of the westernmost dump (see Appendix plates 35 and 36). As the southernmost of this pair of workings, it is again assumed that this working was undertaken by Mr Tanner and party, the tributors known to have been working this most eastern of the Queen Extended tribute blocks.

#### SIGNIFICANCE/RECOMMENDATIONS

The southern set of workings attributed to Mr Tanner remain in a reasonable state of preservation and should be protected from future activity.

#### REFERENCES

1. Montgomery, 1890, page 32.
2. Montgomery, 1893a, page 9.

### 5.3.22 Zeehan Silver Queen Number 5 lode workings

#### LOCATION

Various surveys and exploration charts mistakenly show the Queen Number 5 shaft to be located east of the Oonah mine. It is rather some 100 m northeast of the Zeehan Silver Queen Number 3 shaft, in the immediate vicinity of the old Silver Queen Number 5 lode (see fig. 3).

#### HISTORY

A c.1900 article relating the Silver Queen syndicate's assets stated that the Number 5 shaft was less than 100 feet in depth<sup>(1)</sup>. In 1904, Government geologist Waller noted that:

To the east of Number 3 lode a crosscut was driven 250 feet. At 160 feet a small lode was cut, carrying splashes of galena, and was driven on for 100 feet. This is known as No. 5 lode. It is reported to be unpayable so far as it was tested in the drive, but near the surface a party of tributors obtained a fair parcel of ore from the same lode<sup>(2)</sup>. There are no subsequent references to the Number 5 lode or its resident shaft, suggesting that no viable lode was ever uncovered here.

#### DESCRIPTION

The bulk of exploration on the Number 5 ore lode is known to have been undertaken underground from the neighbouring numbers 3 and 4 shafts. Some surface testing was undertaken, and this is evidenced by a collapsed adit portal and several trenches located 40 m west of the Silver Queen concentrating mill remains.

#### SIGNIFICANCE/RECOMMENDATIONS

These are the unremarkable remains of limited prospecting activity. Therefore the site is deemed to be of Low significance and no recommendations regarding their future management are made.

#### REFERENCES

1. *Cyclopedia of Tasmania*, 1900, page 498.
2. Waller, 1904, page 63.

### 5.3.23 Zeehan Silver Queen tramway

#### LOCATION

This tramway has since been covered by the Trial Harbour road.

#### HISTORY

The Silver Queen Prospecting Association had seen their premier mine, the No. 1 shaft, linked to the Zeehan railway line in October 1893, when the Zeehan Tramway Company finally completed a mile long section of track from the railway station to the so called Queens End where the No. 1. shaft's tramway intersected with several other rival tramways<sup>(1)</sup>. When the Number 4 shaft became the premier mine on the Silver Queen leases, the tramline was extended from the Number 1 shaft to the Number 4 shaft in c.1895. A year later the Silver Queen Extended Co. then built their own section of line from the Queen Number 4 shaft to their workings on their northern boundary<sup>(2)</sup>. When the Zeehan Tramway Company sold all their assets to the Dunkley Brothers in 1919, the old Queen Number 4 tramway formed a part of the sale. In 1924 Dunkley Brothers relocated their timber business to the Stanley area and at this time salvaged a number of lines including the Queen Number 4 tramway<sup>(3)</sup>.

#### DESCRIPTION

This tramway formation between the vicinity of the old Number 1 shaft and the Silver Queen Number 4 shaft was reused after the line's salvage for the re-alignment of the Trial Harbour road. The current road therefore follows the alignment of the tramline.

#### SIGNIFICANCE/RECOMMENDATIONS

None made.

#### REFERENCES

1. Whitham, 1971, page 73.
2. Ibid.
3. Whitham, 1971, page 78.

## 5.4 SILVER QUEEN EXTENDED LODES

The Silver Queen Extended workings described in this report were all situated in the northeastern corner of one of two of this company's leases. Some of these workings tapped into the rival Silver Queen Number 4 mineral lode, while a number of others on the northern slope of Queen Hill to the south tapped independent ore bodies, including the Gossan lode, Fahey's lode and the Waterwheel lode.

#### 5.4.24 *Silver Queen Extended (Waterwheel lode)*

##### LOCATION

The remains of this operation appear to be located on the southern side of the swamp 100 m south of the southern edge of the Zeehan cemetery (see fig. 3).

##### HISTORY

Between c.1904 and 1913, this area within Silver Queen Extended lease number 187-87M, was worked on tribute by one of several parties. In 1913 it was reported that:

*On the northern part of this section a waterwheel has been erected, and a shaft sunk on a lode carrying about 4 inches of galena. Prospecting trenches have been cut in several directions, and altogether prospects are encouraging<sup>(1)</sup>.*

In 1914, all of the old Queen Extended leases were taken over by the Nike Mining Company NL and there is no subsequent record of this operation.

##### DESCRIPTION

This mine was not surveyed because it was not deemed to be potentially at risk from the proposed AMD remediation project.

##### SIGNIFICANCE/RECOMMENDATIONS

The significance of this site is unknown. In the event that this mine is threatened by any proposed development, it should be surveyed by a qualified archaeologist.

##### REFERENCES

1. Secretary for Mines report for year ending December 31, 1913, page 17.

#### 5.4.25 *Silver Queen Extended (Gossan lode)*

##### LOCATION

The workings developed to tap this lode were excavated along the upper slope of Queen Hill within the Queen Extended lease number 187-87M. One of these workings is located approximately 200 m southeast of the Waterwheel Lode workings described previously (see fig. 3).

##### HISTORY

In 1896, Government geologist Montgomery noted that work at the Silver Queen Extended lease had become more energetic. More specifically, the northern section of this lease had been subdivided into six separate tributes numbered 1 to 6 from east to west. One tribute party headed by Messrs Fahey and Hill had located another lode on tribute blocks 3 and 4, and had excavated a tunnel 170 feet in length along the face of this lode<sup>(1)</sup>.

When Government geologist Twelvetees visited the Zeehan field in 1900, he noted that a new large scale

company, nominally known as the Mount Zeehan (Tasmania) Pty Ltd but trading internationally as the British Zeehan Silver Mining Co., had taken over the Silver Queen Extended lease in addition to the nearby Balstrup and Silver Spray sections.

By 1900, one source reported that all of the Silver Queen Extended leases; *are being worked upon the block system. There are numerous galena lodes running through the sections, and these are divided into blocks and sub let to parties of miners who pay the association from 10 to 20 per cent, of the value of the ore won*<sup>(2)</sup>. This lease was worked intermittently by tributors until 1913, when an intensive government prospecting programme cut 2231 feet of costeans in an effort to revitalise interest in this area<sup>(3)</sup>. In 1914, all the old Queen Extended leases were taken over by the Nike Mining Company NL, which abandoned the workings described above in favour of a more consolidated lode on the south flank of Queen Hill. It is this latter site which became known as the (Nike) Silver Queen Extended mine.

##### DESCRIPTION

This set of workings consists of a stope and two well preserved adits. Each of these diggings has a matching mullock dump over an 80 30 m hillside expanse.

##### SIGNIFICANCE/RECOMMENDATIONS

Although of nominal historical significance, archaeologically this site is a discrete and well preserved minescape, which is deemed to be of Medium significance. It should therefore be preserved from future developments.

##### REFERENCES

1. Montgomery, 1896, page xxvi.
2. *Cyclopedia of Tasmania*, 1900, page 498.
3. Blissett, 1962, page 173.

#### 5.4.26 *Silver Queen Extended (Fahey's Lode)*

##### LOCATION

This site was situated in the mid northern vicinity of lease number 187-87M. Today the site might be more properly described as being 250 m southwest of the Silver Queen Extended Gossan lode workings (Site report 5.4.25) on the upper northern slope of Queen Hill.

##### HISTORY

This lode was the second of at least four southward striking ore lodes on the northern slope of Queen Hill and was situated in the Silver Queen Extended lease. The Gossan lode described previously was another of these. When the Queen Extended Company ceased work in c.1892 and henceforth employed tributors, they subdivided this lease into six separate tributes numbered 1 to 6 from east to west. In 1904 Government geologist Waller reflected on this particular operation, remembering that:

*In the northern section, Fahey's Lode was the principal ore producer. This was worked about eight years ago by Messrs Fahey Brothers, who obtained large quantities of gossan from the upper levels, much of which was very rich. This turned to galena in depth<sup>(1)</sup>.*

This and the other hillside leases were worked intermittently by tributors until 1913, when an intensive government prospecting programme cut 2231 feet of costeans in an effort to revitalise interest in this area. In 1914, all the old Queen Extended leases were taken over by the Nike Mining Company NL, which abandoned these hillside workings in favour of a more consolidated lode on the south flank of Queen Hill (Silver Queen Extended (Nike) mine).

## DESCRIPTION

Located well to the west of the proposed AMD remediation project area, this mine was not surveyed.

## SIGNIFICANCE/RECOMMENDATIONS

The significance of this site is unknown. In the event of any future impact, this mine should be surveyed by a qualified archaeologist.

## REFERENCES

1. Waller, 1904, page 63.

### 5.4.27 Silver Queen Extended tramway

## LOCATION

This 1.2 kilometre long tramway was laid from the Queen Number 4 shaft southwest to the eastern boundary of the Queen Extended lease.

## HISTORY

In 1896, the Silver Queen Extended Company constructed their own private tramway from the terminus of the town tram at the Silver Queen Number 4 shaft to their own main workings at the northeastern boundary of their lease<sup>(1)</sup>. This was subsequently extended further southwest onto the next lease (Sylvester mine) owned by the Tasmanian Smelting Company Pty Ltd. This tramway was certainly gone by 1924, when the medial section of track to the north servicing the Queen Number 4 shaft was pulled up and salvaged<sup>(2)</sup>.

## DESCRIPTION

This linear site was not surveyed as its orientation was deemed to be outside the survey area.

## SIGNIFICANCE/RECOMMENDATIONS

The archaeological significance of this site remains unknown. If any works are proposed for the swamp land in the vicinity of the Waterwheel mine, the actual route of this tramline should be better clarified.

## REFERENCES

1. Whitham, 1971, page 73.
2. Whitham, 1971, page 78.

## 5.5 CLARKE'S LODE

Clarke's lode is a pyritic ore body striking northeast/dipping southeast which contains regular bands and aggregates of galena and stannite together with small amounts of sphalerite, chalcopyrite and quartz. This lode was worked principally for its galena, but some stannite was produced during the early phase of operations here between 1901 and 1905. Clarke's lode was also tapped at its northernmost extent near Zeehan township by the Silver Queen Number 1 shaft which subsequently became the Montana Number 2 mine. The Stormsdown open-cut mine on the heights above the Clarke's lode workings was dug to recover cassiterite in the 1960's.

### 5.5.28 Unknown concentrating mill site

## LOCATION

This structure stands 20 m south of the Trial Harbour Road approximately 100 m northeast of the Silver Queen Number 4 shaft precinct (see fig. 3).

## HISTORY

The origins of the mill erected at this site are unknown, although some speculation based on historic photographic evidence is possible. Two historic plates of the Queen Hill mining field (Appendix plates 5 and 6) show two corrugated iron buildings in the vicinity of the remains described here, implying a construction date of around the turn of the century. The most curious problem is who built it and why, given that the Zeehan Queen mill had been re-erected only 50 m to the northwest?

It is therefore suggested that this concentrating mill was built by independent miners (tributors?) working on the nearest mineral lode to the mill site, which was Clarke's lode. Although this lode and its attendant adit workings were on the Zeehan Queen lease, the tribute system would have required them to pay larcenous milling rates in addition to their sub lease obligations. Historic (Appendix) plate 6 also shows a track leading south from this building to the mid-slope of Queen Hill, where the adits accessing Clarke's lode were located.

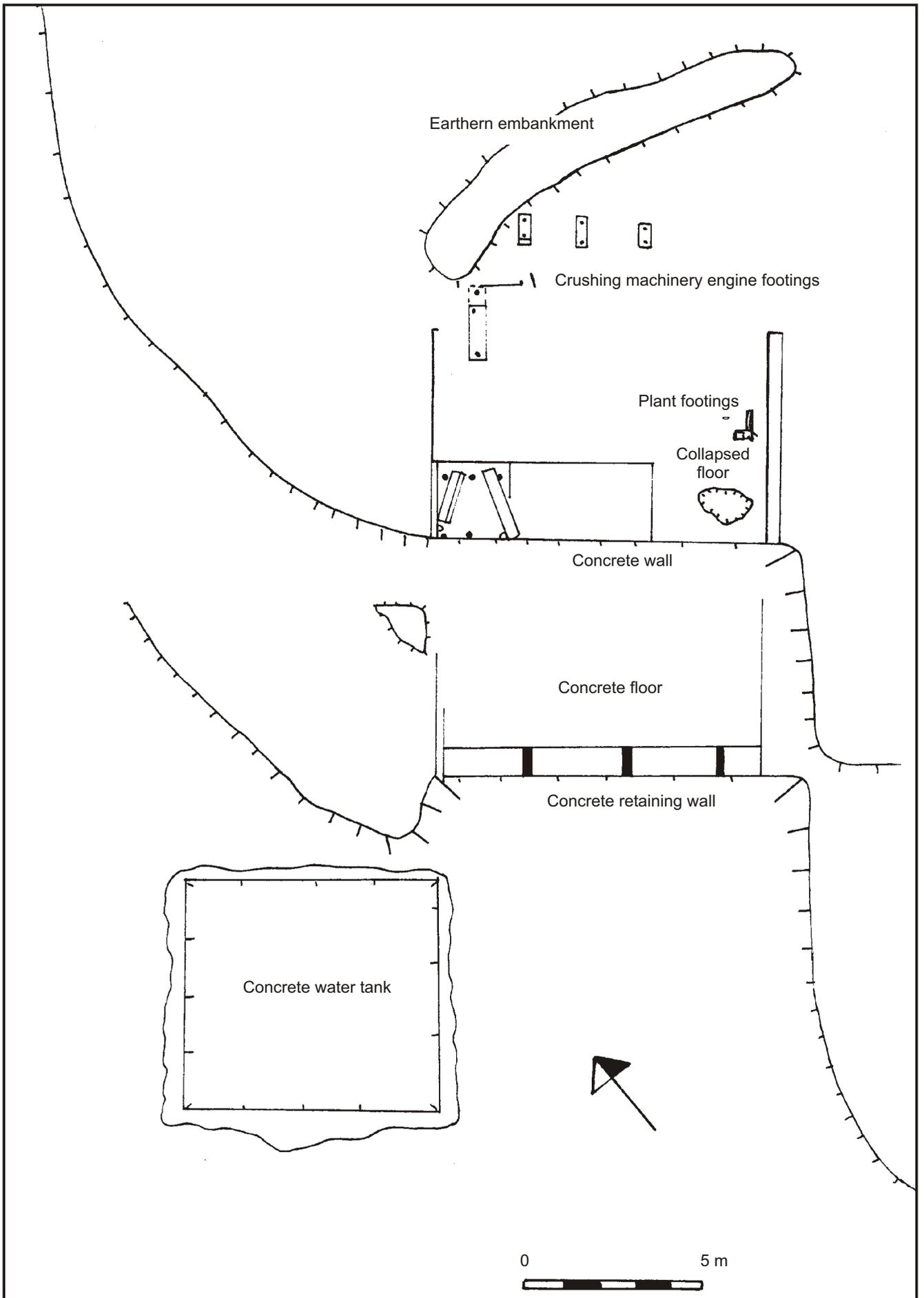
If the mill was related to the Clarke's lode workings, it would have closed down between 1914 and 1929.

## DESCRIPTION

This site consists of an earthen embankment, a five stepped/tiered concrete mill foundation and an adjacent concrete water tank. Mysteriously, if this is in fact the remains of a concentrating mill, there is no sign of treated tailings in the vicinity. Reference should be made to Figure 7, which shows a scaled plan of the mill site, and to Appendix plate 38.

### *Earthen embankment*

The northernmost feature at this site is an 11 2 0.8 m high earthen embankment crudely defining the northern wall of the mill building.



**Figure 7**  
*Scaled plan of unknown concentrating mill site*

### Mill footings

In total, the exterior dimensions of the earthen cutting accommodating the foundations measures 23 10 m, with a fall of approximately seven metres. The upper/northernmost level has no concrete floor, its principal features being three parallel concrete footings measuring 0.5 0.75 m in dimension, presumably laid to support the primary mill crushing plant. The second level, measuring 10 6 m in dimension, is a L-shaped floor surface with one concrete footing at its northwestern corner and another against its eastern end.

The third level, measuring 6 2 m, has a 2 2 m concrete plinth with two concrete slabs measuring 2 × 0.3 m each lying on it. The fourth level measuring, 6 9 m, has no resident features. The retaining wall separating it from the fifth and final level is a metre in thickness with three small channels (roof upright slots?) moulded at three metre intervals along it. The fifth/ground level measures 11 6 m and it too lacks any internal features.

### Concrete water tank

A 7 6.5 m wide concrete water tank has been dug into the ground immediately west of the fifth mill level floor. Of unknown depth, the tank still retains a metre of water within it.

### SIGNIFICANCE/RECOMMENDATIONS

Although its historic pedigree remains uncertain, the excellent physical condition of the site makes it highly archaeologically significant. The mill and its dam should therefore be protected from all future developments.

### 5.5.29 Unknown tailings dump

#### LOCATION

This site is situated on the north side of the present Trial Harbour Road at its intersection with the old Trial Harbour road deviation and Oonah mine road (see fig. 3).

#### HISTORY

The origin of this tailings dump remains uncertain, as there is no record or remains of any milling plant in this vicinity. It is possible that one of the adits working Clarke's ore lode along the northern stretch of the old Trial Harbour road deviation could have had its ore hand milled at this site. Indeed during his 1895 inspection of the mines working Clarke's lode, Government geologist Montgomery noted: *Nearly all the tribute parties say that they cannot afford the mill charges for concentration, and do better by roughly cleaning the ore by hand jigs<sup>(1)</sup>*. The modest amount of tailings present would certainly suggest a small scale operation like this.

#### DESCRIPTION

This tailings dump measures approximately 50 40 m in extent, although vegetation may conceal more of it. Appendix plate 38 shows a contemporary view of this site.

#### SIGNIFICANCE/RECOMMENDATIONS

This site is deemed to be of Low significance. No recommendations regarding its future management, are made.

#### REFERENCES

1. Montgomery, 1895, pages xl-xli.

### 5.5.30 Unknown adit

#### LOCATION

This former adit is situated immediately east of the old Trial Harbour road deviation 40 m south of its intersection with the present Trial Harbour Road (see fig. 3).

#### HISTORY

The name and history behind this site remains unknown. Given its occurrence on the Silver Queen Prospecting association lease and its purposeful excavation to access Clarke's mineral lode, this adit would be expected to date between c.1900 and c.1925.

#### DESCRIPTION

This site consists of a 20 30 m mullock heap leading to a 30 4 2.5 m high adit drive. Subsequent exploration activity by a bulldozer however has crushed the adit entrance, and renewed traffic down the old Trial Harbour road deviation leading to the Stormsdown open cut mine, has damaged the mullock heap.

#### SIGNIFICANCE/RECOMMENDATIONS

Damage to this site has limited its present archaeological significance. It is deemed to be of Low significance, and no further recommendations regarding its management are made.

### 5.5.31 Dunn's Tunnel (Number 7 adit)

#### LOCATION

This site is located 25 m east of the old Trial Harbour road deviation some 80 m south of its intersection with the present Trial Harbour road (see fig. 3).

#### HISTORY

The origins of this adit are uncertain, however it should date from between c.1900 to c.1915. In his 1961 report on renewed operations at the nearby Dunkley Number 1 adit by Messrs Dunkley and Fieldhouse, Government geologist Blissett recommended that:

*If operations are started, other adits might profitably be re-examined, in particular Dunn's Tunnel, which is*

*now blocked about 120 feet from the portal. In 1938, some driving was done beyond the fall, but there is no information about values<sup>(1)</sup>.*

This work was done in 1938 by the newly formed Zeehan Tin Development Co. NL, which obtained a lease over this area for tin mining purposes (see Stormsdown mine).

#### DESCRIPTION

This site consists of a well defined adit and surrounding 60 40 m wide mullock dump. The adit's portal measures 15 m in length.

#### SIGNIFICANCE/RECOMMENDATIONS

This site remains in an excellent state of preservation and is deemed to be of Medium significance. It should therefore be protected from future impacts.

#### REFERENCES

1. Blissett, 1961, page 29.

#### **5.5.32 Road Tunnel (Number 6 adit, adit crosscut)**

#### LOCATION

This site is located 15 m from the southern side of the present Trial Harbour Road directly opposite the old Oonah tram embankment. (see fig. 3).

#### HISTORY

The history of this former adit remains uncertain. A survey chart dated c.1900 fails to show this adit, suggesting that it post-dated the turn of the century<sup>(1)</sup>. In 1937, Government geologist Henderson inspected workings *on a levelled area just east of the Oonah tram bridge consisting of three surface chippings and a small cut approximately one foot deep*<sup>(2)</sup>. Tin oxide was present although there are no subsequent details as to whether a more concerted effort was made to excavate here. The adit may have been the result of depression-time prospecting, although it is more likely to have dated from the early 1900's, when the main assault on Clarke's lode was made.

#### DESCRIPTION

The site consists of an adit and attendant mullock dump. The adit portal has been driven into a 10 m high sheer rock wall. The adit entrance has suffered from siltation and is now only 0.3 m above the surrounding ground level. The remains of a timber portal of sorts are still evident near the entrance roof. A continuous stream of acid mine drainage discharges down the side of the road from this adit. On the north side of the present Trial Harbour Road, some 35 m from the adit entrance, is the mine's mullock dump. Measuring approximately 20 40 m in width, this dump has a parallel pair of sequential timber uprights protruding from its summit, indicating the orientation of a former tramline used to cart mullock waste from the adit to

this dump. Appendix plates 39 and 40 show views of the adit and mullock dump respectively.

#### SIGNIFICANCE/RECOMMENDATIONS

The adit at this site is not deemed to be of any historical/archaeological consequence and can be targeted for AMD remediation if required. The attendant mullock dump should be retained in association with the adjacent Oonah mine tramline embankment as an archaeologically significant precinct (see site report 5.1.9).

#### REFERENCES

1. Undated chart of mineral leases, tramlines and plant at the Zeehan mineral field held by MRT.
2. Henderson, 1937, page 21.

#### **5.5.33 Dunkley's Number 2 adit and open cut**

#### LOCATION

This site formerly comprised part of mining lease number 31M/54. It is situated 40 m east of the building site described below, and some 70 m east of the old Trial Harbour road deviation (see fig. 3).

#### HISTORY

This adit was certainly re-excavated by Messrs Dunkley and Fieldhouse in c.1960/61 as part of their ore recovery operations using both deep lead and open-cut techniques. Government geologist Blissett's survey plan of their lease, completed after his 1961 inspection, shows the Number 2 adit portal and partially collapsed tunnel leading to an open-cut operation beyond. A tramway links the open cut, tunnel and adit portal to the partnership's milling plant which is described below<sup>(1)</sup>. This adit and open-cut pit were presumably abandoned in the late 1960's, when the partnership's leasehold rights ended.

#### DESCRIPTION

Unfortunately, the Blissett plan showing this site was not located until after the completion of field work. As a result this adit was not searched for.

#### SIGNIFICANCE/RECOMMENDATIONS

The existence and contents of this site should be clarified.

#### REFERENCES

1. Blissett, 1961, pages 26-29.

#### **5.5.34 Dunkley's Number 1 adit (Number 5 adit)**

#### LOCATION

This site is situated 15 m west of the old Trial Harbour road deviation some 70 m southwest of Dunkley's mill (described below).

## HISTORY

The establishment of operations at this adit remains uncertain, although Blissett (1961) intimates that this adit had already been created when tunnelling works were undertaken here by Messrs D. Dunkley and R. Fieldhouse in 1961<sup>(1)</sup>. These partners sought to remove the soft puggy pyritic ore from this adit, which first appeared 145 feet inside the portal, further suggesting that substantial work had already been done by someone else in the past. In addition to following this ore body underground, the two partners initiated another adit and open-cut operation to the northeast in order to access the same ore body from the surface. This was described previously as Dunkley's Number 2 adit and open cut.

## DESCRIPTION

This site comprises a water tank, adit, mullock dump and connecting tramway. Photographs of these features appear as Appendix plates 41 to 43.

A 20 m long portal leads to the well defined 2.5 m high adit entrance. Torchlight revealed that the adit gallery is still clear for a distance of at least 30 m. A four metre length of steel rail lying on the floor of the portal indicates that a narrow gauge tramline once connected the adit to its attendant mullock heap situated on the western side of the old road deviation. Tramway remains are more extensive on this 25 40 m wide mullock heap. These consist of a 20 m long progression of timber sleepers and uprights surrounded by more lengths of twisted steel rail. A rivetted ships water tank lies derelict on the northern side of the mullock heap near the track. A form concrete water tank stands only ten metres north of the adit entrance. Measuring 5.5 4 1.7 m in height, the rectangular tank has three buttresses supporting its western wall, and one each for the north and south walls.

## SIGNIFICANCE/RECOMMENDATIONS

This site is one of the most archaeologically significant of the Clarke's lode adits, and should be protected from all future activities.

## REFERENCES

1. Blissett, 1961, pages 26-29.

### 5.5.35 Dunkley's mill

## LOCATION

The collapsed remains of this structure are located 40 m east of the old Trial Harbour road deviation, approximately 30 m west of the ascribed position for Dunkley's Number 2 adit (site 5.5.33).

## HISTORY

This small ore milling complex appears to have been erected by Messrs Dunkley and Fieldhouse in c.1960. In 1961, Government geologist Blissett inspected the adjacent workings operated by this partnership, and

his attached plan of the lease shows the mill building in question linked by a tramway to the portal of Number 2 adit and beyond to their open-cut operation<sup>(1)</sup>. The mill was presumably abandoned at the termination of their leasehold operation in c.1966.

## DESCRIPTION

This site consists of the timber/corrugated remains of Dunkley's mill, an excavated pit and a prospecting trench. The mill remains now consist merely of a 6 4 m jumble of corrugated iron sheeting, timber palings and poles (see Appendix plate 44). Some plastic debris further highlights the relatively recent age of the building. A prospecting trench or abortive adit portal measuring 6 3 m in height was noted ten metres north of the mill remains. A 5 5 4 m deep pit and adjacent spoil heap was found immediately west of the mill ruins.

## SIGNIFICANCE/RECOMMENDATIONS

Although it possesses the remains of a structure, the advanced state of deterioration tends to minimise this site's archaeological significance. No recommendations regarding its protection are therefore made.

## REFERENCES

1. Blissett, 1961, pages 26-29.

### 5.5.36 Clarke's Number 4 adit

## LOCATION

This adit was formerly situated immediately east of the old Trial Harbour road deviation some 90 m south of Dunkley's Number 1 adit. This area has since been open-cut mined, and the adit destroyed.

## HISTORY

This was the original adit excavated to access a substantial mixed galena and stannite ore body named Clarke's Lode. The discoverer of the lode presumably excavated the adit described here as a tributary to the Zeehan Silver Queen Prospecting Association some time in the early 1890's. Government geologist Montgomery noted after his 1895 tour of the Zeehan mineral field that:

*In section 1637M we find the workings of Clarke's tribute. A tunnel has been driven from the side of the Trial Harbour road to cut a big lode 4 to 6 feet wide with well defined walls, running NNE<sup>(1)</sup>.*

Montgomery was curious as to the appropriate metallurgical treatment for the ore obtained from this mine, writing:

*It is somewhat difficult stuff to deal with, and it would be worth experimenting to see if it could not be more profitably smelted directly than treated by concentration, especially as silver is contained in the pyrites to a considerable value. The tributaries at present pick out the cleanest ore and hand jig part of the poorer stuff, but necessarily there is a great deal of waste<sup>(2)</sup>.*

Clearly Montgomery found it hard to believe that miners working such a potentially valuable resource would be prepared to lose so much of the refinable mineral content through rudimentary hand operated technology. Subsequently he denigrated the tributors reluctance to pay for outside milling operations.

*Nearly all the tribute parties say that they cannot afford the mill charges for concentration, and do better by roughly cleaning the ore by hand jigs; there is something wrong if this is the case<sup>(3)</sup>.*

The Silver Queen re-acquired the operation from the tributors, but at the end of 1899 tribute parties were re-introduced and produced viable tonnages of stannite and galena. In 1902, the Silver Queen leases were all sold to a British-based firm which vested these assets in a new company called the Zeehan Queen Co. Clarke's workings and the old Silver Queen Number 4 shaft were the principal assets which had encouraged the takeover and now pre-occupied the new owners. Unfortunately despite a major underground exploration programme, the accessible lode was worked out and Clarke's adit closed temporarily in 1905.

In 1910, the next Government geologist Twelvetrees visited the vicinity of Clarke's Lode and noted that in addition to this adit, Clarke's lode was being attacked at deeper levels by two galleries from the nearby Silver Queen Number 4 shaft. On Clarke's lode, Twelvetrees also wrote:

*This lode traverses the country on the northern fall of the hill which bounds the Queen Valley on the south... The only means of access at present is the cross cut adit from the road, which has been driven to the lode a distance of 50 or 60 feet... Clarke's lode is a composite one of banded galena and stannite, with a little chalcopryrite, in which the stannite has hitherto been neglected, no allowance being made for it in purchasing<sup>(4)</sup>.*

Tributors worked the mine for a number of years subsequently, and the government undertook another exhaustive exploratory survey of the lode in 1914. Unfortunately nothing of any magnitude was found. The last ore production from this old Silver Queen lease occurred in 1929, although it remains unclear whether this ore was removed from the vicinity of this adit or the Number 4 shaft.

#### DESCRIPTION

Not applicable. The adit and its tunnel have been destroyed by open-cut mining operations.

#### SIGNIFICANCE/RECOMMENDATIONS

Not applicable.

#### REFERENCES

1. Montgomery, 1895, page xl.
2. Ibid.
3. Montgomery, 1895, page xli.
4. Twelvetrees and Ward, 1910, page 133.

### 5.5.37 Unknown Number 2 and 3 adits

#### LOCATION

This adit is located 35 m west of the old Trial Harbour road deviation. The Queen Number 4 shaft lies 120 m due west of this adit (see fig. 3).

#### HISTORY

Although this complex is marked on a 1971 geological survey, its actual name and history remains unknown<sup>(1)</sup>. Given its occurrence on the Silver Queen Prospecting association lease and its purposeful excavation to access Clarke's mineral lode, this adit would be expected to date between c.1900 and c.1925.

#### DESCRIPTION

This site consists of a gated adit entrance, portal and mullock heap. The adit tunnel was examined by torch light and found to be unobstructed for at least 30 m. The adit entrance remains intact and a metal gridded gate of pre-1945 construction has been installed here to prevent unwarranted access. The lock on the gate is however somewhat more recent (1960's?). The adit portal measures 24 1.5 3.5 m in height. A number of timber boards lie on the floor of the portal, perhaps installed as fluming to divert water from the adit entrance. Slightly discoloured water discharges from the adit entrance in a continuous flow. The mullock heap at the end of the adit portal measures some 40 50 m in extent. Appendix plates 45 to 47 show various views of the gate and adit tunnel.

#### SIGNIFICANCE/RECOMMENDATIONS

This archaeologically well preserved site should be protected from future impacts.

#### REFERENCES

1. Chart of Queen Hill workings after Twelvetrees by Cominco Exploration, 1971 (MRT – TCR 71-0807).

### 5.5.38 Ward and Fairfield's Number 1 adit

#### LOCATION

This adit is situated ten metres south of the old Trial Harbour road deviation some 40 m due south of the unknown numbers 2/3 adits described previously. (see fig. 3).

#### HISTORY

This adit is marked on an old survey dated from c.1900<sup>(1)</sup>, and was the second adit dug to access Clarke's lode (Clarke's adit being the original). The shaft might have been periodically worked until the final abandonment of the Queen Hill field by c.1925/1930. The designation of this adit as "Ward and Fairfields" appears on a 1971 geological survey<sup>(2)</sup>.

#### DESCRIPTION

This site consists of an adit, portal and associated mullock dump. The adit tunnel was examined by torch

light and found to be undamaged for 30 m (see Appendix plate 48). The rectangular adit entrance remains well defined as does its seven metre long portal. A 35 45 m wide mullock dump commences at the end of the portal.

#### SIGNIFICANCE/RECOMMENDATIONS

This well preserved adit site is deemed to be of Medium archaeological significance, and should therefore be protected from future activities.

#### REFERENCES

1. Undated chart of mineral leases, tramlines and plant at the Zeehan field held by MRT.
2. Chart of Queen Hill workings after Twelvetrees by Cominco Exploration, 1971 (MRT – TCR 71-0807).

### 5.5.39 Stormsdown open cut

#### LOCATION

The Stormsdown open-cut mine consists of two substantial excavations on the northwestern slopes of Queen Hill. The extent of the open-cut operation is highlighted in Figure 3, which shows a scaled plan of the entire Queen Hill minescape.

#### HISTORY

Messrs E. A. Tomkins and W. Ledger found tin ore cassiterite on the northwest slopes of Queen Hill in 1937<sup>(1)</sup>. Subsequently, this was prospected by the excavation of shallow trenches and pits, and a company titled the Zeehan Tin Development Co. NL was formed in 1938. In that first year of production, 10.25 tons of concentrates containing 3 tons of tin were produced here<sup>(2)</sup>. Details regarding the subsequent activities of the this operation remain uncertain, however between 1957 and 1959, Messrs D. Dunkley and D. McLaren extracted further concentrates yielding 2.27 tons of tin<sup>(3)</sup>. In 1961 these gentlemen obtained lease number 31M/54 covering 10 acres of the northwestern end of Queen Hill, which contained several old workings described previously. In addition to re-working the old Number 1 adit (see site 5.5.34), this partnership also appears to have established an open-cut operation, which subsequent lessees (Cominco?) expanded to its present size in the 1970's.

#### DESCRIPTION

The Stormsdown open-cut operation consists of two separate excavations linked by a parallel pair of vehicle tracks.

##### *Northern (upper) open cut*

This operation is in the western vicinity of Dunkley's mill and adits. It is in all probability an enlargement of the original open cut undertaken by Dunkley and Co. in the early 1960's. This northern excavation now consists of workings on two terraces or benches totalling an area of 180 50 m in width. The excavation

is a shallow one, reaching a maximum depth of only ten metres.

##### *Southern (lower) open cut*

Separated by 30 or so metres from the northern open cut is the larger southern excavation centred on the southern hook of the old Trial Harbour road deviation. Measuring a total of approximately 180 100 m, this excavation is approximately 12 m in depth. Appendix plate 49 shows a view of these workings.

#### SIGNIFICANCE/RECOMMENDATIONS

This open cut mining operation has very little archaeological significance. No recommendations regarding its future management are made.

#### REFERENCES

1. Blissett, 1962, page 128.
2. Ibid.
3. Ibid.

### 5.5.40 Northern Clarke's lode workings

#### LOCATION

These workings are located at the very northern end of the Queen Hill summit. Access is gained by the ring road from the upper/north Stormsdown open cut (see fig. 3).

#### HISTORY

No specific references to this operation could be isolated in the relevant literature, however this mine has been purpose dug to access Clarke's mineral lode which runs along the upper northern face of Queen Hill. This mineral lode was worked most heavily at the turn of the century when tribute gangs made various attempts to tap the lode along the hillside. These workings are therefore tentatively dated to this period. Tributors had abandoned work on Clarke's lode by c.1930. This site is marked on Government geologist Blissett's 1961 survey of Stormsdown mine<sup>(1)</sup>. Unfortunately he does not give it a name or ascribe any history to it.

#### DESCRIPTION

This site consists of workings on three levels and a roadside mullock dump. The eastern/uppermost level contains a collapsed shaft opening two parallel rows of three timber uprights. The second/medial level consists of two mine shafts and an air shaft. One of the shafts is 15 m deep but then blocked with fill. The third and final level consists of a roadside adit immediately east of the Stormsdown ring road and a 40 30 m mullock dump immediately west of the road. Appendix plate 50 shows a view of this set of workings.

#### SIGNIFICANCE/RECOMMENDATIONS

The surface workings here are deemed to be of Medium archaeological significance. It is therefore

recommended that this site be protected from future developments.

## REFERENCES

1. Blissett, 1961, page 27.

### 5.5.41 *Clarke's lode south adits 1 and 2 (Clarke and party?)*

#### LOCATION

These adits are situated midway up the northern slope of Queen Hill above the Stormsdown open cut (see fig. 3).

#### HISTORY

Government geologist Twelvetrees visited what appear to be these workings in 1910. He noted of Mr E. S. Clarke and Party, that:

*An upper crosscut tunnel has been driven 60 feet across slate...About 80 or 90 feet below this is a lower crosscut adit, which is being driven into the hill in a south easterly direction<sup>(1)</sup>.*

The workings were presumably abandoned by 1924 at the latest when the Zeehan Queen lease ended.

#### DESCRIPTION

This description roughly fits the location of these workings if the adit, described as being 90 feet below, is that dug by Messrs Ward and Fairfield (see site 5.5.38). This site comprises two adits and a stope. The northernmost adit entrance consists of a ten metre portal leading to a well preserved adit entrance and tunnel beyond, which is unblocked for at least 20 metres. A 30 30 m mullock dump sits between the portal and the open cut below. Thirty metres to the southwest is a collapsed stope. A further thirty metres to the southwest of the stope is the second adit consisting of a seven metre long portal and adit entrance with a single timber beam secured as a lintel. The resident tunnel is unblocked for at least 20 metres. A scatter of bricks leads from the adit entrance to a 40 30 m mullock dump overlooking the southern end of the Stormsdown open cut. Appendix plates 51 to 54 show various views of these workings.

#### SIGNIFICANCE/RECOMMENDATIONS

These two adits are well preserved examples of hillside mining and as such are deemed to be of Medium archaeological significance. They should therefore be protected from future development.

## REFERENCES

1. Twelvetrees and Ward, 1910, page 134.

### 5.5.42 *Clarke's lode south adit 3 (Cornish and Prairie's Tribute?)*

#### LOCATION

This adit is situated 60 m southeast of the second adit at site 5.5.41 (see fig. 3).

#### HISTORY

Government geologist Twelvetrees described what appear to be these workings after his visit to the Zeehan Silver Queen lease in 1910. He stated that:

*These workings are on the Zeehan Queen property, on the south side of the valley, above the road leading to Trial Harbour. An underlay winze or shaft is being sunk on the western continuation of Clarke's lode... No. 1 level of the Queen Mine passes 150 feet below the bottom of these workings<sup>(1)</sup>.*

Given the proximity of the western end of Clarke's lode and the Number 1 level from the Zeehan Queen mine, the workings described below are the closest to the convergence of these features. These workings would be expected to have operated until c.1930, when most operations on Clarke's Lode were suspended.

#### DESCRIPTION

This adit consists of a five metre long adit portal and steep tunnel incline. A 20 30 m mullock dump spills down the hillside from the adit entrance.

#### SIGNIFICANCE/RECOMMENDATIONS

For management purposes, this well preserved adit should be considered in association with the neighbouring two adits attributed to Clarke and Party (site 5.5.41). All of these sites are deemed to be of Medium significance, and as such this adit/incline site should also be protected from all potential threats.

## REFERENCES

1. Twelvetrees and Ward, 1910, page 134.

## 5.6 TAYLOR'S LODE

Taylor's lode is a smaller mineral belt running parallel to Clarke's lode, along the northern summit of Queen Hill. Its geology is assumed to be similar to Clarke's lode in that it is a pyritic ore body containing galena, sphalerite etc.

### 5.6.43 *Northern Taylor's lode workings*

#### LOCATION

This small prospect is situated on the very northeastern summit of Queen Hill some 50 m due east of Clarke's north workings (see fig. 3).

## HISTORY

In 1914, the Secretary for Mines reported that operations on the Zeehan Queen lease had *been restricted to tributaries, who have been working chiefly on Clark's and Taylor's lodes, in the adit levels*<sup>(1)</sup>. The next and final reference to this set of workings appeared in the Secretary's report for 1918, where it was stated that on the Zeehan Queen lease *The only work being done at present on this company's lease is by tributaries on Taylor's Lode. Results from these operations have been good, but unfortunately nothing has been discovered that would warrant the company spending its capital in more comprehensive work*<sup>(2)</sup>. Such tribute work probably ended by c.1919, although periodic attempts to exploit the lode might have been made until 1930, when the company's lease expired.

## DESCRIPTION

This modest prospect consists of a five metre drive and 10–20 m mullock heap beneath it.

## SIGNIFICANCE/RECOMMENDATIONS

This site is deemed to be of Low significance. No recommendations regarding its future management are therefore made.

## REFERENCES

1. Secretary for Mines report for 1914, page 27.
2. Secretary for Mines report for 1918, page 16.

### 5.6.44 Southern Taylor's lode workings

#### LOCATION

These workings are situated on the northwestern summit of Queen Hill (see fig. 3).

#### HISTORY

In 1914, the Secretary for Mines reported that operations on the Zeehan Queen lease had *been restricted to tributaries, who have been working chiefly on Clark's and Taylor's lodes, in the adit levels*<sup>(1)</sup>. The next and final reference to this set of workings appeared in the Secretary's report for 1918, where it was stated that on the Zeehan Queen lease *The only work being done at present on this company's lease is by tributaries on Taylor's Lode. Results from these operations have been good, but unfortunately nothing has been discovered that would warrant the company spending its capital in more comprehensive work*<sup>(2)</sup>. Such tribute work probably ended by c.1919, although periodic attempts to exploit the lode might have been made until 1930, when the company's lease expired.

#### DESCRIPTION

This site consists of an underground stope excavated above an adit. Both sites are also surrounded by several costean trenches. At the vertical stope entrance, a lining for the shaft has been built from two cross

members with upright boards nailed to them measuring 2–1.5 m in dimension. The shaft is filled with water three metres below the surface. A mullock dump lies immediately west of the stope. The adit downhill from the stope consists of a six metre long portal and 1.5 m high adit entrance flanked by two broken timber uprights. A 15–20 m mullock dump lies immediately west of the adit entrance.

## SIGNIFICANCE/RECOMMENDATIONS

This site is deemed to be of Low significance. No further recommendations regarding its significance are made.

## REFERENCES

1. Secretary for Mines report for 1914, page 27.
2. Secretary for Mines report for 1918, page 16.

## 5.7 MONTANA LODES

Blissett (1962) stated that the Montana ore bodies were fissure veins up to 4 feet in thickness incorporating lenses and bands of galena, accompanied by sphalerite and pyrite in a gangue of siderite and quartz. The galena content in the Number 1 shaft, near the workings described below, was assayed at 68% lead and silver at 115 ounces per ton. The Montana Number 1 mine was the deepest and most profitable mine in the Zeehan mining field.

### 5.7.45 Zeehan Montana Number 2 slide workings

#### LOCATION

These adits are situated 200 m due east of the Oonah concentrating mill (see fig. 3).

#### HISTORY

The history behind these workings remains somewhat ambiguous. They are clearly situated on land well within lease number 2154-87M, which was acquired and worked successfully as Zeehan's premier mine by the Zeehan Montana Company. An old survey chart dating from c.1900<sup>(1)</sup> shows a geological fault called the Number 2 slide in the vicinity of these workings. Unfortunately none of the mine literature appears to refer to workings beside this anomaly. Subsequent geological surveys dating from the 1960's onwards have identified these workings as the Silver Queen Number 5 shaft<sup>(2)</sup>, although it is difficult to believe how this could be so given that this area was never subject to a lease held by the rival Silver Queen syndicate. It should also be noted that maps of the resident mines underground configurations indicate that these workings link up with the Montana Number 1 mine. Therefore it is suggested that these workings formed a part of the Montana Number 1 workings, which were developed between 1892 and 1924.

## DESCRIPTION

This set of workings consists of a set of three adits in the eastern vicinity of the Oonah mine. The most obvious adit is situated beside the track leading from the Montana workings to the Oonah mine (see Appendix plate 55). Situated on the south side of the track, this adit can be traced by the acid mine drainage discharge from its entrance which runs alongside the track. The adit possesses a ten metre long portal and appears well preserved. The two adits and a series of costeans situated near swamp 40 m further southeast appear to be minor exploratory workings of limited depth (see Appendix plate 56). The deep shaft identified on the Cominco Exploration survey as the Queen Number 5 was never found although it should be at this location.

## SIGNIFICANCE/RECOMMENDATIONS

The roadside adit is well preserved and is deemed to be of Medium significance. It is therefore worthy of future management consideration. The precise location of the so called Queen Number 5 shaft would be useful to clarify also.

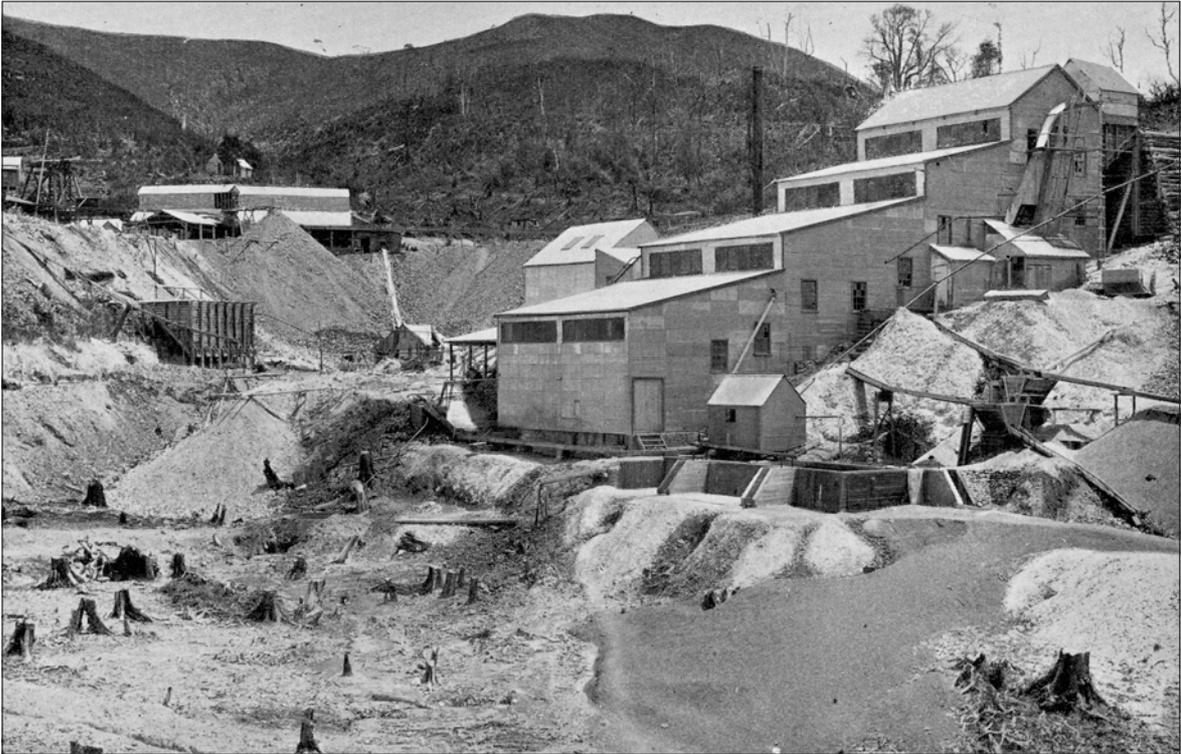
## REFERENCES

1. Undated chart of mineral leases, tramlines and plant at the Zeehan field held by MRT.
2. Chart of Queen Hill workings after Twelvetrees by Cominco Exploration, 1971 (MRT – TCR 71-0807).

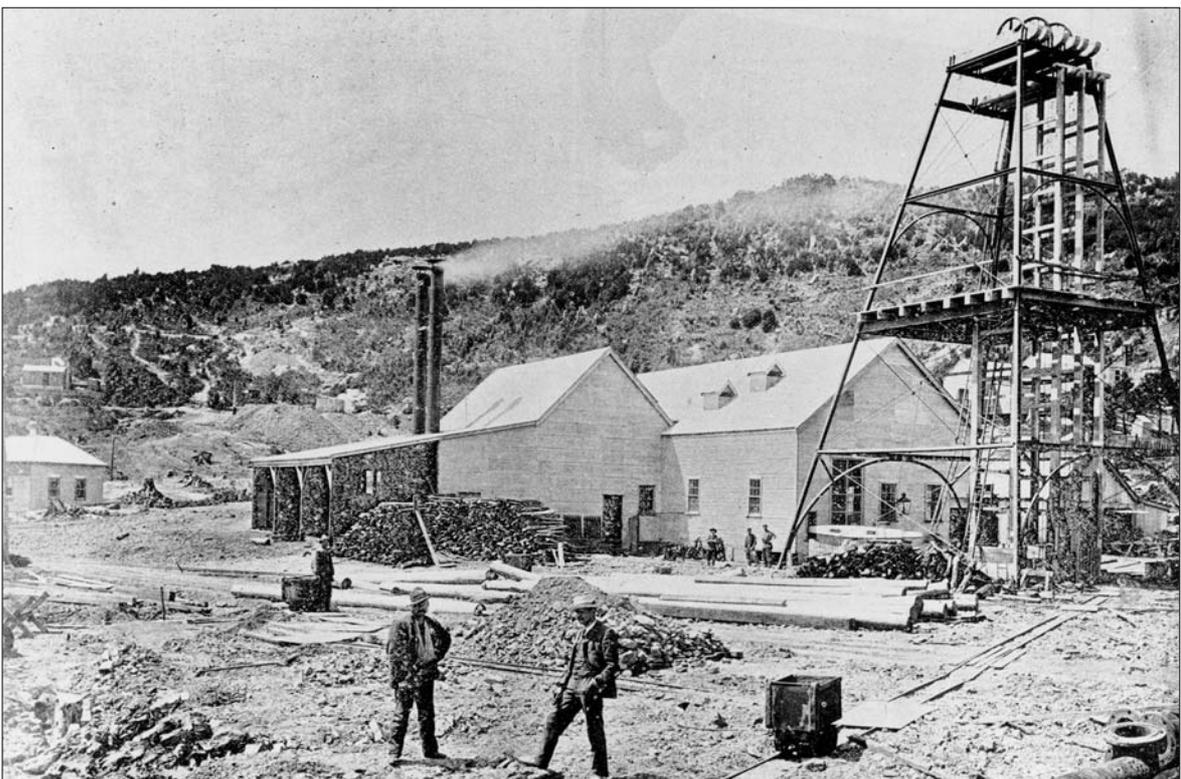
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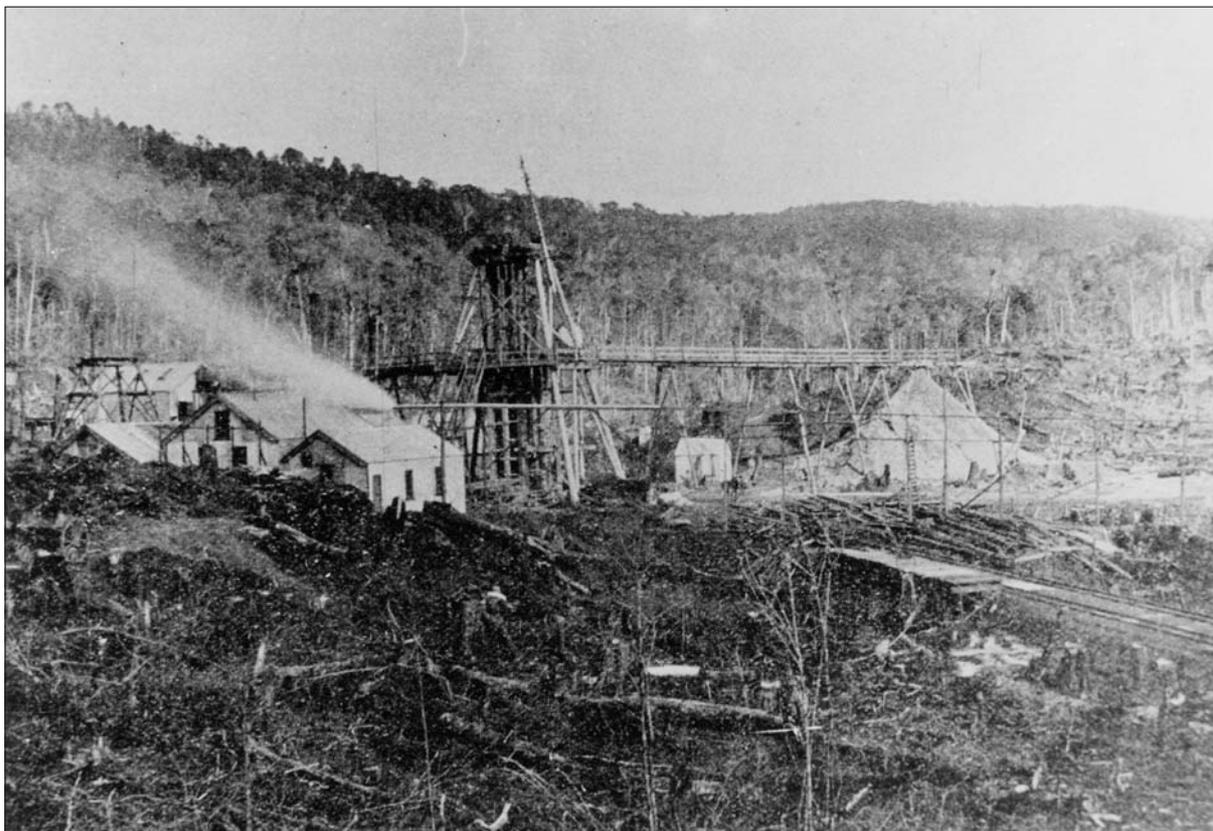
**APPENDIX 1**  
**Historic photographs**



*Plate 1. Historic photograph (c.1902) showing the Oonah main shaft and concentrating mill sites  
[Secretary for Mines Report, 1900-01]*



*Plate 2. Historic photograph (1903) showing Zeehan Silver Queen No. 4 shaft workings and related plant  
[Tasmanian Mail, 5 December 1903]*



**Plate 3**

*Historic photograph (c. 1900) showing Silver Queen No. 4 shaft workings. Note the more modest headframe compared to the replacement shown in Plate 2. [Cyclopedia of Tasmania]*



**Plate 4**

*Historic photograph (c. 1900) showing Zeehan Silver Queen concentrating mill. [Cyclopedia of Tasmania]*



**Plate 5**

*Historic photograph (c. 1900) showing general view of Silver Queen workings. Note the concentrating mill in mid right hand corner connected by tram to the No. 4 workings in the foreground and No. 2 and No. 3 workings in the background. [Cyclopedia of Tasmania]*



**Plate 6**

*Historic photograph (c. 1900) showing general view of Queen Hill workings from the summit of Queen Hill. Note the Silver Queen No. 4 shaft in mid frame. Note also the Silver Queen concentrating mill in upper left hand corner. Also of interest is the building to the right rear of the No. 4 workings, which has been tentatively identified in this report as the unknown concentrating mill at Clarke's lode workings. [Secretary for Mines Report 1901/02]*

## Contemporary Site Photographs



**Plate 7**

*Photo showing pump house brick scatter immediately southwest of Oonah main shaft.*



**Plate 8**

*General view of mullock dump valley at Oonah mine. Main shaft is located above the bank in background and concentrating mill is out of frame beside right foreground.*



**Plate 9**

*Northerly view of mullock dump at Oonah galena lode workings. Shaft is in shadow in upper right hand corner.*



**Plate 10**

*Adit immediately northeast of mullock dump at Oonah galena lode workings.*



**Plate 12**  
*Mullock dump from Bell's adit,  
near Oonah galena lode workings.*



**Plate 11**  
*Interior view of adit northeast of mullock dump at  
Oonah galena lode workings.*



**Plate 13**

*General view of tiered concrete footings at Oonah concentrating mill site.*



**Plate 14**

*Detail of crushing machinery footings on uppermost level of Oonah concentrating mill.*



**Plate 15**  
*View of interior wall at the hillside Oonah  
concentrating mill water tank.*



**Plate 16.** *View of earthen dam northwest of Oonah concentrating mill.*



**Plate 17**  
*Northwesterly view of Oonah tramway embankment  
beside Trial Harbour Road.*



**Plate 18**  
*Southeasterly view of Bradshaw's open cut from summit.*



**Plate 19**

*Adit entrance near summit of Bradshaw's open cut.*



**Plate 20**

*Pulley wheel discarded on slope of Bradshaw's open cut.*



**Plate 21**

*Mullock dump and timber sequence at Bradshaw's tunnel site.*



**Plate 22**

*Adit at Brice's tunnel workings.*



**Plate 23**

*Shaft and surrounding timber uprights at Leatherbarrow's tunnel workings.*



**Plate 24**

*Characteristic pale-coloured tailings beside creek at Bradshaw's mill site.*



**Plate 25**

*General view of Silver Queen concentrating mill site from the northern slope of Queen Hill. The tailings dumps immediately north of the Trial Harbour road (mid right hand side of frame) have originated from the Silver Queen mill located immediately to the north (concealed by regrowth). The two mullock dumps west of the mill tailings relate to the Silver Queen No. 3 shaft workings.*



**Plate 26**

*Detail view of one of the Silver Queen No. 3 mullock dumps.*



**Plate 27**

*Detail view of discharge from Silver Queen No. 4 shaft. Note timber shaft collar in centre background..*



**Plate 28**

*Frame showing one of two large concrete pedestals beside the Silver Queen No. 4 shaft.*



**Plate 29**

*Boiler cowling section lying beside southern shaft at Silver Queen No. 4 shaft site.*



**Plate 30**

*Remnant Silver Queen No. 4 mullock dump immediately north of Trial Harbour road.*



**Plate 32**  
*Earthen excavation at Silver Queen concentrating mill  
looking northeast from third level.*



**Plate 31**  
*Southwesterly view of tiered excavation at the  
Silver Queen concentrating mill.*



**Plate 33**

*Concrete retaining wall with upright timber recess between the fourth and fifth levels, Silver Queen concentrating mill site.*



**Plate 34**

*Easterly view along tailings tramway embankment, Silver Queen concentrating mill site.*



**Plate 35**  
*Adit/stope workings at southern edge of Silver Queen/  
Queen Extended boundary workings.*



**Plate 36**  
*Adit drive tunnel at Silver Queen/  
Queen Extended boundary workings.*



**Plate 37**

*General view of unknown concentrating mill concrete footings beside the Trial Harbour road.*



**Plate 38**

*General westerly view of unknown tailings heap beside the Trial Harbour road.*



**Plate 39**

*View of flooded roadside tunnel adit entrance. Note timbering.*



**Plate 40**

*Northwesterly view of mullock dump beside the Trial Harbour road.  
This dump drew waste from the roadside tunnel adit.*



**Plate 41**

*Interior view of concrete water tank beside Dunkley's No. 1 adit workings.*



**Plate 42**

*Westerly view of mullock dump and connecting tramline from Dunkley's No. 1 adit.*



**Plate 43**

*View within tunnel at Dunkley's No. 1 adit.*



**Plate 44**

*Remains of Dunkley and Fieldhouse's mill east of their former No. 2 adit workings.*



**Plate 46**  
*Detail of gate at unknown adit number 2/3.*



**Plate 45**  
*Gated entrance to unknown adit number 2/3.*



**Plate 48**  
*View within tunnel at Ward and Fairfield's adit.*



**Plate 47**  
*View within tunnel at unknown adit number 2/3.*



**Plate 49**

*Northwesterly view of Stormsdown open cut (southern benches) from the approximate location where Clarke's adit was formerly situated.*



**Plate 50**

*Northwesterly view towards Sven's swamp showing two sets of mullock dumps at Clarke's lode north workings.*



**Plate 52**  
*Adit portal at third adit, Clarke's lode south.*



**Plate 51**  
*View within tunnel at easternmost adit, Clarke's lode south.*



**Plate 54**  
*Adit entrance at Taylor's lode south.*



**Plate 53**  
*View of timbered tunnel inside third adit, Clarke's lode south.*



**Plate 55**  
*Track side adit at Zeehan Montana No. 2 slide.*



**Plate 56**  
*Dry adit at Zeehan Montana No. 2 slide.*

GEOLOGICAL SKETCH PLAN  
of  
**MOUNT ZEEHAN**

SILVER LEAD DEPOSITS

Scale Ten Chains to an Inch.



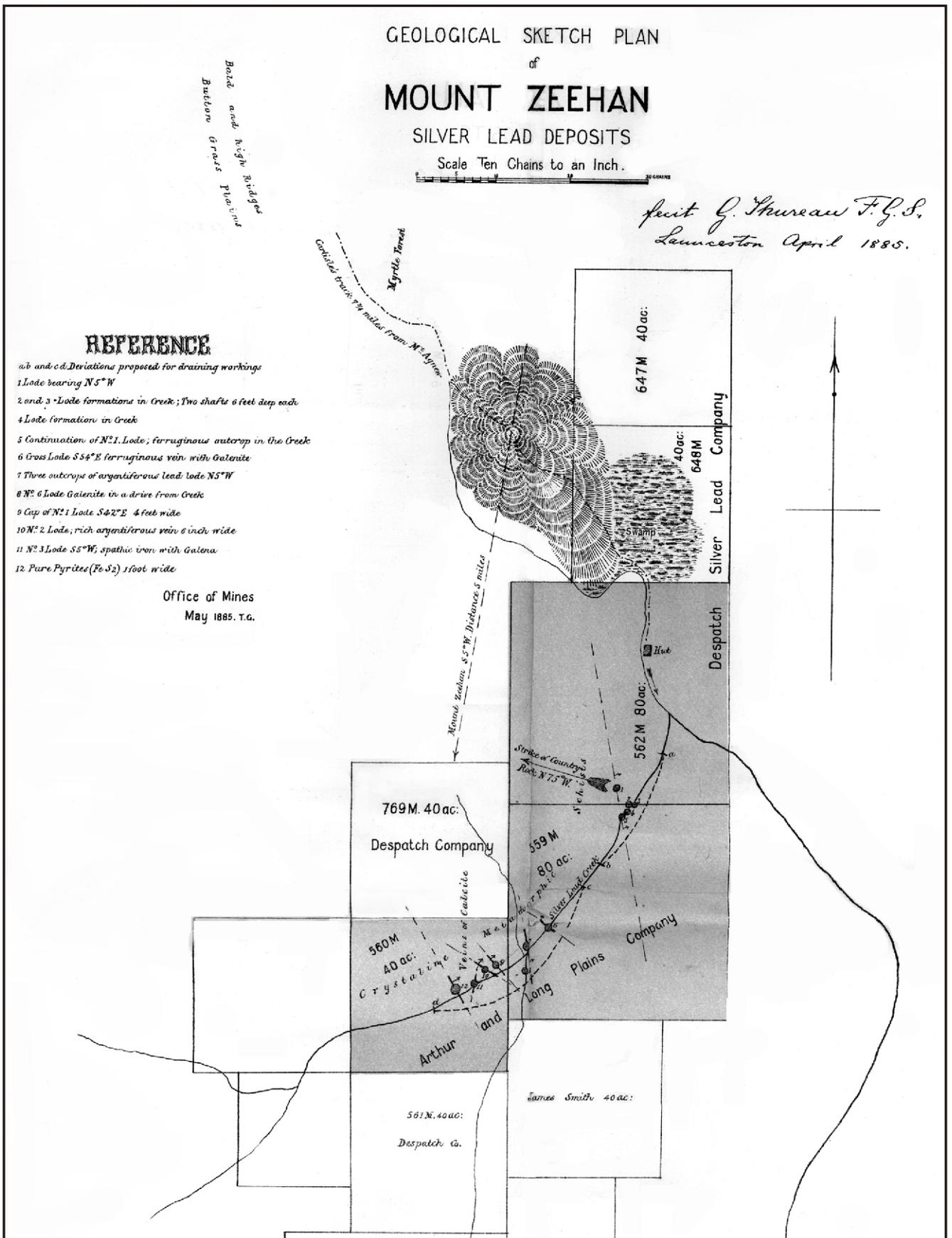
*Geot. G. Sturtevant F.G.S.  
Launceston April 1885.*

*Boyd and high ridges  
Buckton Grass Plains*

**REFERENCE**

- a/b and c/d Deviations proposed for draining workings*
- 1 Lode bearing N5°W
- 2 and 3 Lode formations in Creek; Two shafts 6 feet deep each
- 4 Lode formation in Creek
- 5 Continuation of N21 Lode; ferruginous outcrop in the Creek
- 6 Grass Lode S54°E ferruginous vein with Galena
- 7 Three outcrops of argenticiferous lead lode N5°W
- 8 N° 6 Lode Galena in a drive from Creek
- 9 Cap of N° 1 Lode S42°E 4 feet wide
- 10 N° 2 Lode; rich argenticiferous vein 6 inch wide
- 11 N° 3 Lode S5°W; spathic iron with Galena
- 12 Pure Pyrites (Fe S<sub>2</sub>) 1 foot wide

Office of Mines  
May 1885. T.G.



**Figure 8**

1885 survey of newly surveyed mining leases belonging to Arthur and Long Plains and Despatch companies at the Zeehan mining field. Note the original structure erected at Zeehan. The future Zeehan Silver Queen leases will be located immediately west of lease number 769M.





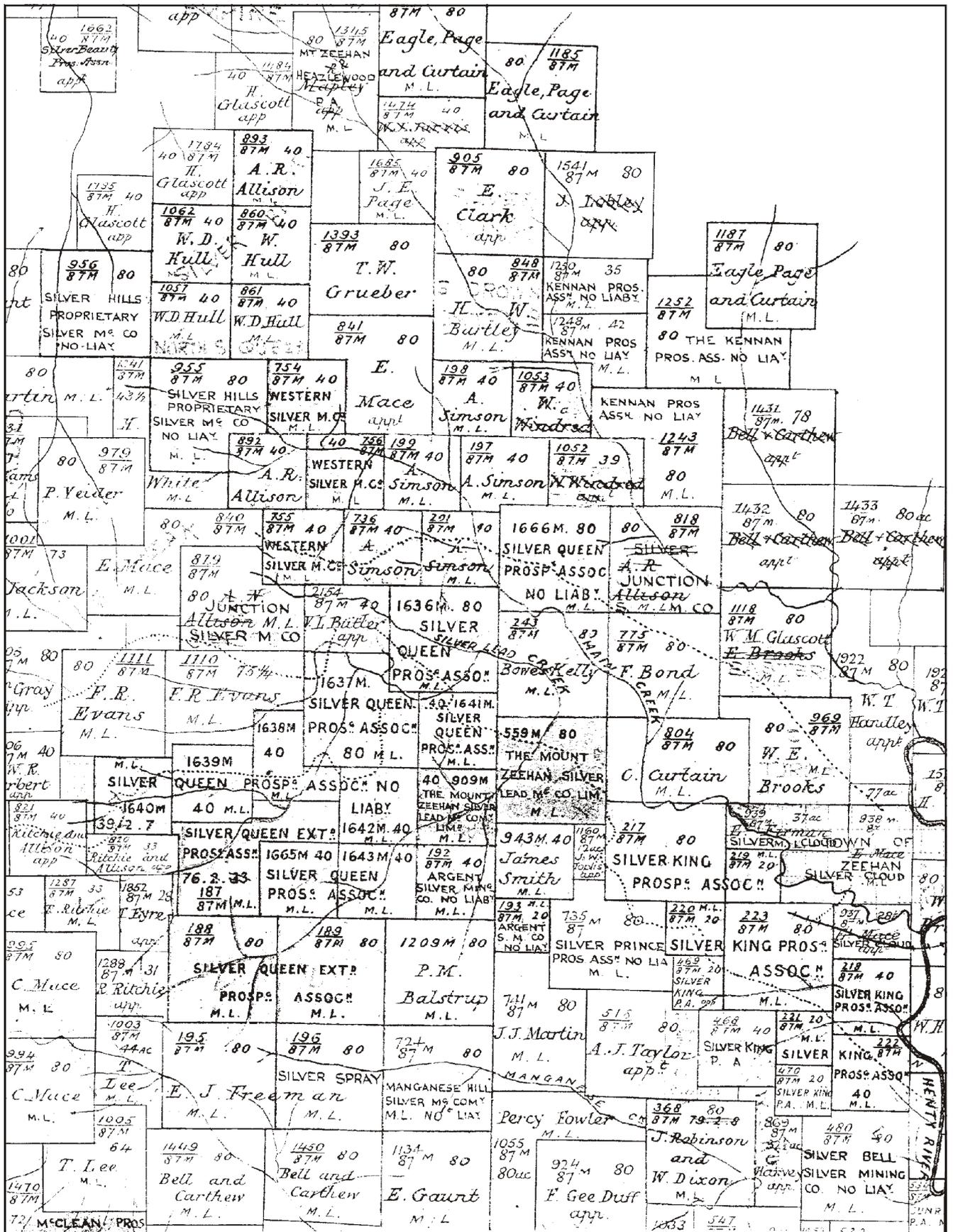


Figure 11

1888 survey of the Zeehan field showing a portion of the 24,000 acres hurriedly pegged by speculators.





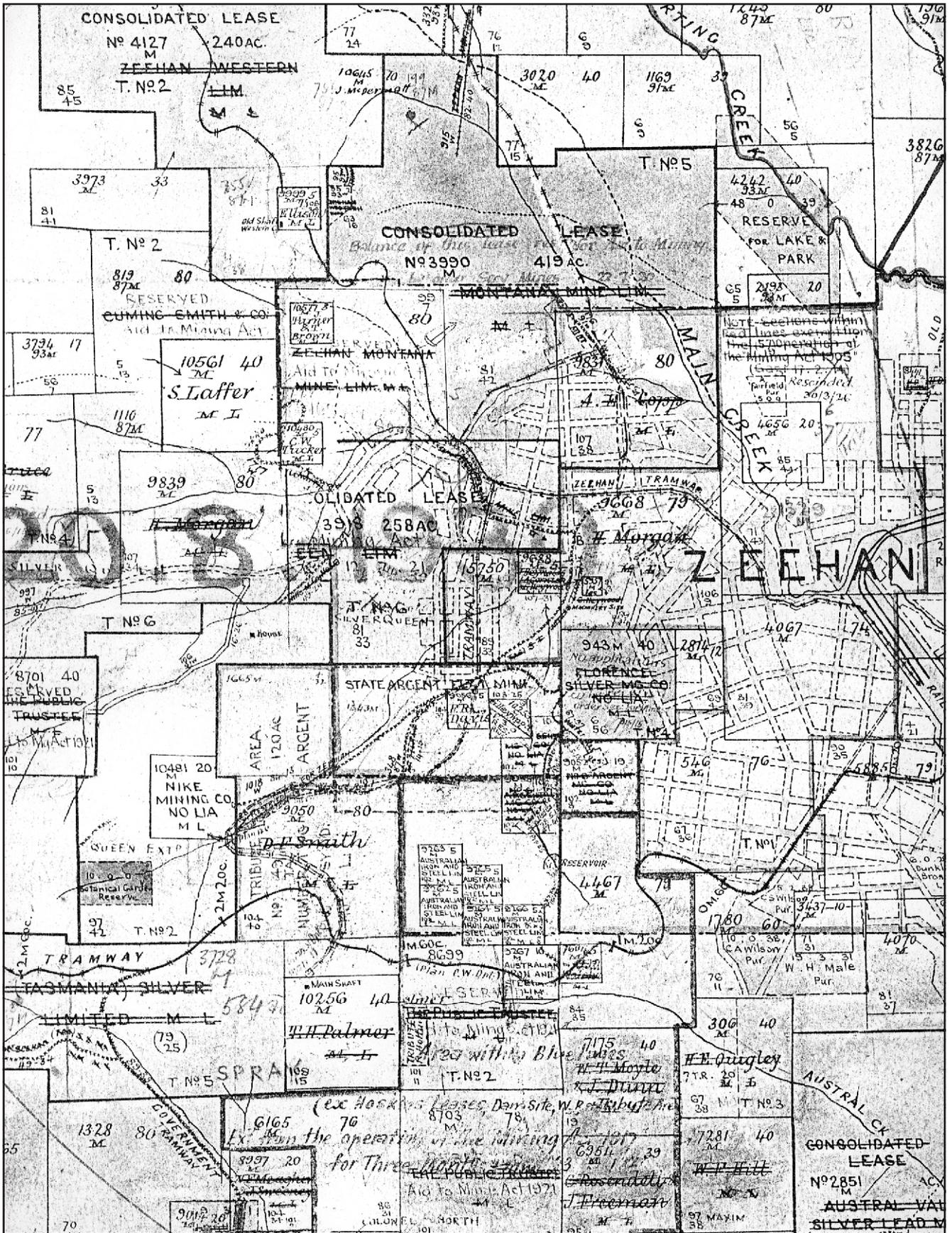


Figure 14

1914-1930 mineral lease chart showing collapse of remaining large company leases and their piecemeal usage by tributors or independents.

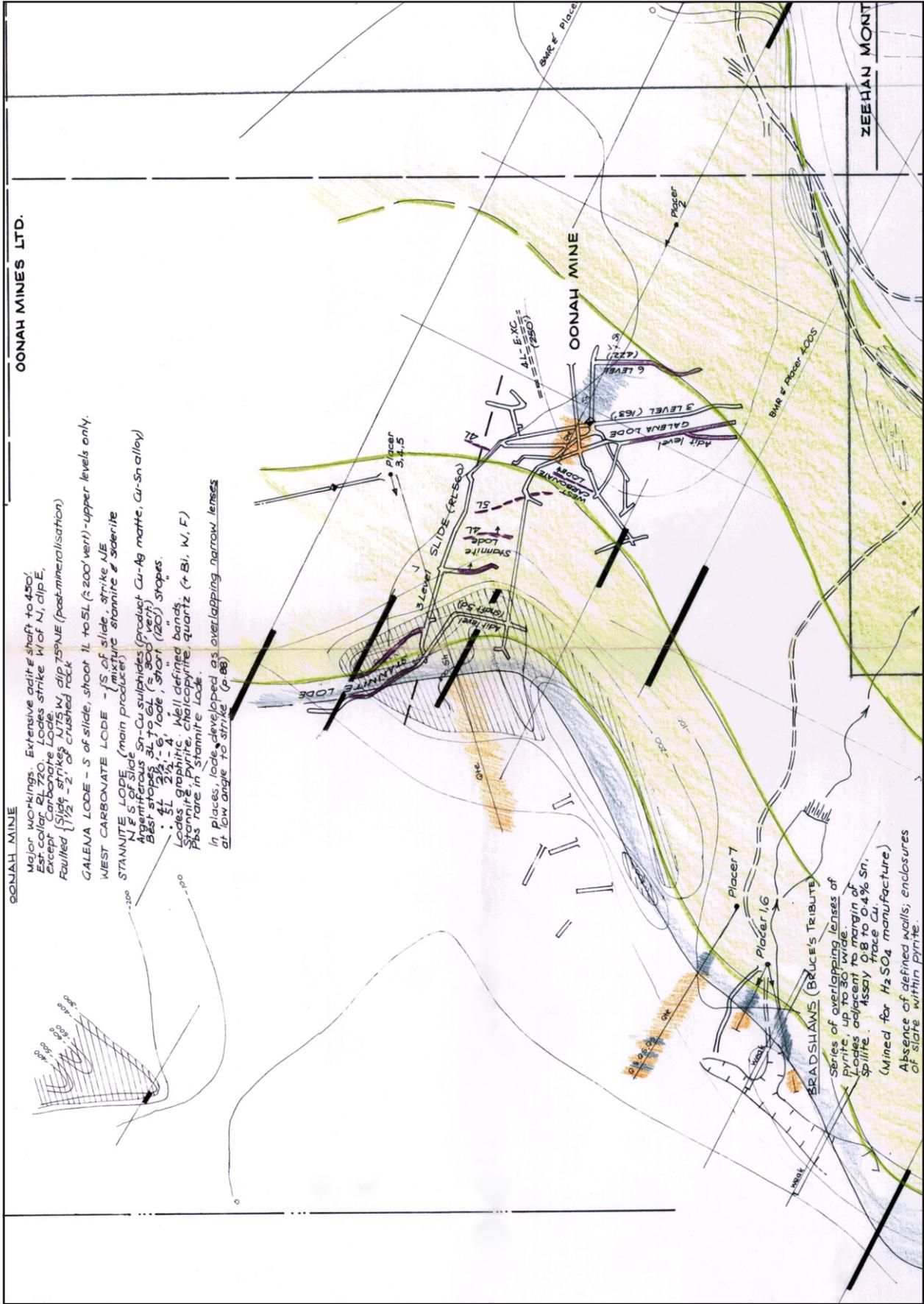


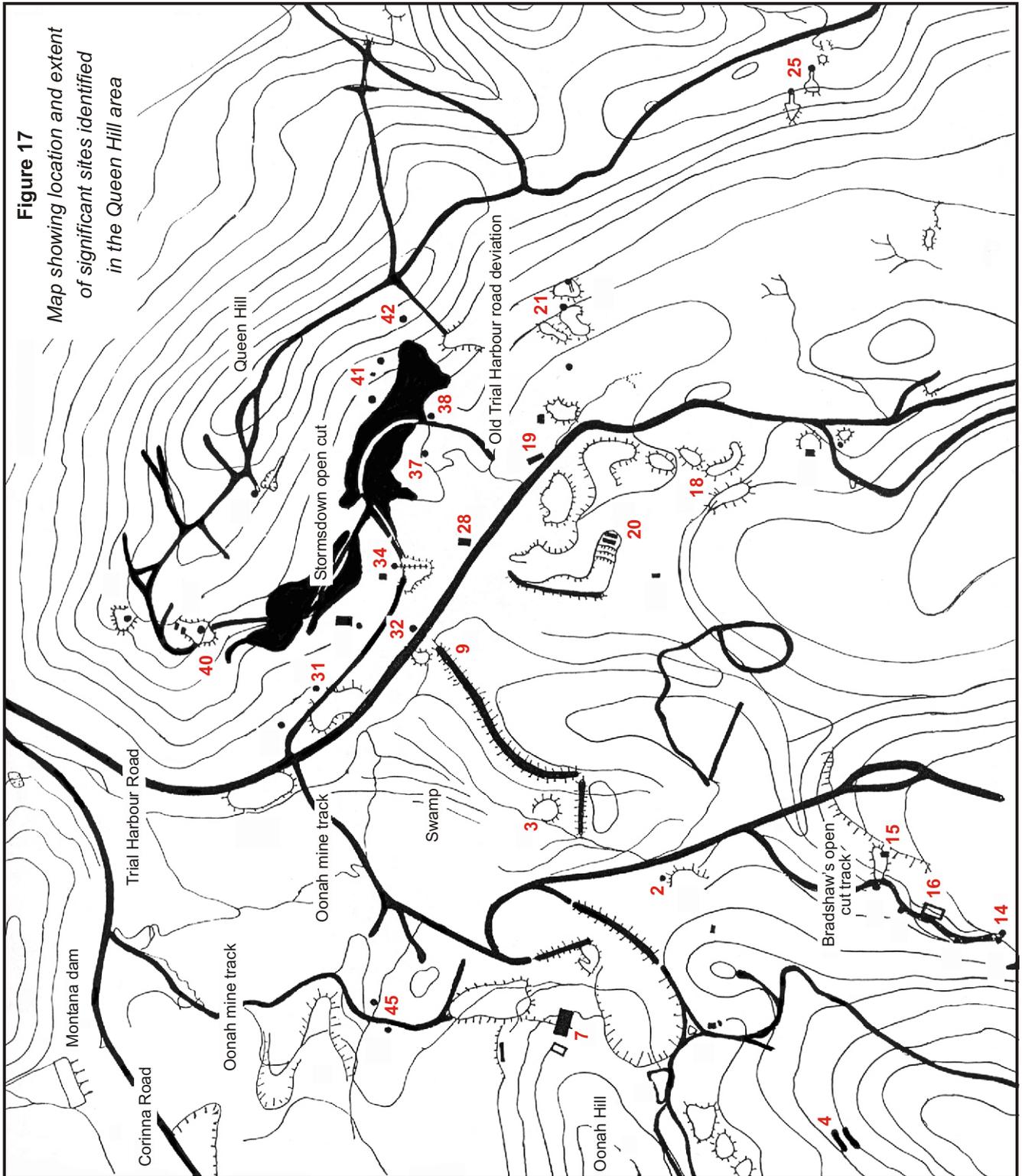
Figure 15. Section of 1971 Cominco Exploration Co. survey of Queen Hill area showing surface and underground workings at the Oonah mine and Bradshaw's open cut (from TCR 71-0807).



Figure 15. Section of 1971 Cominco Exploration Co. survey of Queen Hill area showing surface and underground workings at the various Silver Queen mines and various adits along Clarke's lode (from TCR 71-0807).

**Figure 17**

Map showing location and extent of significant sites identified in the Queen Hill area



0 100 m



- 5.1.2 Oonah galena lode workings
- 5.1.3 Bell's adit
- 5.1.4 Oonah stannite workings
- 5.1.7 Oonah concentrating mill
- 5.1.9 Oonah tramway embankments
- 5.2.14 Leatherbarrow's adit (Bradshaw's lode)
- 5.2.16 Oonah mine dam
- 5.3.18 Silver Queen No. 3 mullock heaps
- 5.3.19 Silver Queen No. 4 shaft
- 5.3.20 Silver Queen concentrating mill
- 5.3.21 Silver Queen Outcrop No. 4 lode workings
- 5.4.25 Silver Queen Extended gossan lode
- 5.5.28 Unknown concentrating mill site
- 5.5.31 Dunn's tunnel (No. 7 adit)
- 5.5.32 Road tunnel (No. 6 adit)
- 5.5.34 Dunkley's No. 1 adit
- 5.5.37 Unknown No. 2 and 3 adits
- 5.5.38 Ward and Fairfield's adit
- 5.5.40 Northern Clarke's lode workings
- 5.5.41 Clarke's lode south adits 1 and 2
- 5.5.42 Clarke's lode south adit 3
- 5.7.45 Zeehan Montana No. 2 slide