



MINERAL RESOURCES TASMANIA

**Archaeological Survey Report
1999/09**

**An archaeological survey
of the Great Republic
tin mine precinct**

By Parry Kostoglou





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Introduction

Project brief

This survey was commissioned by Mineral Resources Tasmania in order to quantify the nature of historic mine related cultural heritage in the vicinity of the former Great Republic and Ben Lomond tin mines. More specifically, the consultant was requested to undertake an assessment of the resident remains in such a manner as to allow the final report to be used by student groups during field trips to the relevant mine sites. As such, this report has been simplified in order to allow its target audience a greater chance of understanding the mechanics of the various mining activities undertaken there, in addition to the sometimes cryptic nature of its surviving archaeology.

Methodology

Fieldwork was undertaken over a three-day period between Tuesday 24 August and Friday 26 August 1999. During this period all known mine sites in the survey area were visited and the locations of all resident features mapped using a differential global positioning system (DGPS). Scaled plans and a photographic record of the more significant features were also made. Two days were subsequently spent perusing archival information on the relevant mines and producing maps from the DGPS data. A further three days were spent authoring this report.

Constraints

The principal constraint encountered during the completion of this survey related to the historic research component. Unfortunately, the bulk of information detailing the development of these mines is chronicled by a number of long defunct regional newspapers. As a result, much more time would have been necessary to peruse the relevant papers published between c.1878 and 1920 in order to compile a comprehensive history of these mines. As this report relies almost exclusively on the more readily accessible Mines Department reports of the day, the historical summaries provided for each mine lack those vital personal details which the government geologists of the day ignored in their pursuit for data.

Location and extent of survey area

The six historic mines and related features described in this report occur in a due north/south orientation which follows a resident mineral deposit known historically as the Ben Lomond line of lode. These mines collectively occur within a 1500 x 500 metre wide rectangle of open woodland in the vicinity of Gipps Creek, a prominent historic tin mining watershed situated some five kilometres southwest of Ben Lomond mountain in northeastern Tasmania. The land occupied by these mine sites is zoned as State forest and as such is managed by Forestry Tasmania. Plate I shows the location of the survey area and its main resident mine sites.

Recommendations

As a result of this survey, the following agency-specific recommendations are made.

Recommendations relating to Tasmanian Minerals Council education group

This survey was commissioned to provide details of the resident mine workings for subsequent use by school groups. Bearing this end use in mind, it is recommended that:

- School groups be encouraged to visit the relevant minescape providing that all archaeological features and portable artefacts are not damaged or defaced in any way.
- These school groups adopt some form of guided tour route around the workings so as to minimise impacts on the landscape. A recommended walk through the historic minescape appears as [Appendix 7.4](#).
- The students be encouraged to undertake some form of archaeological investigation of their own when visiting the mine precinct. This could take the form of simple mapping exercises and deductive interpretation of historic activities at various sites/features.

Recommendations relating to Mineral Resources Tasmania

It is further recommended that Mineral Resources Tasmania:

- Make all exploration activity in this area contingent on the protection of all historic features.
- Circulate this report to Forestry Tasmania in order to assist in the future protection of these sites from logging activity, which is deemed to be the largest potential threat to the resident archaeology.

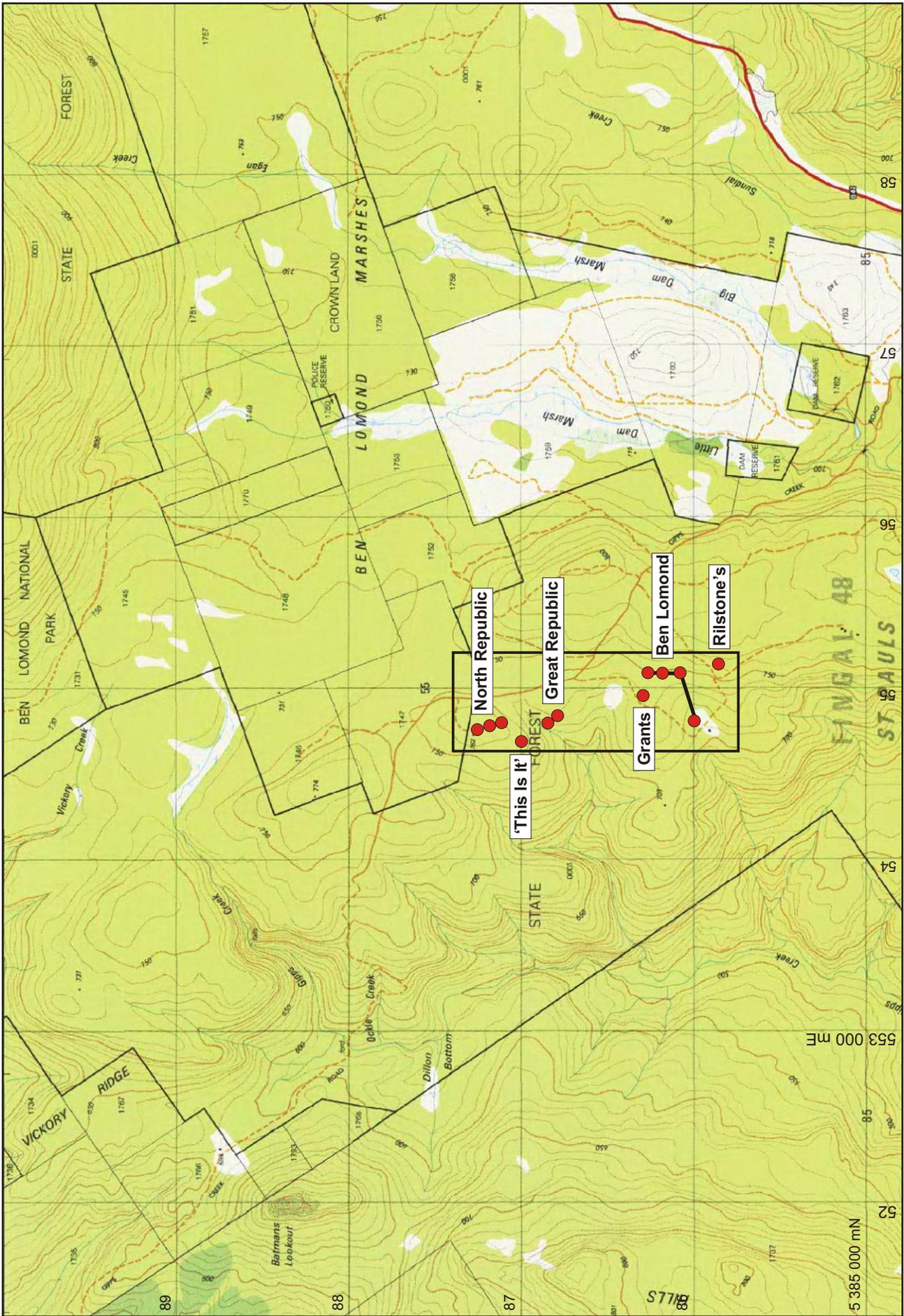


Plate 1. 1:25 000 scale map showing location/extent of survey area and main mines.

Historical overview

This section provides a brief summary of historic tin mining in Tasmania in addition to a more lengthy overview of activities in the Ben Lomond vicinity.

Tin mining in Tasmania

Tasmania's first tin discoveries may have been made in the northeast of the State some time prior to 1870. Unfortunately none of these appear to have been recorded and such claims must remain anecdotal. The first official, and certainly one of the most celebrated tin discoveries, was made at Mount Bischoff by James Philosopher Smith in 1871. Almost immediately, the northwest of Tasmania became the focus of intensive prospecting for further deposits of tin and other valuable minerals, although some men chose to try their luck elsewhere.

In December 1872, a Mr Benjamin Brooks and partners discovered tin near Mount Maurice, Ringarooma. Although financial problems prevented this deposit from achieving the acclaim it deserved, news of the find at least encouraged other prospectors to try their luck in the State's northeast, including a Bothwell-born man called George Renison Bell. While sampling wash dirt from watercourses between the Scamander River and Georges Bay in February 1874, Bell found alluvial tin in several streams, but for reasons unknown chose instead to continue prospecting. His persistence paid off handsomely in March that same year, when he found more substantial alluvial tin in the Boobyalla River near Little Mount Horror. Having found business partners willing to finance him, Bell hurriedly formed the Boobyalla Tin Mining Company. With his partners securing the mining end of the new business, Bell returned to the bush to prospect and found yet more tin at Thomas Plains (Weldborough). With the sheer scale of the alluvial tin fields in the northeast now apparent, large numbers of prospectors proceeded to emulate Bell and find yet more deposits in the major river systems, such as the Ringarooma and Cascade rivers, between 1874 and 1876. To date, these discoveries had occurred in the Ringarooma district, but as prospectors followed the tin trail to the sea, new tin fields were found at Blue Tier, St Helens, Ben Lomond and St Pauls in the decade between the mid 1870s and 1880s.

Meanwhile the last generation of tin fields were being discovered back in the western half of the state. In 1876, Surveyor in Charge Charles Sprent discovered the South Heemskirk tin field. The Mount Balfour tin field was subsequently discovered in the mid 1880s and the North Dundas tin field shortly after in 1890. In 1893 the Stanley River and Cox Bight tin fields were first reported and surveyed.

The fortunes of all these workings naturally reflected the commodity price for tin set on the London market. Other periodic activities such as the two world wars also affected the tin market as greater production was required for the imperial war effort. Depressed tin prices since the 1980s have discouraged all subsequent prospecting and mining activities for tin, and this scenario is not likely to change for some time. Tin mines, for the moment at least, must remain archaeological sites.

Tin mining at the Ben Lomond line of lode

One source suggests that tin may have been mined from the Ben Lomond vicinity as early as 1872, although this seems hard to believe given that George Renison Bell's discoveries did not take place until 1874. It is therefore more likely that the tin potential of the Ben Lomond area was first discovered in the mid to late 1870s in conjunction with nearby Gipps and Storys creeks. Although details of the original tin strike near Ben Lomond remain unclarified, we do know that by 1881 several 80 acre leases had been marked off and occupied by a combination of hopeful miners and shrewd speculators. By c. 1882/83, these leases had passed through a number of hands, and one company titled the Ben Lomond Tin Mining Company had acquired two of the more promising blocks on which it proceeded to sink underground workings and erect a mill plant. A second company occupying neighbouring leases, and titled the Great Republic Prospecting Association, established itself by 1885, and these two mines would collectively proceed to monopolise the so-called Ben Lomond mineral lode. During the closing years of the 1880s, public reports of progress at this field were glowing enough with confident forecasts for the future. By 1887 the Ben Lomond mine adit was 800 feet long and the company had for some time been smelting ore at its mill, although little of it seemed to come from their mine. The construction of another mill by the Great Republic Company further appeared to confirm the long term security of the Ben Lomond field, which the Secretary of Mines re-iterated to Parliament in 1890: *"There is a good deal of preparatory work being done in this neighbourhood, and the prospects are encouraging. The existence of valuable tin lodes in that locality is undoubted, and only the capital and energy are required to develop them"*.

Within two years this apparently enviable state of affairs had been proven ill-founded. In 1892, geologist Montgomery visited the Ben Lomond field to find the Ben Lomond mine abandoned and its mill plant semi ruined. In one of his reports, Montgomery bluntly eulogised that the Ben Lomond mine's management had been profligate in that: *"all the available money was spent in building the battery, erecting winding and pumping machinery, sinking shafts, and driving the main tunnel, and at the end of all this nothing was left to look for the tin with"*.

A year later several small scale miners moved on to the now forfeited leases and proceeded to rework the tailings dumps at the Ben Lomond mill and commence alluvial sluicing of the creek beds. In contrast, the Great Republic mine appeared to move into high gear as new tunnelling and open-cut work at the neighbouring North Republic lease was publicly mooted. A visit to the mine by geologist Waller in 1901 found that the Great Republic mine had also succumbed. In one dispatch, Waller summarised the fate of the mine tersely: "*The Great Republic Mine worked its shoot of ore ... to a depth of 450 feet, and then abandoned it, not because the tin gave out, but because, owing to the low price of tin and the increased cost of mining, the venture ceased to be profitable*".

When tin prices proceeded to recover somewhat by 1913, a new company was formed in Launceston to re-open the Great Republic mine. A new mill complex was built and a tramway laid to the neighbouring North Republic lease where open-cut mining proceeded in earnest to provide much needed first class ore. Unable to ever provide sufficient ore to its new mill, this company's fortunes steadily declined until its final collapse in 1920. The Great Depression saw a new generation of small-scale miners descend on the surrendered leases to alluvially work the surface or re-open abandoned deep lead workings. This tradition prevailed until the early 1990s, when the most recent mining undertaken by Mr Eli Quillerat ended without ceremony.

Site reports

This section details the historic backgrounds of the various mines in the survey area, in addition to describing their current state of preservation. Reference should be made to Plate 2 which shows a small-scale map of the entire workings. Various other plates show larger scale maps of individual mine workings. In summarising the Ben Lomond line of lode's surviving mine-related archaeology, it should be remembered that essentially the minescape within the survey area was created by three principal mines working the resident mineral lode (Ben Lomond, Great Republic, North Republic). When these mines closed, a number of small-scale independent operators (Death, Hayes, Quillerat, Sajben, Hahl) moved into the old leases to mine and process ore. Both generations of miners resided on site and therefore left remains of their camps. This section therefore describes mines, camp sites and related infrastructure such as old roads, dams and water races.

■ 'This is it' workings

LOCATION

Historically, the oldest workings at this mine appear to have straddled the southern boundary of a 40 acre mining lease number 3752/93M (see Plate 21). Today, this small mine might be better described as being situated 250 m southwest of the North Republic mine. Access is best achieved from a snig track off the western side of Gipps Creek Road as indicated on Plate 2.

HISTORY

This location was probably initially worked in the early 1880s in conjunction with other tin prospecting work on the newly discovered Ben Lomond line of lode. Subsequently, tributors from the nearby North Republic mine might have sampled this vicinity in the 1890s and early 1900s, although precise details remain elusive. There are more details regarding work undertaken here by two separate partnerships after 1955. Between c.1958 and the mid 1960s, messrs Julius Sajben and Darrel Hayes treated 127 tons of ore and obtained 1.48 tons of tin concentrate using simple, if time honoured, technology as one source acknowledged at the time: "*At present hand drills are being used; to speed up the development modern mining equipment would be of considerable value to the operators*"⁽¹⁾. Subsequently during the 1980s, Messrs Eli Quillerat and David Dicker obtained nine bags of tin from a small open cut further down the hillside⁽²⁾. One source also alleged that some amounts of silver, lead and copper were found at the northern end of these workings in the 1950s⁽³⁾. The current nomenclature or name of the mine also probably dates from these later mid 20th century activities.

SITE DESCRIPTION

This small mine site consists of seven surface features orientated north/south down the slope of an un-named hill. Reference should be made to Plate 3 which shows a scaled plan of the mine site and the disposition of its various features.

Main shaft

The northernmost feature at this mine is an un-timbered shaft and related ore raising windlass. The shaft itself has a roughly circular mouth over which a crude timber headframe has been erected by the last operators (Hayes & Dicker). The headframe consists of a single cross spar elevated over the shaft by a timber upright on one side and a live tree trunk on the other. A cross brace supports the smaller upright. A metal windlass (hand crank) fastened to another tree seven metres east of the head frame was used to wind material up and down the shaft by means of a cable slung over the cross spar.

Settlement site

Situated 20 m due west of the shaft/headframe are the remains of a small settlement used by the earliest generation of miners at this site. This site consists of at least one remnant dry-stone chimney and associated red brick debris, in addition to an artefact scatter. This scatter contains a curious mix of domestic material such as bottle glass/ceramic, and industrial items such as a boiler pressure valve stem and a section of ore crusher plate.

Pits/mullock

The principal mine workings at this site appear to be two large pits situated south of the headframe/shaft. These 10 x 5 x 4 metre deep excavations both possess a number of shallow drives driven into various aspects of their walls. A 10 x 3 x 2 metre high mullock pile lies immediately east of the southernmost excavation. Several sheets of corrugated iron also litter the base of this mullock heap.

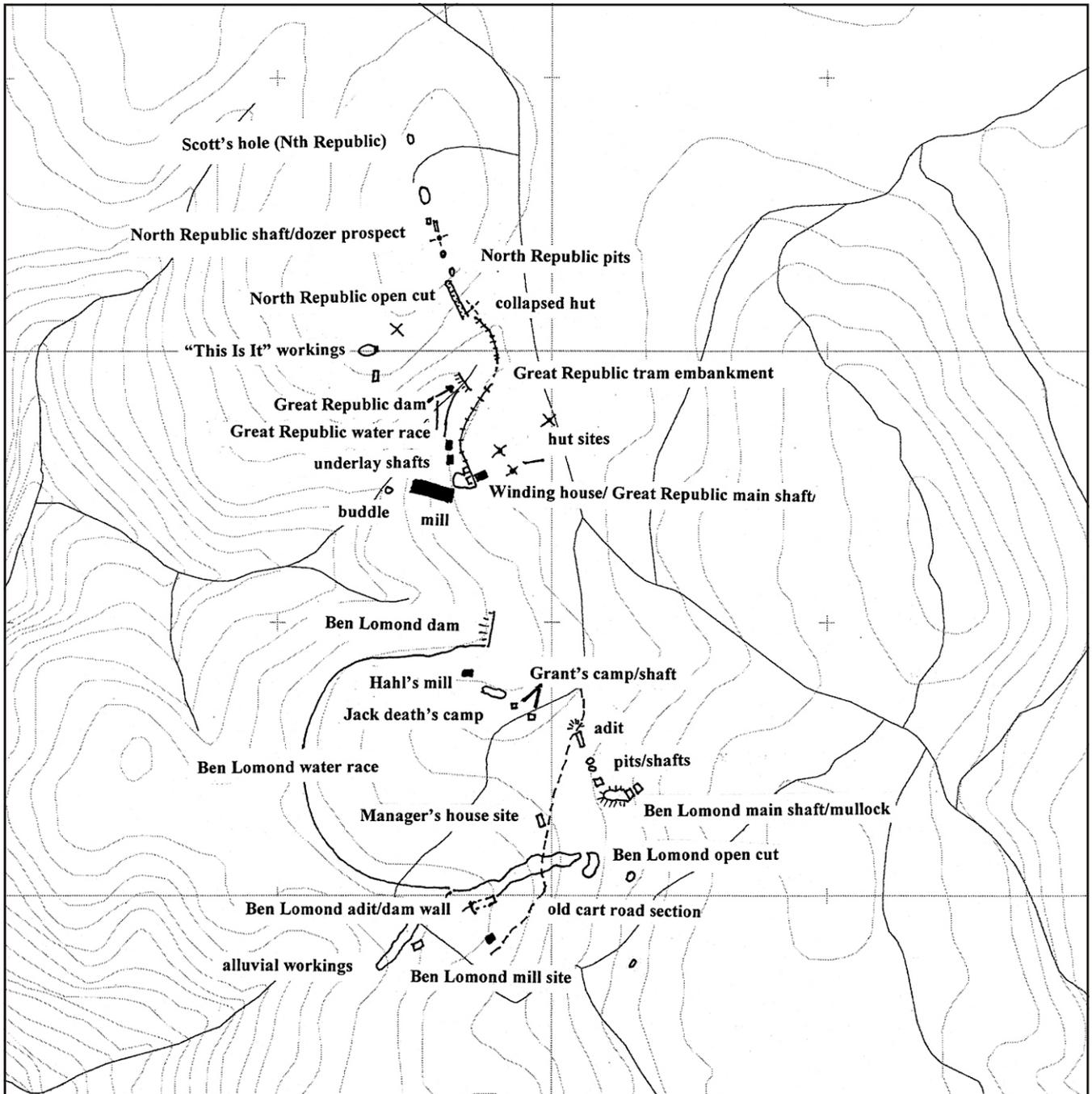


Plate 2

1:10 000 scale map base showing all mine features in the survey area.

Trenching

A seven metre long costean trench dug to analyse the resident mineralogy lies eight metres south of the mullock heap. A pair of parallel mitre marks were also noted on a log five metres south of this costean.

Railway iron/mitred log

Several lengths of narrow gauge railway iron, including steel rails and a 'Y' plate, lie in a heap behind a fallen tree some 15 m southeast of the costean trench.

Mill site

Approximately 20 m south of the costean trench lie the remains of an ore concentrating plant or mill. A scatter of iron consisting of structural items such as corrugated iron sheets/ metal bolts lie around a core of machinery related artefacts such as fuel drums and crusher plates. A number of adjacent *in situ* tree trunks have metal fasteners affixed to them, indicating that they supported a roof over the mill plant. An 8 x 4 m wide earthen cutting housed milling plant for treating fine tailings at the southernmost end of the mill.

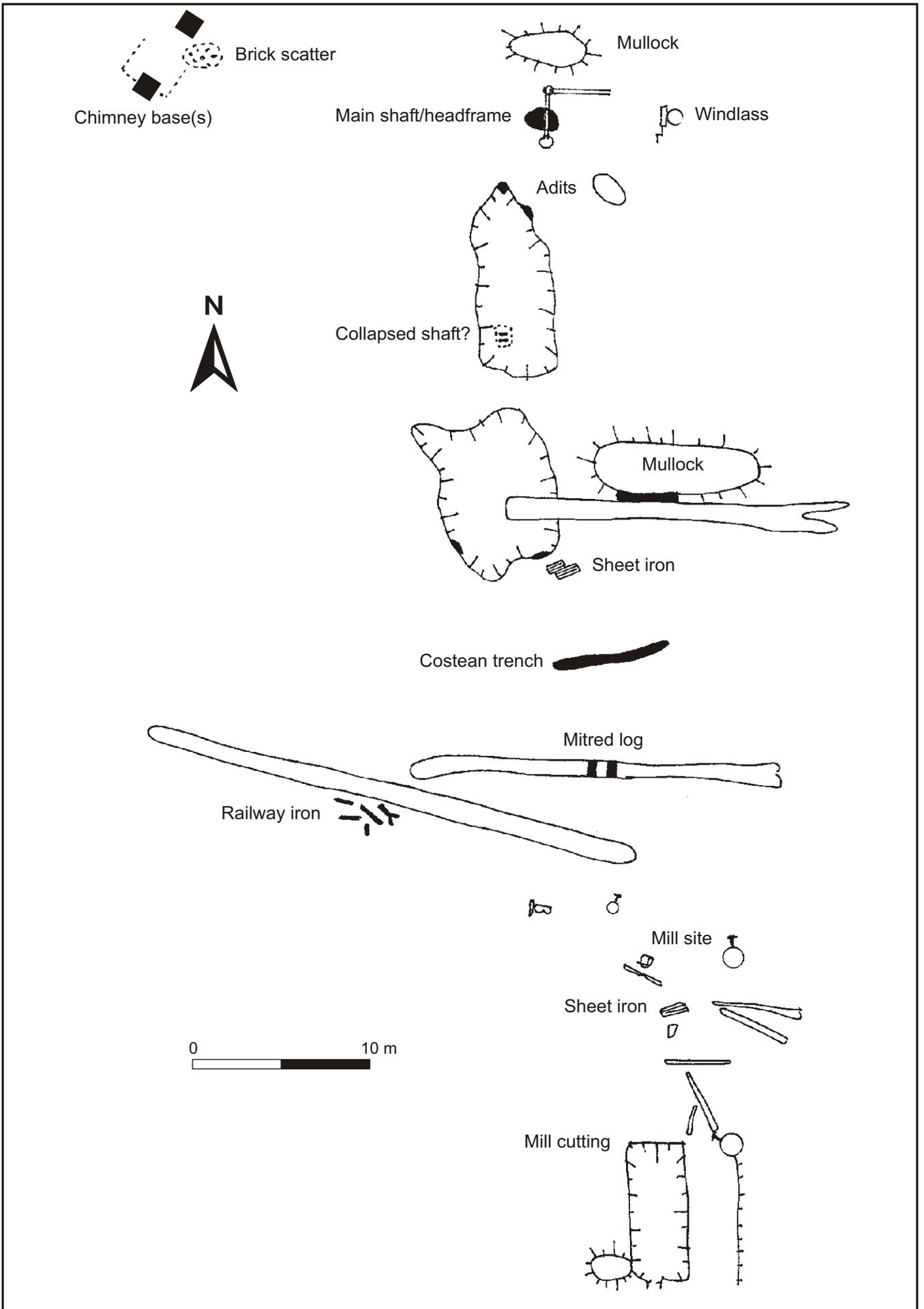


Plate 3

Scaled plan of the 'This Is It' mine site.

Open cut

Evidently, a small open cut excavated by Messrs Quillerat and Dicker in the 1980s is located somewhere south/downhill of the mill site. This feature was not searched for.

INTERPRETATION

Although historic records for this mine are minimal, the surface remains strongly support the suggestion that the mine enjoyed two separate periods of operation. The settlement site, with its old chimney bricks and artefacts relating to steam-powered technology, represent miner occupation near the turn of the century, whereas the milling gear, headframe and open excavations relate to activities post-dating the Second World War. The iron tram-rail artefacts and parallel mitre marks on logs between the shafting and mill site suggest that some form of crude tramline might have been built here to move wash dirt from the mine to the mill.

REFERENCES

1. Jack, 1965, page 23.
2. Volker Hahl, pers. comm.
3. Fingal Historical Society, 1985. Site No. 37.

North Republic tin mine

LOCATION

This is the northernmost set of workings on the Ben Lomond line of lode as indicated in Plate 2. Historically, the North Republic workings appear to have been situated near the eastern boundary of a 40 acre mineral lease number 3752/93M (see Plate 21).

HISTORY

The area containing the North Republic workings was originally pegged as an 80 acre mineral lease c. 1881 by a Mr McCracken. This gentleman appears to have acquired the property for speculative purposes and does not seem to have made any real attempt to mine his lease. Several years later a party of tributors who had lost their lease at the neighbouring Great Republic mine negotiated to work McCracken's dormant lease to the north, which had now become known as the 'Republic Extended'⁽¹⁾. By August 1887 this tribute party, led by a Mr McDermott, was reported to have sunk a 10 foot deep shaft at the workings, which had now been re-christened the 'North Republic' rather than the Republic Extended⁽²⁾. Once again, the tributors faced a renewed threat from the Great Republic mine management who sought to acquire the North Republic lease for their own purposes⁽³⁾.

According to one local source, another attempt to mine the North Republic lease was made around this time by a Mr George Scott, although it remains uncertain whether this gentleman was a separate tributor or part of Mr McDermott's team. Evidently Mr Scott's ore was treated at the Ben Lomond mine's mill before it closed in 1892. Mr. Scott is said to have mined 100 tons of ore before it assayed below 2% and became unviable⁽⁴⁾. During his visit to the Great Republic mine in 1892, government geologist A. Montgomery made no reference to any workings on the adjacent North Republic claim. He did however encourage the present Great Republic mine's management to extend their activities further north, a hint perhaps that by the time of his visit, the tributors at the North Republic had departed. In 1893, the Great Republic Company appears to have indeed taken over the North Republic lease and undertaken some open-cut mining. Another inspection by a government geologist George Waller in 1901 found the North Republic lease to be in the hands of the Ben Lomond and Republic Company, evidently the result of a merger between the two biggest companies working this lode. Of work to date at the North Republic, geologist Waller noted:

"On the most northerly of the sections held by the Ben Lomond and Republic Company (3752-93M) there are two formations which I consider well worthy of attention... The second formation is situated some chains to the north east of this, and is of a different character. The stone here is composed almost entirely of white feldspar, with a little quartz. A large open cutting has been made and evidently the greater part of the stone has been removed and crushed. About 20 tons, however, are still at grass, and all this contains good tin distributed through it in fine grains. If this 20 tons can be taken as a sample of the stone, the show is certainly payable. Unfortunately, owing to the excavation being full of water, I could not examine it in situ".⁽⁵⁾

In c.1914, a Launceston-based company undertaking renewed operations at the Great Republic mine also bought the adjacent 100 acre lease containing the North Republic workings. The open-cut mine on the former North Republic lease was evidently worked by them in a bid to increase the volume of ore being processed at the newly erected (2nd) Great Republic mill⁽⁶⁾. Despite such measures, this bid to resurrect the Great Republic

mine failed and all work at the main mine and the North Republic lease had ended by the end of 1921. In the mid 1960s, a M. Cowdrey opened up parts of the North Republic lode with a bulldozer. In the mid 1980s, a second mechanised campaign was waged here by Messrs Eli Quillerat and Clarrie Hampton⁽⁷⁾. Neither prospecting effort was successful, and the workings were abandoned soon after.

SITE DESCRIPTION

Mine-related workings within the former North Republic lease occur within a 300 x 50 m wide corridor which follows the underground mineralogical line of lode. There appears to be three main sets of workings along this line, which are described more fully below. Reference should be made to Plate 2, which shows all the resident features at this mine.

Northernmost workings

The northernmost set of workings at the North Republic are a combination of shafts sunk by Mr Scott in the early 1900s and more recent open cut/shallow prospecting by Mr Eli Quillerat in the 1980s. Plate 4 shows a scaled plan of this set of workings. The central and most obvious feature at this site is a shaft collar and adjacent timber framework which once formed part of the roof framing for a shed by Mr Quillerat. A pair of welded 44 gallon drums and a section of roof guttering used as a water flume can still be seen lying on the timber framing. Mr Quillerat also re-timbered the adjacent shaft collar in order to re-work it safely. Plate 13 shows a view of these workings taken during the 1980s.

Located five metres north of the mill site is a collapsed and flooded shaft which was re-prospectored by Mr Quillerat. Lying beside this flooded shaft is a pile of block mullock. Located 20 m to the south of Quillerat's shed site is a bulldozed prospect and adjacent set of mullock heaps which formed part of a failed attempt to re-open the workings made by a Mr Cowdrey in the 1960s. Plate 14 shows Mr Cowdrey's bulldozed prospect in the 1980s.

Numerous old shafts and prospects

Commencing 40 m south of this bulldozed prospect, a series of shallow prospects, flooded shafts and related mullock heaps are encountered at various intervals all the way to the North Republic open cut, some 250 m to the south. These assorted workings appear to be turn of the century attempts made by tributers or the Great Republic Company to clarify the precise orientation of the tin-bearing line of lode.

Open cut

The southernmost workings on the old North Republic lease comprised a substantial open-cut operation commenced in the 1890s by tributers, which was ultimately mined out by the second generation of Great Republic mine operators between 1914 and 1919. The main feature at the open cut site is a 65 x 5 x 8 m deep trench. Piles of large diameter waste rock have been dumped at intervals west of the open cut while smaller gauge mullock has been deposited in a single 35 m long finger formation immediately to the east.

Hut site

A collapsed hut was located 30 m east of the southernmost end of the open cut trench. Measuring 5 x 3.5 m in dimension, the hut consists of a toppled corrugated iron roof/wall skin applied to an unhewn hardwood frame. A dry-stone chimney foundation is also evident beneath one corner of the collapsed debris. The origins of this hut remain unclear.

REFERENCES

1. The Tasmanian, 1 October 1887.
2. Undated reference from *The Tasmanian* (August 1887) obtained from Volker Hahl.
3. Undated reference from *The Tasmanian* (August 1887) obtained from Volker Hahl.
4. Fingal Historical Society, 1985, Site No. 35.
5. Waller, 1901, page 330.
6. Volker Hahl, pers. comm.
7. Volker Hahl, pers. comm.

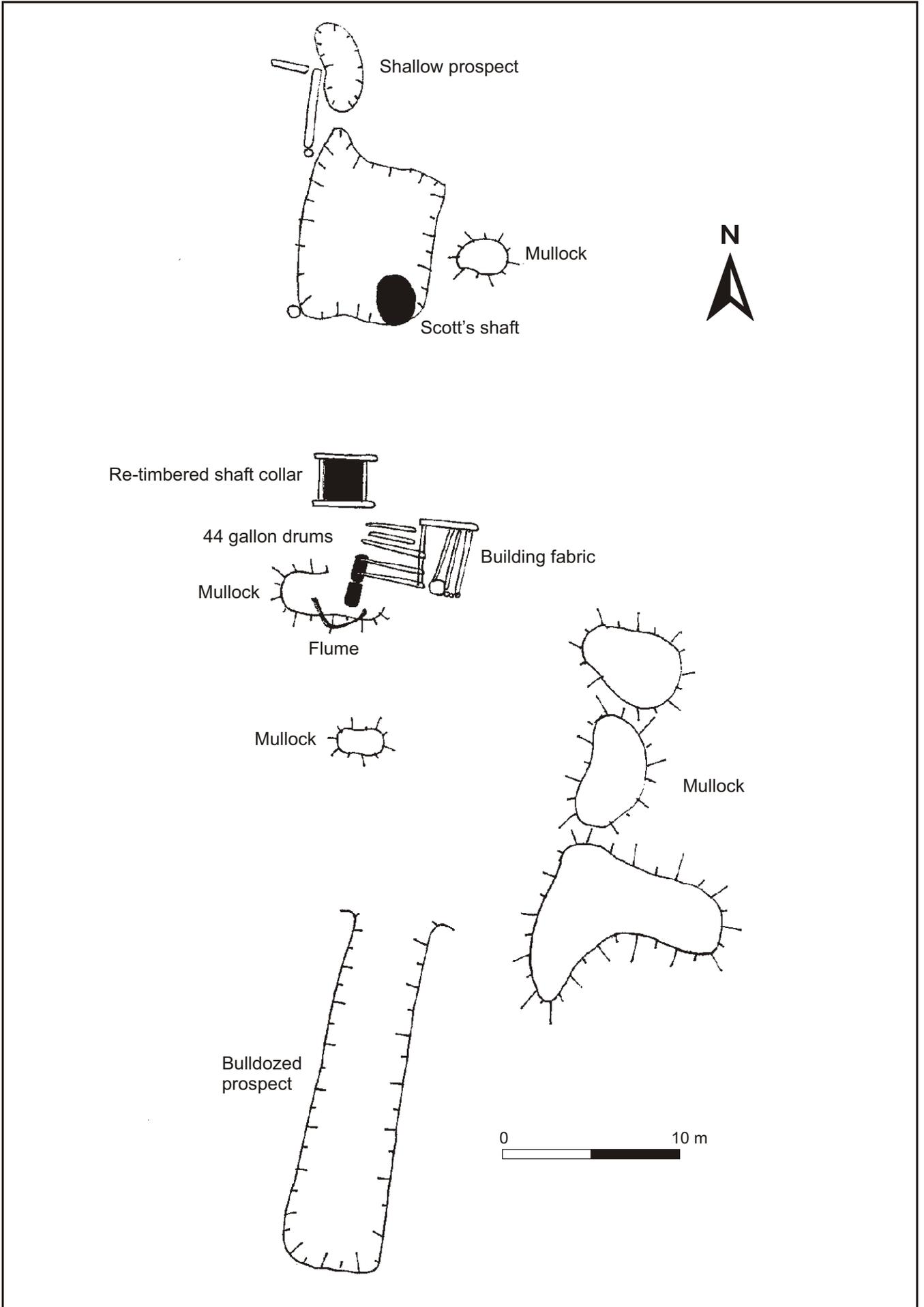


Plate 4

Scaled plan of the North Republic mine site.

■ **Great Republic tramline**

LOCATION

The remains of a connecting tramway between the Great Republic and North Republic mines commence 20 m south of the North Republic open cut. The formation can be traced 300 m further south to its terminus beside the main shaft of the Great Republic mine. Plate 5 shows the location and extent of the tramway formation.

HISTORY

In 1916, the Great Republic mill was known to be processing ore won from the North Republic open-cut mine as a ready means of obtaining good quality ore for its newly completed mill⁽¹⁾. This process was contingent on the Great Republic mine's management having once again secured leasehold rights to the North Republic mine before authorising the construction of a timber tramway linking the two sites. The quarter mile long tramline would have been abandoned by 1920 when the Great Republic mine closed down for the final time.

SITE DESCRIPTION

Today, the tramline survives as a 250 m long rubble-built embankment linking the North Republic open cut to the Great Republic's main shaft/mill precinct. At its most substantially consolidated point beside the open cut, the embankment measures 3 x 2 m in height. It has been constructed using mullock from the resident mines.

REFERENCES

1. Secretary of Mines report for 1916, page 34.

■ **Great Republic dam site**

LOCATION

This dam site is located 100 m south of the southern end of the North Republic open cut, as indicated in Plate 2.

HISTORY

This structure appears to have captured and stockpiled water for use at the nearby Great Republic mine by the mine's first operators between 1887 and 1897. One source claims that the subsequent Launceston-based company operating the mine between 1915 and 1919 sought to provide mine water through other means, which involved the construction of a pipeline between the mine and Old Pub Creek. Evidently, this structure collapsed when water was first directed into it⁽¹⁾.

SITE DESCRIPTION

The water supply system for the Great Republic mine consists of two related features.

Dam

This structure consists of a 30 x 3 x 2 m high wall made of consolidated earth which has been built up across an existing creek bed.

Water race

An earthen head race, measuring 200 x 0.5 x 0.3 m in depth, can be traced from the dam vicinity to the Numbers 1 and 2 underlay shafts precinct at the Great Republic mine.

REFERENCES

1. Hand written notation by Mr Darrell Hayes on original typed manuscript of Reid's 1929 Mines Department report held by Volker Hahl.

■ **Great Republic tin mine**

LOCATION

Historically, the Great Republic mine was situated on a 40 acre mineral lease number 3751/93M (see Plate 21). Today, the site can be best described as being located 250 m south of the North Republic open-cut mine. The precise location of both mines appears on Plate 2.

HISTORY

The Ben Lomond tin lode was originally discovered on a lease further to the south (see Ben Lomond tin mine) prior to 1881. However, a further extension of this lode was soon located on a neighbouring 80 acre lease to the north held by a Mr J. Walden⁽¹⁾. By the mid 1880s, a 60 acre section of this lease had been acquired by a mining syndicate which called itself the Republic Prospecting Association. This enterprise was formed with a float of 60,000 shares valued at 10 shillings each, and shareholders duly appointed a Mr J. Williams as manager⁽²⁾. Surface prospecting yielded little of value, and the property was leased to a tribute party led by a Mr Thomas McDermott. Granted limited rights to sink a shaft to the 30 foot level only, this party discovered the tin lode which had eluded the original company prospectors. For their success, this tribute party were unceremoniously outbid by a rival group led by a Mr James Henry Rilstone, which acquired rights at the mine to a depth of 50 feet. In October 1887, a newspaper article described the mining operation and its colourful cast to date.

“The lode claims of Ben Lomond which a few years ago attracted so much attention, and then appeared to collapse, are steadily coming to the front again through the bona fide work done in the prospecting. The Republic Association’s claim of 60 acres is one that had been lying idle for a long time when Mr McDermot and party took it on tribute, and proved a valuable lode existed. This party held the tribute to 30 ft., to which depth they sunk the shaft, and from 146 tons of tin stuff crushed by them at the Ben Lomond Company’s battery they obtained 18 tons of tin ore. Rilston and party then took up the tribute for another 50 ft., and have sunk the shaft to that depth, the lode being 6 ft. wide, and in places running more, of solid tin stone, running north and south... The tin stuff which Rilston and party are having crushed (at the Ben Lomond Co’s battery), we are informed, yields about 15 per cent of tin ore. The holders of the claim intend to sink the shaft another 50 ft., which will prove the lode to 130 ft., and if only as good prospects as those of the 80 ft. already tested continue, the association may congratulate themselves on having a valuable property”.⁽³⁾

Later that same year, government geologist Thureau noted that the Great Republic mine’s management were preparing to construct their own milling plant, which would no longer see them dependant on the neighbouring Ben Lomond Company’s apparatus. With considerable satisfaction, Thureau also noted that as part of the fittings for the new mill, its management had purchased two Frue Vanners which he had recommended in a previous report⁽⁴⁾. Even with the purchase of this equipment, the Secretary of Mines report for 1888–89 bemoaned the continuing lack of progress. Despite stockpiling a large quantity of tin-stone ‘at grass’, the Great Republic had as yet done no crushing.

In December 1891, another government geologist, A. Montgomery, inspected the mine and found it full of water as a result of repairs to the winding machinery. He returned again in March the following year and found the Great Republic in full production. During a tour of the mine with the resident manager, a Mr Moyle, geologist Montgomery learnt that to date the mine had won 131.75 tons of black tin from 1560 tons of crushed ore. With an average concentration of 8.4% tin, the earnings from the sale of this refined product totalled 8420 pounds. Despite such dividends, Montgomery foresaw a bleak future for the mine unless new shoots of tin ore were discovered. He also confided that the type of milling machinery installed at the mine was not able to efficiently process resulting ore. Nor did the mine assay its tailings to monitor the dubious quality of milling. In summary, he wrote:

“The ore in the Great Republic shoot has proved very rich, and if obtainable in larger quantity would make the mine a very profitable one. The ore is however, unfortunately confined to this one shoot, as far as yet ascertained, the lode being outside of this too small and poor to be worked. As the shoot, though a strong and remarkable one, is of very small length horizontally, it has been necessary to do a great deal of dead work for opening up a comparatively small piece of ground. Every successive level requires the main shaft to be sunk deeper, and cross-cuts and drives to be made for a very considerable distance before the ore is reached. This large amount of dead work is a severe burden on the mine, and unless other shoots are discovered, or the present one enlarges in depth, will probably lead to its eventual abandonment, even though good ore should continue to be found”.⁽⁵⁾

When the next government geologist, George A. Waller, made his inspection of the Ben Lomond field a decade later in mid June 1901, he indeed found the Great Republic mine workings abandoned, a victim of the precise scenario forecast in 1892 by geologist Montgomery. Waller summarised the fate of the mine tersely:

“The Great Republic Mine worked its shoot of ore ... to a depth of 450 feet, and then abandoned it, not because the tin gave out, but because, owing to the low price of tin and the increased cost of mining, the venture ceased to be profitable”.⁽⁶⁾

The Great Republic mine remained idle until 1914, when the Secretary of Mines reported that a company had been formed to re-open the old workings there. A year later the same source elaborated:

“The Great Republic tin mine is to be given another trial. A winding plant has been erected by the new company, and the lode has been tested by prospecting and sampling at the different levels and stopes

down to the bottom, or 400 foot level. It is understood that the result of this work is of a satisfactory nature, and that development work will follow. The lode in this mine is unique as compared with other tin lodes in the state, inasmuch as the tin oxide values live to a much greater depth that has so far been proved elsewhere. The payable ore-shoot is apparently short, but further exploration may show an improvement in this respect”.⁽⁷⁾

In 1916, the same source noted that work had now resumed at the deeper levels of the mine, and new crushing and ore dressing equipment had been installed. All of this work appeared to be funded by the sale of ore won from the adjacent North Republic open cut, an asset the current Great Republic mine managers prudently acquired some time earlier. In 1917 it was reported that all work underground had almost come to a standstill as a result of a fire which had destroyed the winding plant. The main focus of activities was hurriedly shifted to surface prospecting activities near the main workings which found a nominal ore value of 1%. It seems doubtful that the deeper sections of the mine were ever re-opened after the fire. Certainly the 1920 Secretary of Mines report mentioned that:

“Desultory attempts have been made to keep the battery going in order to cover expenses. Results however, have not followed expectations, and the mine is again flooded. When in operation 20 men were found employment”.⁽⁸⁾

Only a year later the same source tersely reported the demise of the operation:

“Outside a caretaker, who occupies his spare time prospecting, nothing prevails. It is currently reported that the company proposes to dispose of the plant and dismantle it”.⁽⁹⁾

One source alleges that in 1922, the bulk of the machinery at the Great Republic was purchased by the Storey’s Creek Tin Mining Company, and moved to their mining lease.⁽¹⁰⁾

Two subsequent though modest attempts to rework the Great Republic lease were made after the Second World War. In the 1950s, a Mr George Fieldhouse sought to reprocess the former mill’s slime tailings in a Cornwall buddle he purpose-built nearby. In association with his partner, a Mr Morrison, he obtained half a ton of tin in a month which assayed impressively with a 73% purity⁽¹¹⁾. Belatedly this highlighted how inefficient the old milling plants had proved, and how justified the government geologists had been in suggesting that the tailings be assayed regularly. The final effort to mine the Great Republic was undertaken between 1965 and 1967, when Mr Darrell Hayes and partners opened up a prospect trench 150 m northwest of the main shaft in order to tap the continuation of the number 1 lode⁽¹²⁾.

SITE DESCRIPTION

Today, the Great Republic minescape continues to retain vestiges of almost all the mine workings, milling plant and water/transport infrastructure established during its various incarnations between c.1878 and c.1967. Both historic and contemporary descriptions of the more prominent features at this site appear below. Reference should also be made to Plate 5 which shows a scaled plan of the mine site, and Plates 15 to 20 which show several historic plans of the mine.

Hayes prospect

The northernmost feature on the Great Republic lease is the prospecting trench dug by Mr Darrell Hayes and his associates in the mid 1960s. In addition to the 15 m long trench itself, the site is marked by the timber framed remains of a crude sieving plant for removing unwanted coarse material from the wash dirt.

Underlay shafts

Located 60 m east of Hayes prospect are the numbers 1 and 2 underlay shafts comprising the northernmost part of the Great Republic mine’s deep lead workings. These two shafts have been recently caged for safety reasons.

Underlay shafts engine shed

A donkey engine for providing water pumping and motive power in the underlay shafts was formerly housed in a shed immediately east of number 2 underlay shaft (see Plates 16–20).

Underlay shafts tram spur

A section of tramline formerly linked the number 2 underlay shaft to the original mill building (see Plate 16).

Main shaft

An article appearing in August 1888 related the latest developments at the mine as relayed by two of the Republic company’s directors recently returned from an inspection.

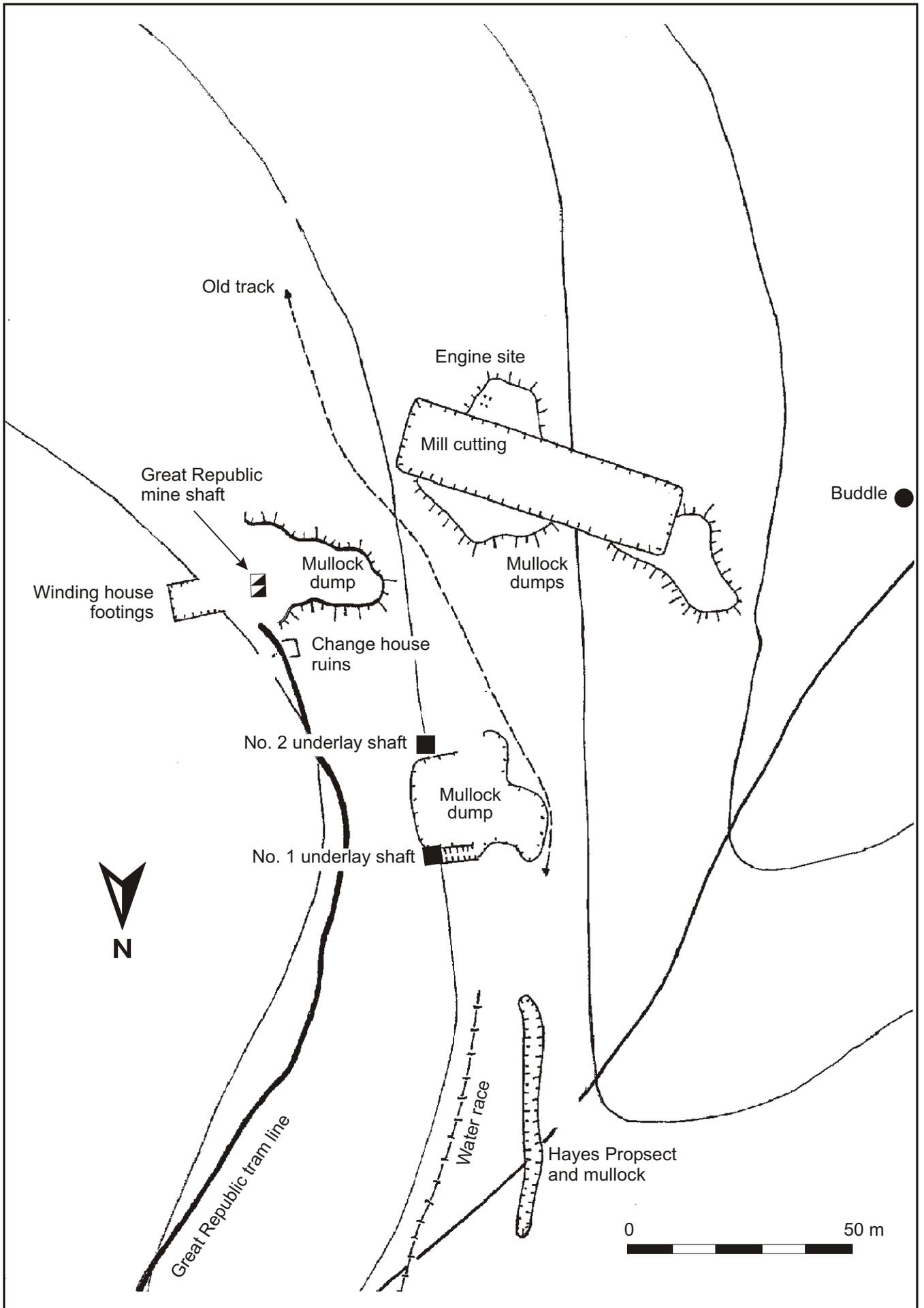


Plate 5

Scaled map of the Great Republic mine site.

“Since the formation of company, a main working shaft has been started on site fixed upon by Mr Rosales. This shaft, which measures 12 ft. x 4ft. 6 in. in the clear, has been sunk to a depth of 50 feet, and is timbered from a depth of 40 ft. to within 2ft. of the surface, and puddled with clay behind timber to keep shaft clear of surface water, which has been rather heavy; this will save labour in bailing. The shaft is logged up 6 ft. above surface, a roomy brace erected which is roofed over... We suggest that the shaft be sunk to a depth of 250 ft. more or less, without timbering other than putting in frame sets and bearers at intervals for support of pump columns and to fix skids to for cages, as the country being sunk through is hard granite rock, which will stand perfectly safe without close timbering. We also suggest that your manager be instructed to procure and erect poppet legs over main shaft...”⁽¹³⁾

The Great Republic mine's main shaft lies 50 m southeast of the number 2 underlay shaft. Like its companions, the 5 x 3 m main shaft collar has been recently caged as a safety precaution. One anchor bracket which formerly fastened onto the base of the headframe is still *in situ* near the southeastern corner of the shaft. The cover photo to this report shows a black and white view of the Great Republic main shaft head frame near the turn of the century.

Main shaft mullock dump

A substantial 40 x 35 x 4 m high mullock dump lies immediately south of the main shaft. This dump appears to cover the location of the first/original mill at the Great Republic mine which operated between c.1880 and 1890.

Change house ruins

The waist-high stone remains of a building stand twelve metres west of the main shaft. These remains consist of a return wall measuring 5 x 4 x 1.5 m in height made of local granite boulders which have been bonded with an industrial mortar. A doorway cavity is evident on the eastern side of the structure. Local sources claim that this structure was the change room for employees working down the main shaft. Plate 12 is supposed to show a historic view of this structure.

Winding house site

The same directors also made brief reference to the all too traditional form of power that the mine was intending to use in the short term to retrieve mullock and mine water from the shaft:

“The surface around shaft has been levelled, and sufficient space excavated for erection of winding and pumping machinery when required... In the meantime it will be advisable to erect whip and form horse walk to facilitate sinking of shaft, and in case of sudden influx of water”.⁽¹⁴⁾

This system appears to have been replaced in the 1890s by a donkey engine installed beside one of the incline shafts for pumping and winding purposes.

A more substantial power plant at the mine site had been erected by c.1890 and enclosed by a winding house. Today this is evidenced by an earthen cutting which has been excavated into a slope five metres northeast of the main shaft. Measuring 21 x 17 m in extent, the cutting is clearly defined on all four sides by a combination of linear stone walls and earthworks. The prepared surface within the cutting contains a number of remnant features from the old winding house and its resident machinery. Reference should be made to Plate 6 which shows a scaled plan of the winding house precinct. The most obvious of these features is the rear external casing plate off a horizontal Cornish-type boiler. A number of the boilers internal fire bars also litter the vicinity of the casing. Several timber bed logs and cement floor sections near the western end of the excavation mark the locations where the actual winding gear was anchored. A pair of parallel stone lines near the centre of the excavation mark the location where the Cornish boiler was housed.

Second mill site

Two different operators installed two different sets of milling plant beside the Great Republic main shaft. In the late 1880s, the original Great Republic Prospecting Association installed the first generation of equipment, which government geologist Montgomery obligingly described in his 1892 report.

“The mine has a 10-head stamp battery for crushing the stone, and two Frue vanners for concentrating it. The gratings have 82 holes to the square inch, and the battery crushes about 30 tons of ore a week, working eight hours daily, or at the rate of 1.5 tons per head in 24 hours. The crushed material does not go directly onto the vanners, but first passes through three straight narrow buddles, each about 10 feet long, in which the heaviest ore is saved. This is dressed by hand by washing in another straight buddle or tie, the tailings from which go on to the Frue vanners together with the overflow from the first three buddles. This arrangement, by taking out a large proportion of the heaviest tin ore, lightens the work of the two vanners, which would otherwise be overburdened if set to treat the stuff from 10 heads of stamps, containing 7 to 10 per cent of concentrates. The vanners are driven by a belt from the cam shaft,

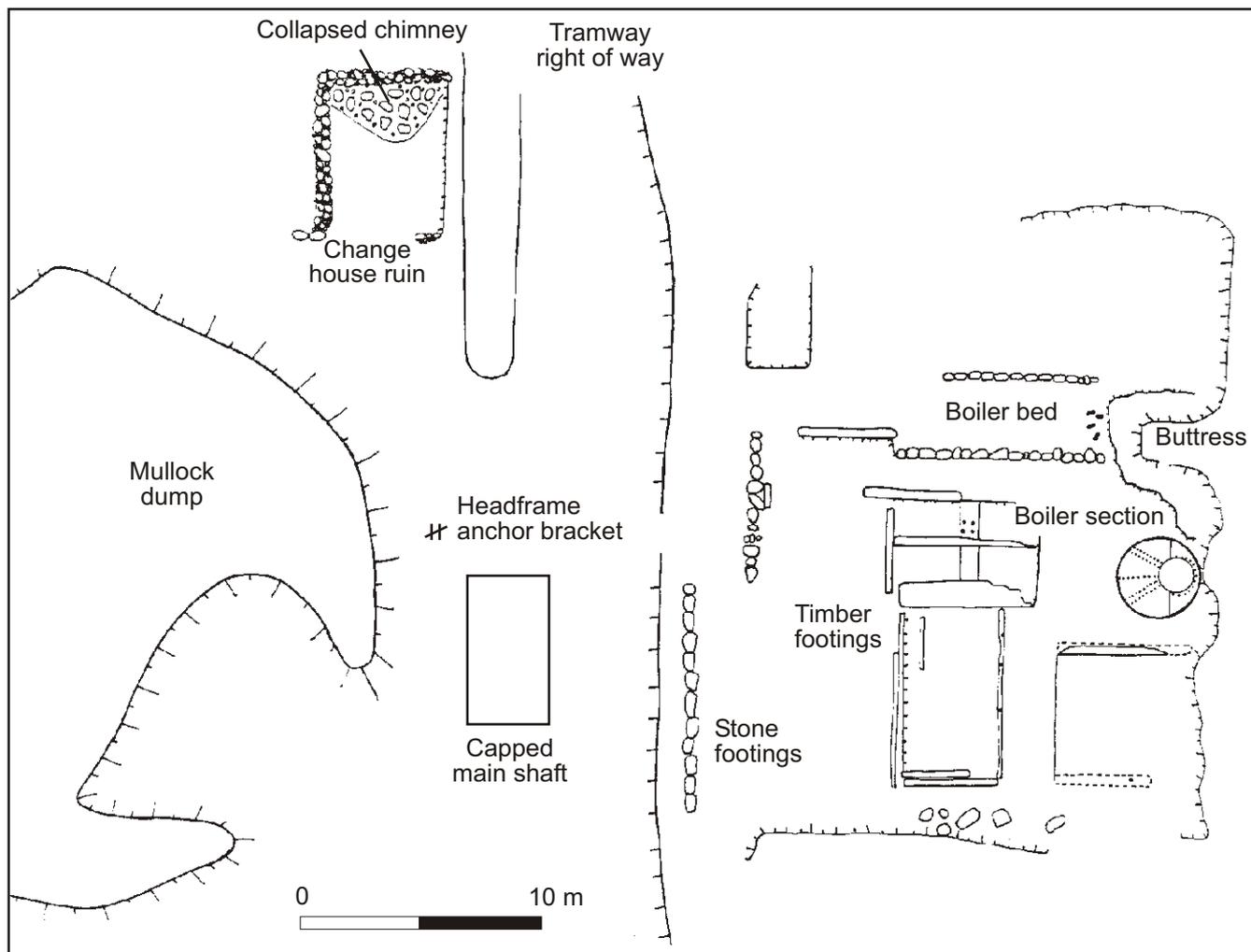


Plate 6

Scaled plan of the Great Republic winding house/main shaft precinct.

a bad arrangement that ought to be altered, as the tables cannot be driven with the required regularity from the cam shaft... The battery is driven by a 2 h.p. portable high pressure double expansion engine, by Marshall. A sister engine is used for winding. The battery and dressing appliances cannot be said to represent a good type of dressing machinery, but under the circumstances of the mine are probably as good or better than a more elaborate plant. More room is badly required in the battery, working being very much cramped, but it serves very well to test the mine. Should the Great Republic become a large concern, a better style of dressing machinery and a larger plant would require to be erected. Classification of the crushed material, the first requisite for successful concentration, is at present ignored altogether".⁽¹⁵⁾

In 1916, the Secretary of Mines report carried an all too brief description of the plant newly installed by the second company to work the Great Republic. This report stated that:

"This company has installed a 10 head stamp battery and complete tin dressing plant, which is operated by an up-to-date suction gas engine".⁽¹⁶⁾

The remains of the second mill erected at the Great Republic mine between 1914 and 1920 lie in a large excavated cutting immediately south of the main shaft mullock dump. Measuring 60 x 15 m in dimension, this cutting is stepped out to create five separately tiered work platforms, which allows gravity alone to move untreated ore from the top to the bottom of the building. Plate 7 shows a scaled plan of this second mill site.

The uppermost T-shaped level, measuring approximately 18 x 18 m in dimension, hosted an ore shoot, primary crusher and its power plant. Remains of the ore shoot/ore feeding apparatus now consist of a 2 x 1.5 m excavation in the northernmost cell of the mill cutting. A concrete trough eight metres further south appears to mark the location of the primary crusher. A mound of uncrushed ore, which was never treated by the primary crusher, lies immediately west of a single engine footing. This footing, in association with a scatter of red bricks/charcoal ten metres to the south, indicate where the wood-fired gas producing power plant which drove the crushing plant was positioned.

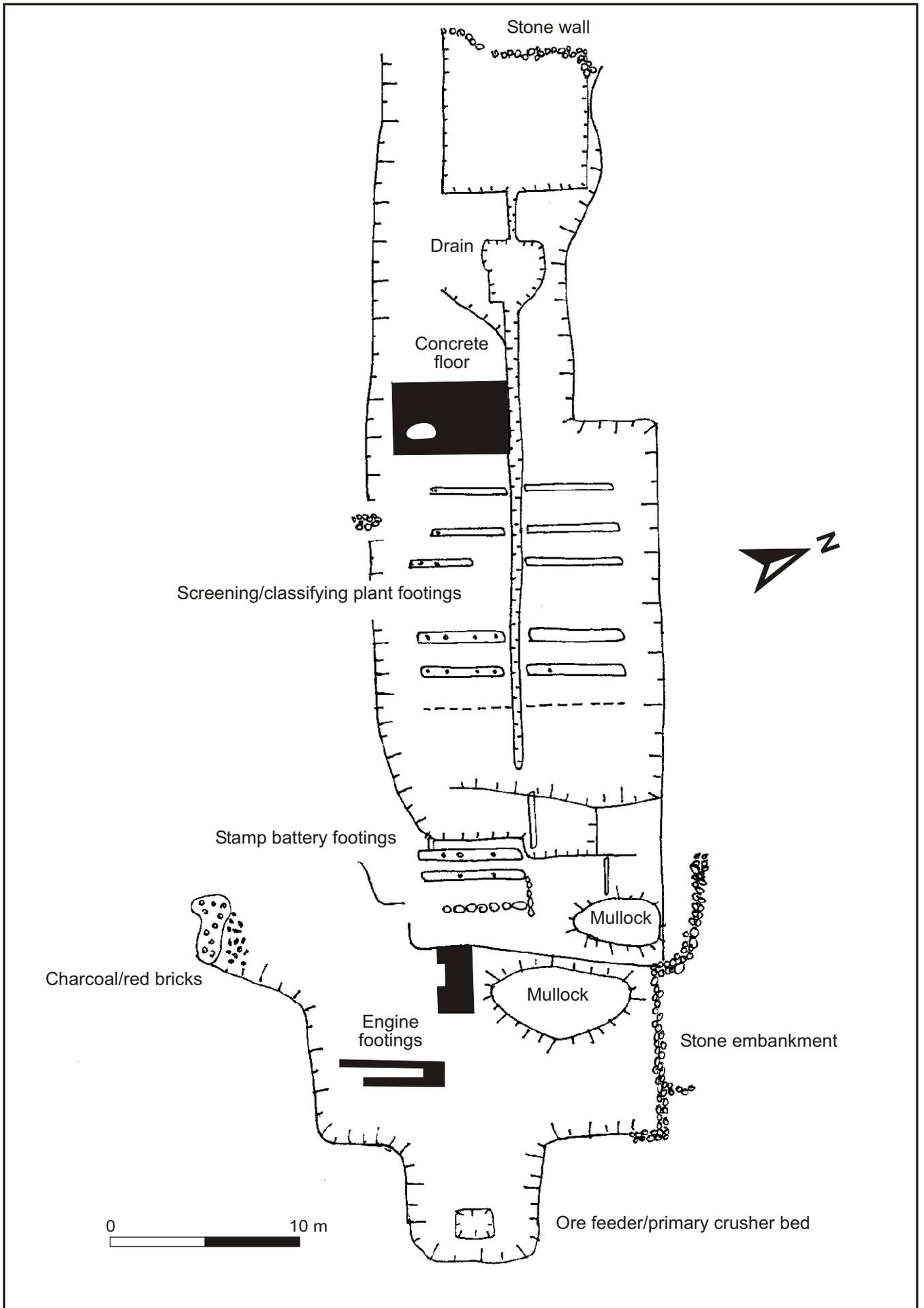


Plate 7

Scaled plan of the Great Republic battery/mill site.

The second level appears to have housed the ten-head stamp battery which re-crushed the ore from the primary crusher to a finer consistency again. This 13 x 6 m working platform contains two parallel timber bed logs used to support the stamp battery. A mound of crushed ore awaiting secondary crushing in the battery lies against the western wall.

The third and largest level of the mill housed the so-called concentrating plant which sorted waste rock from tin ore using various mechanical means. Measuring 27 x 15 m in dimension, this level retains a pair of parallel sequences of bed logs which formerly supported ore sorting appliances such as Wilfley tables or Frue vanners. An earthen cutting running down the centre of the floor drained this work station and its machines. A 6 x 4 m wide cement floor towards the southern end of this level may have hosted another process in the concentration regime such as ore sorting and bagging. The fourth and fifth levels at the bottom end of the mill consist of a pair of large earthen pits through which the central drain flows. These may have formed some sort of rudimentary slimes tailings treatment process.

Cornwall buddle

This device was built in the 1950s to re-process the now abandoned mill's slime tailings. It consists of a circular stone-lined trench with a central hub/platform which have all been made from tabular granite pieces bonded with a crude pug-like cement. The buddle measures five metres in diameter and 0.35 m in depth. Plate 8 shows a scaled drawing of this feature.

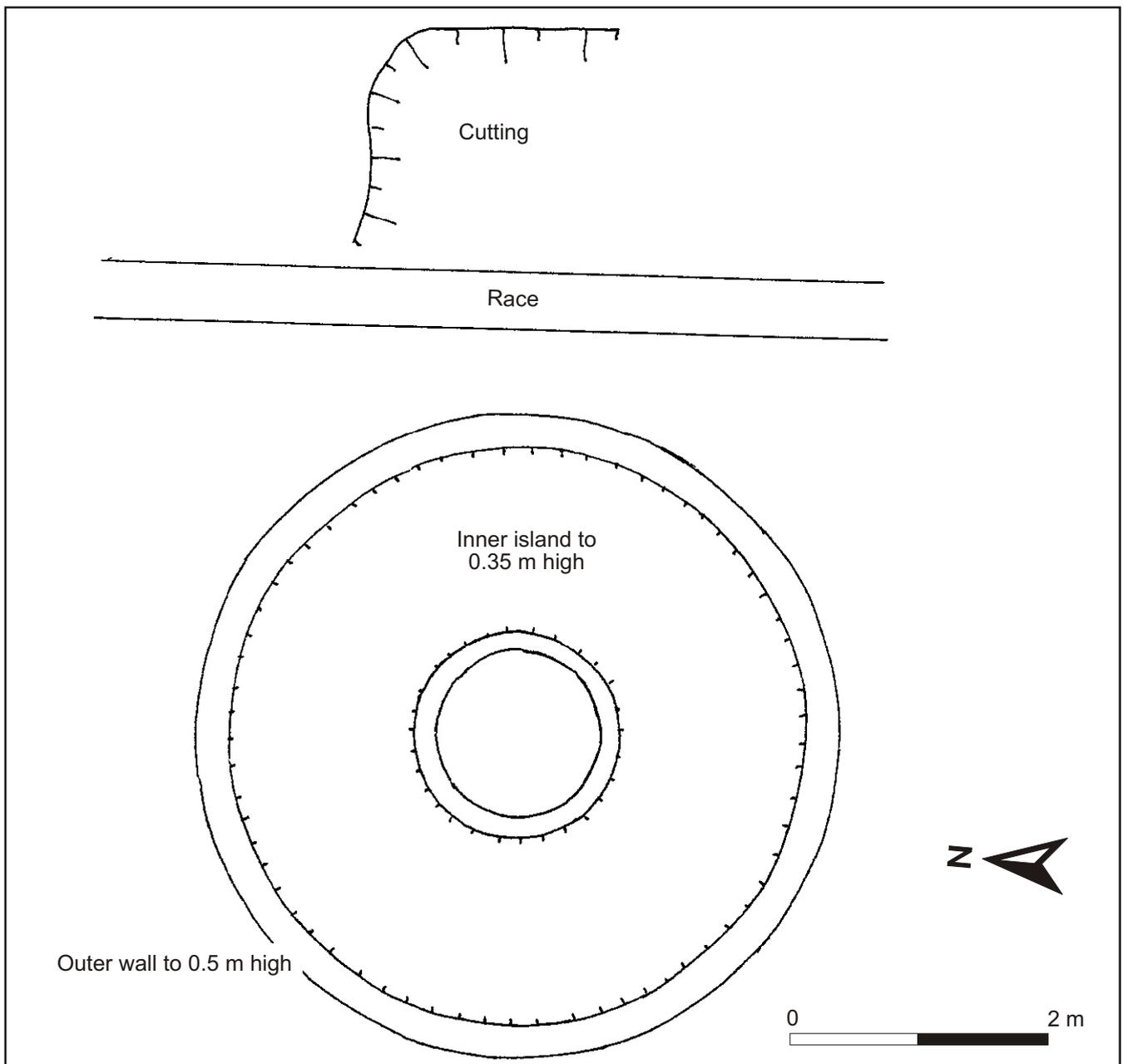


Plate 8

Scaled plan of the Cornwall buddle, Great Republic site

Smithy/carpenter's shop

"We suggest that the present smithy be converted into a store, and a larger smithy and carpenter's shop combined be built at a more convenient spot".⁽¹⁷⁾ A newspaper source made reference to a blacksmith's and carpenter's shop at the mine. All of the historic mine plans (Plates 16–20) show an unlabelled building to the northwest of the original mill site, which may be this structure. No sign of this building was noted during the survey.

Hut sites

Brief mention was made, after an 1888 directorial visit, of the buildings intended to house the workers and other craftsmen near the mine:

"Huts have been built for accommodation of more men, and manager's residence is in course of construction near the works, the present one being inconveniently situated for proper supervision. A quantity of palings and shingles for building purposes have been split, and timber for frame sets and bearers cut..."⁽¹⁷⁾

Due to the inconvenience of commuting to and from their work place, most workers at the Great Republic mine would have resided at or near the mine site, and a newspaper article cited previously described the erection of working men's houses. Today, the area around the mine workings is dotted with a number of former house sites characterised by remnant stone chimney bases and scatters of domestic rubbish such as bottle glass and ceramic.

Tramway/water race

The timber tramway linking the North Republic workings to the Great Republic main shaft/mill site has been described previously, as has the race bringing water from a large dam on the North Republic lease to the mill site.

INTERPRETATION

The following summary of operations at the Great Republic site has been based on a combination of historic information and the current archaeological remains.

Mining

The underground workings at the Great Republic mine were substantial, ultimately reaching the 450 foot level before closure. Plate 18 shows a plan of the underground workings in the early 1890s. Over time, the resident ore body was mined from the three separate surface workings we see today, as geologist Montgomery explained in his 1892 report.

"The ore cropping at surface was first of all worked by means of an underlay shaft, marked number 1 underlay shaft on the plan. As this went down it was found that the ore was in the form of a pipe-vein and dipping southerly, and when a depth of about 67 feet had been reached, No. 2 underlay shaft was sunk to work it further. In this again it was found that the ore continued to pitch to the southward, and it was recognised that a main winding and engine shaft was required. This was accordingly sunk (main shaft on plan), and at 166 feet a crosscut was driven towards the lode..."

Ore conveyance

Ore mined in these three shafts or the nearby North Republic open cut was carted to the mill site for treatment by means of one of two tramlines. The earliest and shortest line linked the underlay shafts to the mill. The later and longer line connected the North Republic open cut to the mill.

Ore feeding

Having arrived at the mill by tram, ore was tipped from the carts or ore skips into timber ore bins built at the very top of the mill. These bins were gradually emptied by means of a shoot either directly into the first ore crusher or into a mechanised ore feeder which provided the crushing plant with a measured and consistent flow of ore.

Primary crushing

Milling or crushing of the ore at a mill could have involved up to three phases of crushing; primary, secondary and tertiary. Only primary and secondary crushing appears to have been undertaken at the Great Republic mill. Unfortunately, historic sources do not tell us how the primary crushing was undertaken here, although it would have involved some type of plant such as a jaw crusher or stone breaker, after men working with large sledge hammers had broken up some of the larger rocks manually.

Secondary crushing

The material from this primary crushing would then have been lowered into the ten head stamp battery for secondary crushing. Plate 32 shows a diagram of a stamp battery which basically consisted of a series of heavy rods and attached weights, which when lowered under power crushed a measured amount of ore beneath them. This ore was then dropped through screens into mortar boxes at the base of the battery.

Concentrating

The small grained material removed from the mortar box was then delivered to the concentrating floor where a number of devices stood ready to further separate the desired tin ore from remaining unwanted waste rock particles. Such separation could be achieved using either water-based gravity traps or more complex chemical treatments such as mercury or cyanide processes. The more rudimentary water-based separation technique seems to have been employed at the Great Republic mill. In the original 1880s mill, this involved the use of Frue vanners. The later plant may have re-used these vanners or employed other machines such as Wilfley tables and cone separators, through which fine-grained tin particles were recovered from rock using water as the separating agent. The large volumes of water required for this necessitated the construction of a related dam and connecting water race.

Tailings reprocessing

Many old mines such as the Great Republic lacked sufficient quality control in their milling process to recover all the potential tin ore. Therefore, further valuable tin was unintentionally discarded in association with the unwanted mill tailings at the end of the milling process. Subsequent miners re-worked these tailings in order to obtain tin rather than establish their own underground mines. This occurred at the Great Republic in the 1950s, when Mr George Fieldhouse built his Cornwall buddle to re-work the slimes tailings from the second mill.

Transport to market

Once refined ore had been bagged and stockpiled at the mill, it either awaited transport direct to a smelter or to an intermediate buyer who bought the semi-refined ore and then re-sold it to a smelter. At the Great Republic, the bagged ore was taken by cart road to Avoca and then on to Launceston.

Accommodation and amenities

Due to the distance and poor quality of the road out to Avoca, the bulk of the work force lived on site at the mine. Workers were housed in modest timber cottages built by the mining company. The mine manager resided in a more substantial house built away from the workers. The company would also have provided a simple store for employees to purchase supplies from.

REFERENCES

1. Thureau, 1881. Map showing Ben Lomond tin deposits. 20 chains to one inch.
2. Unknown article from *The Tasmanian* held by Mr Volker Hahl.
3. *The Tasmanian*, 1 October 1887, page 19.
4. Secretary of Mines Report for 1887, page 16.
5. Montgomery, 1892, page 33.
6. Waller, 1901, page 315.
7. Secretary of Mines Report for 1915, page 34.
8. Secretary of Mines Report for 1920, page 25.
9. Secretary of Mines Report for 1921, page 23.
10. Fingal Historical Society, 1985, Site 44.
11. Fingal Historical Society, 1985, Site 40.
12. Urquhart, 1965, page 51–54.
13. *The Tasmanian*, 18 August 1888, page 22.
14. *The Tasmanian*, 18 August 1888, page 22.
15. Montgomery, 1892, page 33.
16. Secretary of Mines Report for 1916, page 34.
17. *The Tasmanian*, 18 August 1888, page 22.

■ **Original Avoca/Ben Lomond track**

LOCATION

The original foot track linking the mines along the Ben Lomond line of lode with Avoca can still be traced in parts between the Great Republic and Ben Lomond tin mines as indicated in Plate 2.

HISTORY

In his 1881 report on the Ben Lomond tin deposits, government geologist Thureau bemoaned the lack of a navigable route between the tin mines on the Ben Lomond line of lode and the nearest settlement at Avoca.

“The only drawback to tin mining hereabouts consists in the want of a good road (or tramway) of easy gradient to Avoca. The mines being situated at a very considerable altitude, the transport of minerals would otherwise be both tedious and costly to Avoca, which will become in due course of time, the centre of the extensive mining district”.⁽¹⁾

At this time, access to the recently discovered Ben Lomond mines consisted of a crude foot track crossing Castle Cary Rivulet and Gipps Creek which approached the mines from the south. By 1892, the next geologist to visit the mining field noted that:

“A fairly good cart road has been made from Avoca to the Great Republic mine, and access from it to the other mining properties is pretty easy”.⁽²⁾

The same author also noted that this new road crossed:

“an old unformed road leading from the Rix Hill mine to those of Story’s Creek. This old road connects near the Rix Hill mine with another track leaving the main road about four miles from Avoca and leading to the Ben Lomond, Great Republic, and Gipps Creek mines, and to the Town Reserve lying at the foot of ‘The Butts’”.⁽³⁾

CURRENT SITE DESCRIPTION

Identifiable sections of the oldest roadway consist merely of an unformed six foot wide track which has been most recently used by logging machinery.

REFERENCES

1. Thureau, 1881, page 3.
2. Montgomery, 1892, page 25.
3. Montgomery, 1892, page 25.

■ **Jack Death’s camp**

LOCATION

This former camp site is situated in a clearing some 70 m west of the track to the Ben Lomond mine as marked on Plate 2.

HISTORY

A sometime prospector and timber splitter named Mr Jack Death erected a bark-roofed hut and subsequently resided at this location with his wife and seven children (during the 1930s?). After the departure of the Death family, two other families led by Mr Walter Redburn and Cock Jones re-occupied the camp site during the 1940s and 50s⁽¹⁾. The ground around the camp site was also alluvially mined in the early 1960s by a Mr Foster and finally in the 1980s by Messrs Volker Hahl and Eli Quillerat⁽²⁾.

CURRENT SITE DESCRIPTION

This site is comprised of the former hut site and adjacent alluvial mining activities which are bisected by a water race servicing the former Ben Lomond tin mine (see below). Reference should be made to Plate 9 which shows a scaled plan of this site.

Camp site

The camp site is situated in a 40 x 30 m clearing within the resident dry woodland. The former hut site location is marked by a stone chimney base and adjacent building embankment. Linear stone lines on the ground around the hut site indicate the boundary of the camp and resident gardens.

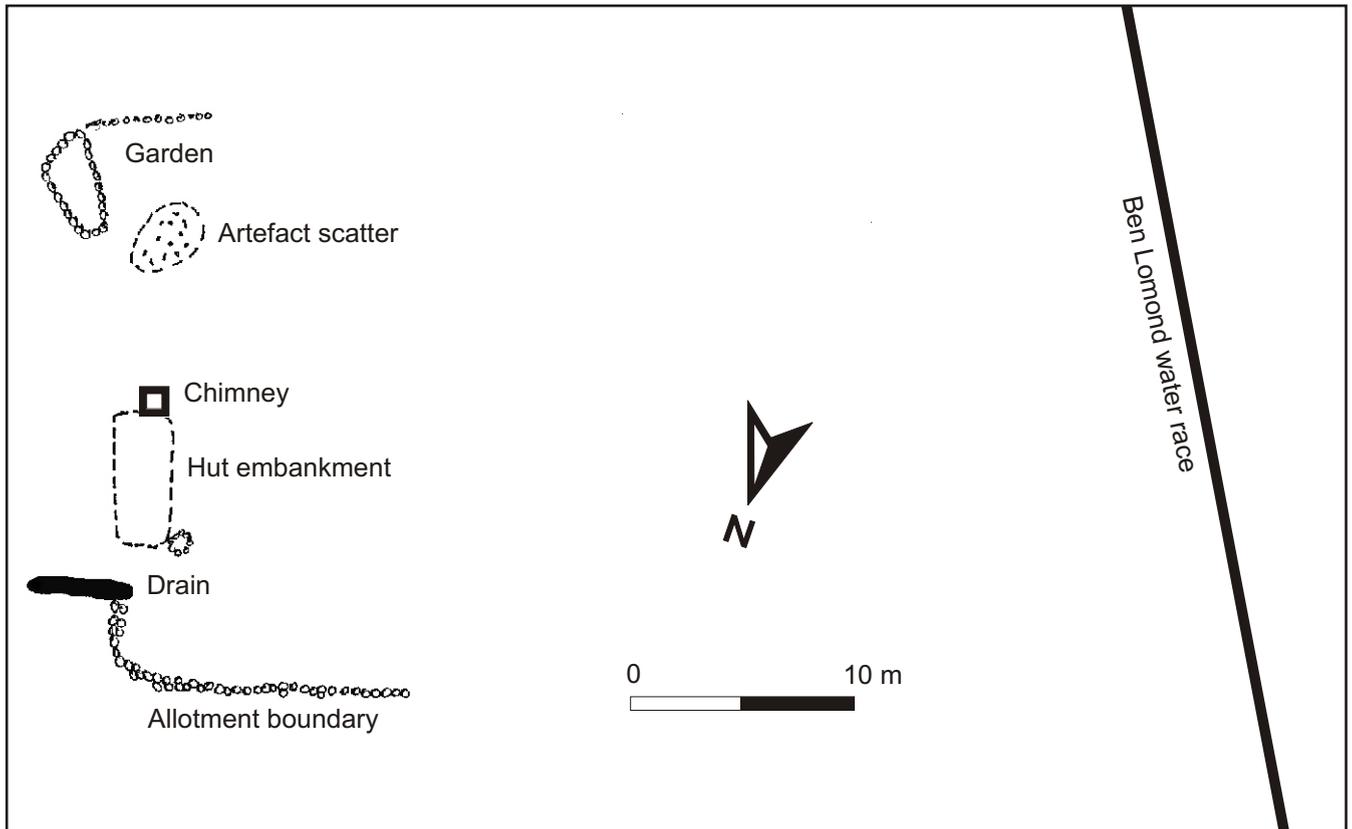


Plate 9

Scaled plan of Jack Death's camp.

Water race

A shallow earthen water race passes the camp site 45 m to the north. This race conveyed water from a nearby dam to the Ben Lomond tin mine.

Tin prospects/mill site

A further 18 m north of the water race stand the remains of crude ore washing and crushing plant built by Messrs Quillerat and Hahl to process wash dirt dug from the adjacent creek bank. The crushing plant consists of a rivetted water pipe erected on a concrete base. A weight within the cylindrical pipe is connected to a timber whip which was raised and lowered by hand. The area around the crusher is littered with spare shoes and dyes from an old crushing battery which were re-used in this plant. There are also two halved 44 gallon drum sections full of wash dirt which was never processed.

REFERENCES

1. Fingal Historical Society, 1985, Site 51.
2. Volker Hahl, pers. comm.

■ *Ben Lomond mine dam site*

LOCATION

This dam site is situated 50 m northwest of Jack Death's camp site as indicated in Plate 2.

HISTORY

This dam appears to have been built c.1884 by the Ben Lomond Tin Mining Company to supply their mine and mill with year round water⁽¹⁾. The dam was subsequently re-used in the 1920s and 30s by various small-scale operators who were undertaking alluvial mining on the old Ben Lomond mine lease.

SITE DESCRIPTION

This dam site consists of an earthen wall measuring 71 x 4 x 2 m in height which has been thrown across a seasonal water course. A boxed water (head) race, ultimately leading to the alluvial workings on the Ben Lomond mine lease, commences at the eastern end of the dam wall.

REFERENCES

1. Volker Hahl, pers. comm.

■ *Grant's mine and camp*

LOCATION

This site is bisected by the Gipps Creek spur road as indicated on Plate 10. As such, the camp site is on the northern side of the road while the mine shaft lies on the southern side of the road.

HISTORY

Messrs Tom and Ted Grant established a small-scale underground mine in the vicinity of the northern end of the old Ben Lomond mine some time in the 1920s–30s⁽¹⁾. After they abandoned this operation, Mr Eli Quillerat re-opened their shaft and repaired the connecting water race, only to find that the shaft would not drain. It was then abandoned for the final time.

CURRENT SITE DESCRIPTION

The most obvious remains of this enterprise is a permanently flooded 2 x 1 m shaft immediately south of the resident vehicle track. A shallow earthen water race measuring 65 m in length proceeds in a northeasterly direction from this shaft towards an adit portal relating to the Ben Lomond tin mine. The camp site on the opposite side of the track is evidenced by modest scatters of domestic rubbish.

REFERENCES

1. Fingal Historical Society, 1985, Site 50.

■ *Ben Lomond tin mine*

LOCATION

The workings and related structural remains associated with the historic Ben Lomond tin mine are the southernmost sites on the Ben Lomond mineral lode, occurring on the western slopes of a hill as indicated in Plate 2. Historically, the main shaft and related workings were situated on a 40 acre mineral lease number 3750/93M, while the company's mill and adit were surveyed separately on an adjacent 40 acre lease number 3990/93M (see Plate 22).

HISTORY

This tin discovery was the first to be made on the Ben Lomond line of lode, and as such, the Ben Lomond mine may be said to be the oldest set of workings in this vicinity. One secondary source alleges that mining may have started here in 1872⁽¹⁾. Certainly by 1881, this site had been pegged as part of two 80 acre leases held by Messrs Powell and Evans⁽²⁾. To their mutual surprise, these gentlemen discovered that the desired line of lode proceeded northwards along their mutual central boundary, and work was soon begun on better clarifying the location and extent of the resident tin-bearing rock. In 1881, the first inspection of the discovery by a government geologist was undertaken by G. Thureau, who found that:

“On Messrs Powell and Evans’ leases of 80 acres each, prospecting and permanent mining has been carried on... At present the indications for permanency have become more satisfactory, on account of a vein carrying rich tin having been discovered, which presents a very promising appearance. The ore, i.e. the vein, is about one foot wide, highly metalliferous, and fully one third of same is rich cassiterite”.⁽³⁾

By 1883, Mr Powell had become the Director of a company formed to work the prize, which was registered as the Ben Lomond Tin Mining Company. Its prospectus claimed that the Ben Lomond Co. had 34,000 pounds worth of new capital issued as 34,000 one pound shares. Another company titled the Star of Ben Lomond was said to be in the process of formation to work an adjoining 120 acre lease, however this appears to have remained still-born⁽⁴⁾. Four years later in 1887, geologist Thureau returned to the Gipps Creek area, and reported developments at the Ben Lomond mine. While approving the underground workings, he was less than impressed with the chosen ore recovery technology being employed at the mine’s mill.

“The Ben Lomond Company, especially, have constructed a main adit nearly 800 feet in length, sunk a main engine shaft, and various other shafts, winzes, levels, and crosscuts have disclosed some five or six lodes, all more or less tin bearing, but, owing to their primitive style of concentrating appliances, I found that a very large percentage of the best description of ore had been escaping, rendering thereby all the efforts of the company to obtain from really good lodes a remunerative return nugatory”.⁽⁵⁾

Perhaps the primitive state of the milling technology was a reflection of the mine management’s intention to sell the mine, which was reported by at least one newspaper in August 1887. An article appearing in *The Tasmanian* noted that one of the directors of the Ben Lomond Company had undertaken to place the mine on the English market, after an extraordinary shareholders meeting in May had approved the proposal. Unfortunately, with the papers detailing the terms of the sale *en route* by steamer from England, the directors could not give details of a final settlement. In passing, the same article also noted that the company’s mill was engaged in crushing ore for a nearby mine (Great Republic?)⁽⁶⁾. By 1890, the Ben Lomond Company was in financial trouble but chose, somewhat optimistically, to expend further capital on the long awaited, but nonetheless untimely new mill plant. In 1891, the mine was accordingly equipped with a ten head stamp battery and concentrating plant. However, only a year later in 1892, government geologist A. Montgomery found the Ben Lomond mine abandoned and its new mill plant in sad disrepair. In his report, Mr Montgomery stated that at the mine:

“No work is being done now on this property, and the expensive mining and ore dressing plant erected is suffering much from disuse, wood work being rotted, split, and warped, and iron-work eaten with rust. I was unable to examine the underground workings, owing to the shafts being full of water, and the long adit partly fallen in and half full of water also”.⁽⁷⁾

Montgomery then proceeded to detail the reasons for the mine’s failure, which in his opinion had far more to do with a poor mine plan and frivolous milling plant, than any takeover bids from abroad, hostile or otherwise.

“This mine is a standing example of a mistake which is far too common, and which ruins many promising ventures. The capital of the company has been spent on building a battery and doing dead work of one sort and another before proving the mine itself. If I have been correctly informed, the main shaft was sunk before the adit was driven, and it would have been an easy matter to prospect Nos. 1 and 2 lodes from the shaft to the same depth as it commanded by the adit. It would have been better to do this prospecting work from the shaft before driving the adit. If it had proved satisfactory, the construction of the tunnel would have been very desirable, as it cuts through the whole system of veins, provides a way to the battery, and drains the mine to a depth of over 100 feet. If the adit had been made before the main shaft was sunk and provided with winding engine and pumps, the mine would have been proved to the same depth as now without any necessity for these. Hence, so far as testing the mine to a depth of 100 feet is concerned, either the main shaft and its machinery, or the adit is altogether superfluous. Had the mine proved a good one both would have been doubtless required, the shaft to work the ground below the adit level. But all the available money was spent in building the battery, erecting winding and pumping machinery, sinking shafts, and driving the main tunnel, and at the end of all this nothing was left to look for the tin with. Had the money used for the battery and driving the adit been expended in driving on the lodes from the main shaft, a great deal of exploratory work could have been done, and it is very probable that the mine would have been in operation to this day.”⁽⁸⁾

A letter attached to an 1893 Crown survey of the 20 acre allotment containing the Ben Lomond mill (see Plate 22) noted that this block had been taken up by Messrs J. H. Rilstone and William McEwan, who intended to rework the old tailings beside the dressing shed⁽⁹⁾. Evidently a trial treatment of these tailings had yielded 2.5% tin to the ton. In addition to these gentlemen, a number of other prospectors and employees at the neighbouring Great Republic mine continued to reside in a variety of structures erected on this lease.

In November 1919, the lease to the mine was transferred to Ben Lomond Tin Mines NL, which appears to have been a new company formed expressly to re-open the old Ben Lomond Co. workings as a new company was doing on the rival Great Republic lease. This new company’s rights to the Ben Lomond lease became void in 1923. The old abandoned mill plant was subsequently re-used by Mr Darrell Hayes until it was damaged by

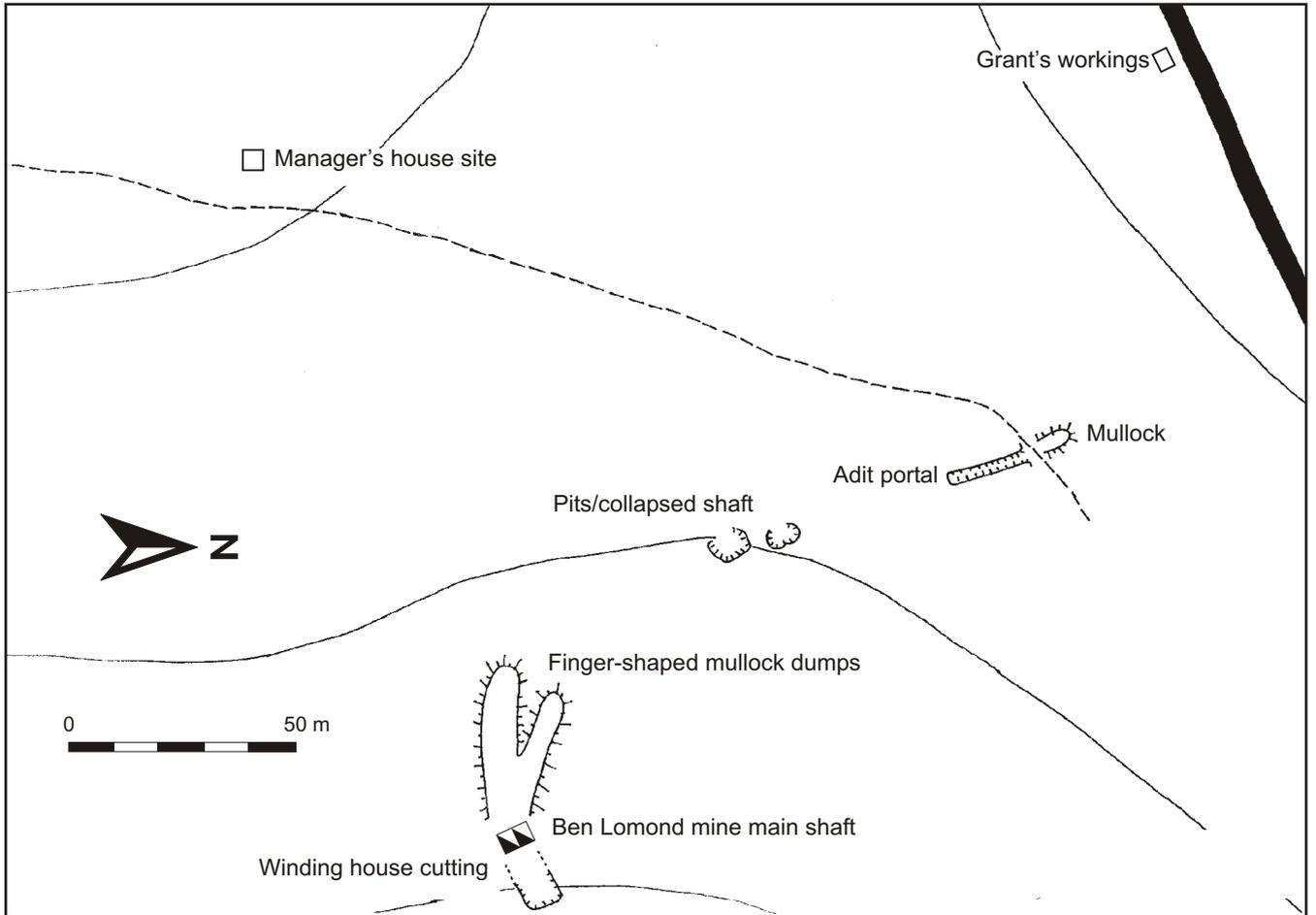


Plate 10. Scaled map of northern half of Ben Lomond mine site

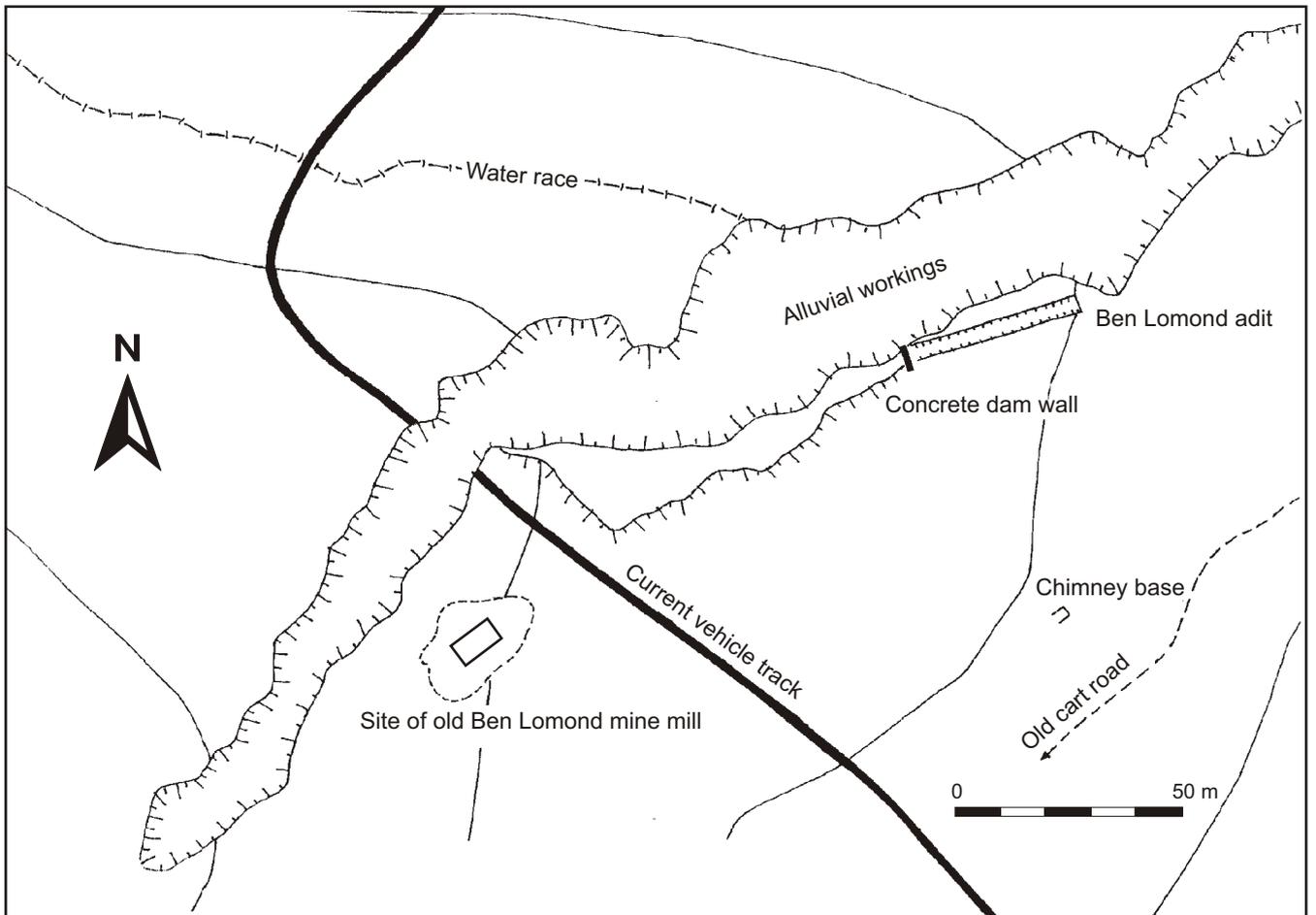


Plate 11. Scaled map of southern half of Ben Lomond mine site

vandals in 1975. The last occupant was Mr Eli Quillerat, who resided at the site as a sometimes prospector until the early 1990s⁽¹⁰⁾.

SITE DESCRIPTION

This section provides both historic and contemporary descriptions of the various features comprising the old Ben Lomond tin mine, which were re-located during this survey. Reference should be made to Plates 10 and 11 which show scaled plans of the northern and southern halves of the site.

Adit

The northernmost workings within the Ben Lomond mine lease consist of an adit and adjacent mullock dump. The adit approach or portal measures 30 m in length and the entrance behind remains intact. No attempt was made to enter the adit tunnel. One source alleges that this adit/tunnel was sunk after the closure of the Ben Lomond mine, by a local mining partnership consisting of Messrs C. Eberhardt and A. Lawson⁽¹¹⁾.

Pair of shafts

The first of two vertical shafts may be seen barely 30 m southeast of the adit described above. Its companion, further south again, is collapsed. Both excavations are most prominently marked by mullock dumps. In 1892, government geologist Montgomery wrote critically of this double shafting, which he considered repetitive:

“About 1.5 chains north of main shaft, a small shaft has been sunk on the lode to a depth of 80 feet, and about 50 feet N.W. from this there is another 80 foot shaft. These two shafts are in my opinion, unnecessarily close to each other, the exploration work done by the second being more easily and cheaply done by driving from the first one... Not much tin ore is visible, but presumably any good stone extracted has been sent to the battery”.⁽¹²⁾

Number 1 (Main) shaft

The main shaft at the Ben Lomond mine lies 40 m southeast of the second/collapsed shaft described previously. The main shaft precinct contains the remains of a water race, mullock formation, shaft and the site of the former winding house. The mullock dump is the most obvious feature at this site, consisting of a characteristic fan-shaped formation measuring up to four metres in height. Adjacent to this dump is a 4 x 2 m wide shaft collar. Ten metres east of the main shaft may be found the scant remains of the winding house. This consists of a 15 m squared earthen building cutting excavated into the slope. This feature has been lined with ashlar stones around its perimeter. The remnants of the machinery formerly installed here include a number of boiler staves and machine footing anchor bolts. Despite being the main mine entrance on the Ben Lomond lease, there is little historical reference to this site. Only Montgomery in 1892 noted that the main shaft had at that time been worked to a depth of 100 feet⁽¹³⁾.

Managers house site

The scant remains of the Ben Lomond mine manager's house lie 120 m southwest of the number 1 (main) shaft. Remnants of the house consist of a chimney butt and scatter of domestic debris.

Other hut sites

At least five other hut sites are now known to have been dotted around the landscape within the Ben Lomond Company's lease. One of these was noted 70 m due south of the Ben Lomond adit portal. Some of these appear marked on Plates 22 and 23, which are historic Crown surveys of the Ben Lomond lease undertaken during the 1890s.

Old cart track

A section of the old 1880s track to Avoca passes this hut site as it bisects the former Ben Lomond mine lease.

Open cut

An open cut operation tapping the number 2 mineral lode at the old Ben Lomond workings lies 150 m southeast of the main shaft site. This open cut site consists of a T-shaped excavation measuring 40 x 20 x 6 m in dimension. In 1892 Montgomery noted that this was “a surface excavation, 40 feet long, 15 feet wide, and 12 feet deep, from which I was told that 38 tons of tin ore had been extracted”⁽¹⁴⁾.

Alluvial workings

Some alluvial workings, situated in a gully measuring 400 x 30 x 2 m deep, commence 30 m due west of the open cut pit. This alluvial operation post-dates the Ben Lomond lease, being undertaken by various miners during the 1920s/30s and Mr Julius Sajben in the 1970s⁽¹⁵⁾.

Water race

A shallow earthen water (head) race carried water to the above alluvial workings from the dam near Death's camp.

Ben Lomond adit

An adit comprising part of the old Ben Lomond workings lies on the southern bank of the alluvial workings some 230 m southeast of the open cut site. Today the 30 m long adit portal is completely flooded, and was accordingly used as a dam by Mr Julius Sajben during his occupation of the nearby old mill site. Mr Sajben built a five metre long concrete wall at the western end of the adit to help impound the water. In 1901, geologist Waller observed that "*The Ben Lomond adit, a very unnecessary piece of work at the time when it was put in, is 735 feet in length, ... and is still 120 feet short of No. 1 lode*". A tramline is known to have connected this adit to the mill building⁽¹⁶⁾.

Ben Lomond mine mill

The site of the Ben Lomond mine's ore treatment mill lies 110 m southeast of the Ben Lomond adit portal. Since its abandonment by the Ben Lomond Company prior to 1892, the mill site has been re-used time and again by tributers re-working the old tailings and other individual miners such as Darrell Hayes and Julius Sajben. The site as seen today is the result of a clean up undertaken by Forestry Tasmania/Mines Department after the departure of Mr Sajben during the early 1990s. The remaining features, such as timber bed log footings and rubbish scatters, relate to Mr Sajben's tenure at the site. Only a small number of old sandstock bricks could be attributed to the original mill.

Of this original mill we know relatively little. Geologist Montgomery penned the only known description of it in 1892.

"At the mouth of the adit a 10-head battery has been erected, furnished with classifiers, jiggers and ties as tin-saving appliances. The whole building is now in very bad order, the woodwork being very much warped and shrunk, so much so that the dressing appliances would have to be entirely renewed before doing any work. They could not have been very efficient in the first instance, for though fairly good so far as they went, there seems to have been no adequate provision for the treatment of the fine sands and slimes".⁽¹⁷⁾

Plates 22 and 23 show Crown surveys of the lease containing the mill complex undertaken during the 1890s. In both diagrams we see a combined central battery and engine house with chimney and attached shed. A tramway connected this mill to some of the workings further east which have since been opened up using alluvial technology.

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2. Thureau, 1881, page 3.
3. Thureau, 1881, page 3.
4. Sholl, 1882, page 80.
5. Report of Secretary of Mines for 1886-87, page 16.
6. *The Tasmanian*, 6 August 1887, page 22.
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8. Montgomery, 1892, page 34.
9. Department of Mines survey. County of Cornwall. Book Number 18. Survey Number 8.
10. Volker Hahl, pers. comm.
11. Fingal Historical Society, 1985, Site No. 58.
12. Montgomery, 1892, pages 33-34.
13. Montgomery, 1892, page 33.
14. Montgomery, 1892, page 34.
15. Volker Hahl, pers. comm.
16. Waller, 1901, page 328.
17. Montgomery, 1892, page 34.

Rilstone's workings

LOCATION

Historically, this modest working was situated in the southern half of 40 acre mineral lease number 4232M. The site today can be described as being situated 400 m due east of the old Ben Lomond Company's mill site as indicated in Plate 2.

HISTORY

During the early to mid 1890s, Mr James Henry Rilstone was re-processing the tailings at the old Ben Lomond tin mine's mill site. By 1901 he had discovered his own tin lode as geologist Waller soon reported:

“On the southern portion of section 4232, a new lode, known as Rilstone's lode, has been uncovered in a surface trench... A good deal of the stone carries nice tin... The show is certainly a promising one, and is worth a trial”⁽¹⁾.

There are no further known references to Mr Rilstone's discovery, and it can only be assumed that having failed to identify a payable component to the lode, this gentleman abandoned his lease in favour of several others he held in the vicinity.

DESCRIPTION

According to Mr Darrell Hayes, the workings at James Rilstone's lode consisted of “a long trench, two smaller ones and a cross trench chasing a narrow vein of ore”⁽²⁾. Unfortunately, logging activities throughout the area formerly comprising this site have made it impossible to relocate.

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1. Waller, 1901, page 330.
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Glossary

Adit (also drive or drift)	Horizontal or gently inclined passage or tunnel of underground mine that is driven from the surface. The slight grade enabled ore carts to run downhill out of the mine under their own weight and mine water to be self draining.
Alluvial	This denotes material that has been washed and transported by water. Alluvial tin is therefore tin that has been found in alluvium, i.e. riverine or estuarine deposits of sand and gravel.
Buddle	Circular concentrating table/excavation either with convex or concave sides, which are swept by brushes rotating around a central pivot. Buddles were often used for reprocessing tailings discharged from battery/mill sites.
Cage	The car or carrier used to hoist men and materials up and down a shaft.
Collar	Timbering, steelwork, concrete or masonry erected around the entrance to a shaft, to reduce the risk of things falling down and prevent fretting of the entrance.
Concentrates	Processed finely crushed ore containing a mixture of metallic sulphides and heavy desired metals such as tin.
Costean	A test trench made on the surface across the top of an ore body.
Deep leads	Mineral veins at great depths in a mine (alluvial or hard rock) worked by deep sinking, i.e. excavating deep shafts.
Flume	Wooden channelling used in conjunction with water races to convey water to a mining claim.
Frue vanner	Ore dressing/concentrating machine incorporating a wide fabric or rubber belt stretched between two rollers. Crushed ore fed onto the belt was carried against a current of water which washed away the light waste. The desired heavy material was carried over the end of each belt and collected. Vanners were replaced by the more efficient Wilfley table (see below).
Headframe	The steel or wooden framework erected over a shaft.
Lode	Part of an ore zone or rock mass containing several veins spaced closely enough so that they and the intervening rock can be mined as one unit.
Mullock	Old Cornish mining term used to describe the waste rock from a mining operation. After the useful ore is stockpiled for treatment, the barren material not worth treating is usually dumped in radiating heaps below a main drive/adjacent to a shaft or used to backfill stopes.
Open cut	Method of mining where a lode or ore body outcrops at or near the surface and can be mined without resorting to underground methods.
Race	A channel (usually open) for conducting water to or from a mining site.
Shaft	A vertical passage to provide access from the ground surface to underground levels. Shafts were usually subdivided into three sections. Typically two were used as winding/haulage compartments for lift cages while the third contained a ladder way and drainage/ventilation piping.
Stamper battery (stamp mill)	A mill for crushing ore by means of a sequence of stamping motions achieved by the alternating lifting and dropping of heavy stamps by means of a powered camshaft.
Stope	An underground excavation from which ore is extracted, usually above or below a drive or working level.
Tailings	Portions of washed and crushed ore (usually in a fine ground state after processing) which are considered too poor to treat further, and are discarded.
Tributers	Miners who work a section of an ore body belonging to a company which pays as royalty a percentage of the value it recovers.
Underlay shaft	A principal entrance to a mine sloping at about 45 degrees to follow the dip of an ore body.
Whip	A structure containing a pulley mounted over a shaft. A rope running over the pulley was attached to a horse. When the horse was led away from the shaft, it pulled suspended loads up the shaft. Also used to describe a counterbalanced pole used to lift or lower material.
Wilfley table	Shaking tables invented by Rittinger in 1844 and developed by Wilfley for use in separating or concentrating the heavy pulverised ore from lighter material.
Winding house (or engine or pump house)	Structure for housing winding, hauling and pumping engines.
Winze	A generally small cross section vertical or steeply inclined shaft or passage excavated from one level to another in underground workings. Winzes do not reach the surface, and were usually excavated downwards from an upper level to a lower one.

APPENDIX I

Historic photographs

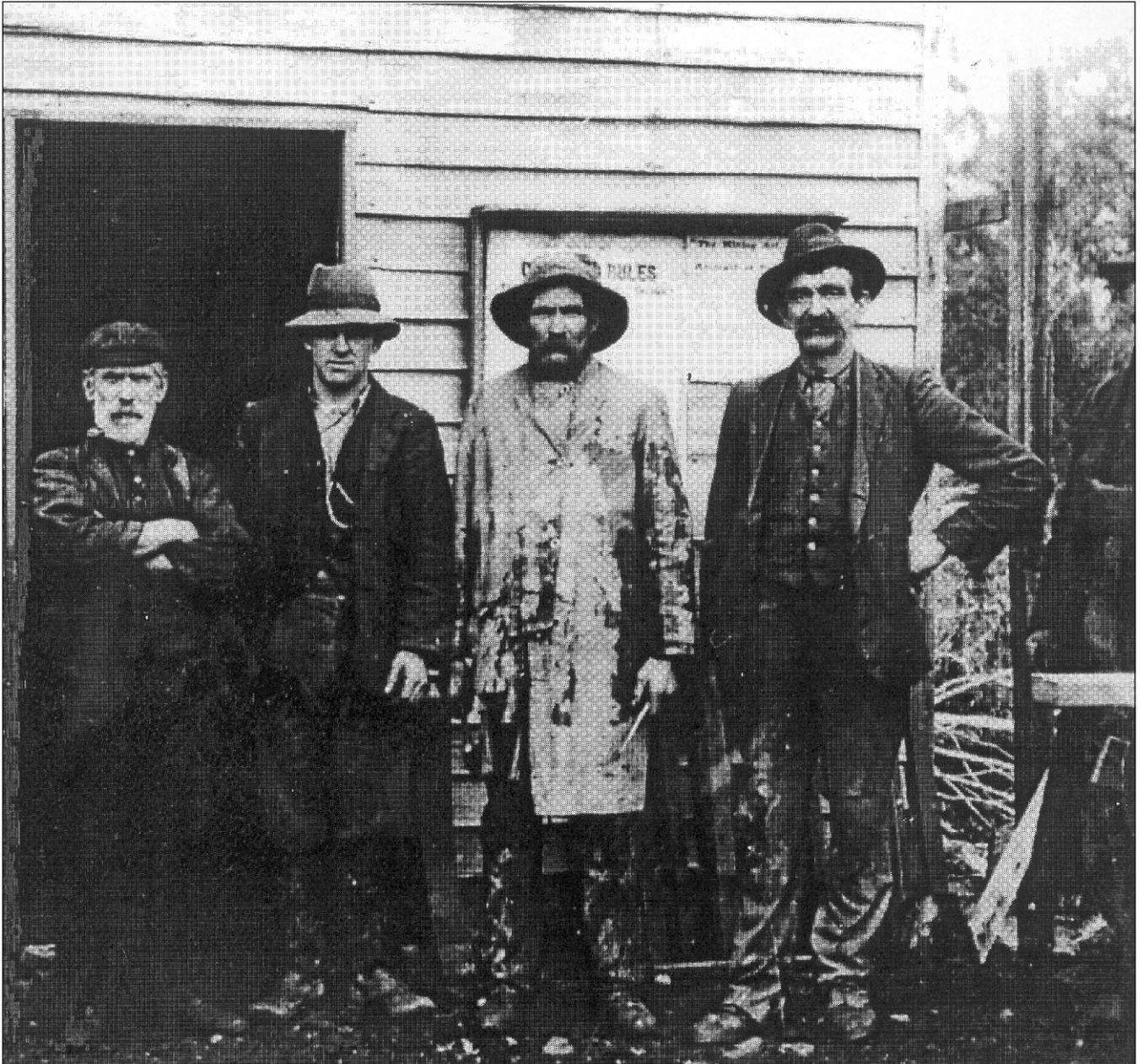


Plate 12

Undated photo of miners outside change house at the Great Republic mine.



Plate 13

Photo showing newly re-timbered main shaft collar at the North Republic mine, c.1980.



Plate 14

Bulldozed prospect south of main shaft at North Republic mine, c.1980.

APPENDIX 2

Historic maps and plans

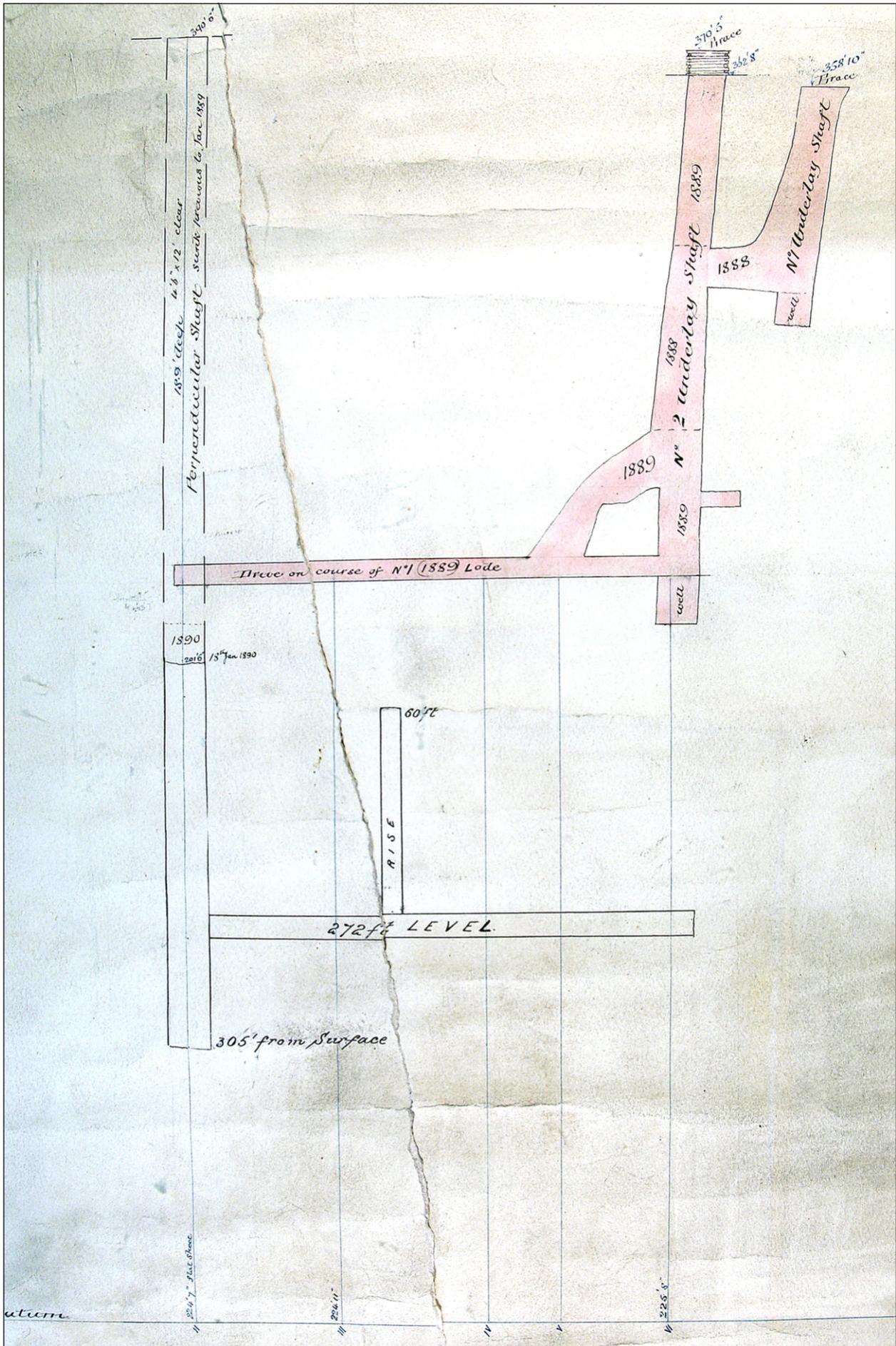


Plate 15

Longitudinal section of Number 1 lode at the Great Republic mine dated 24 January 1890.
[MRT Mine Plan 279-04]

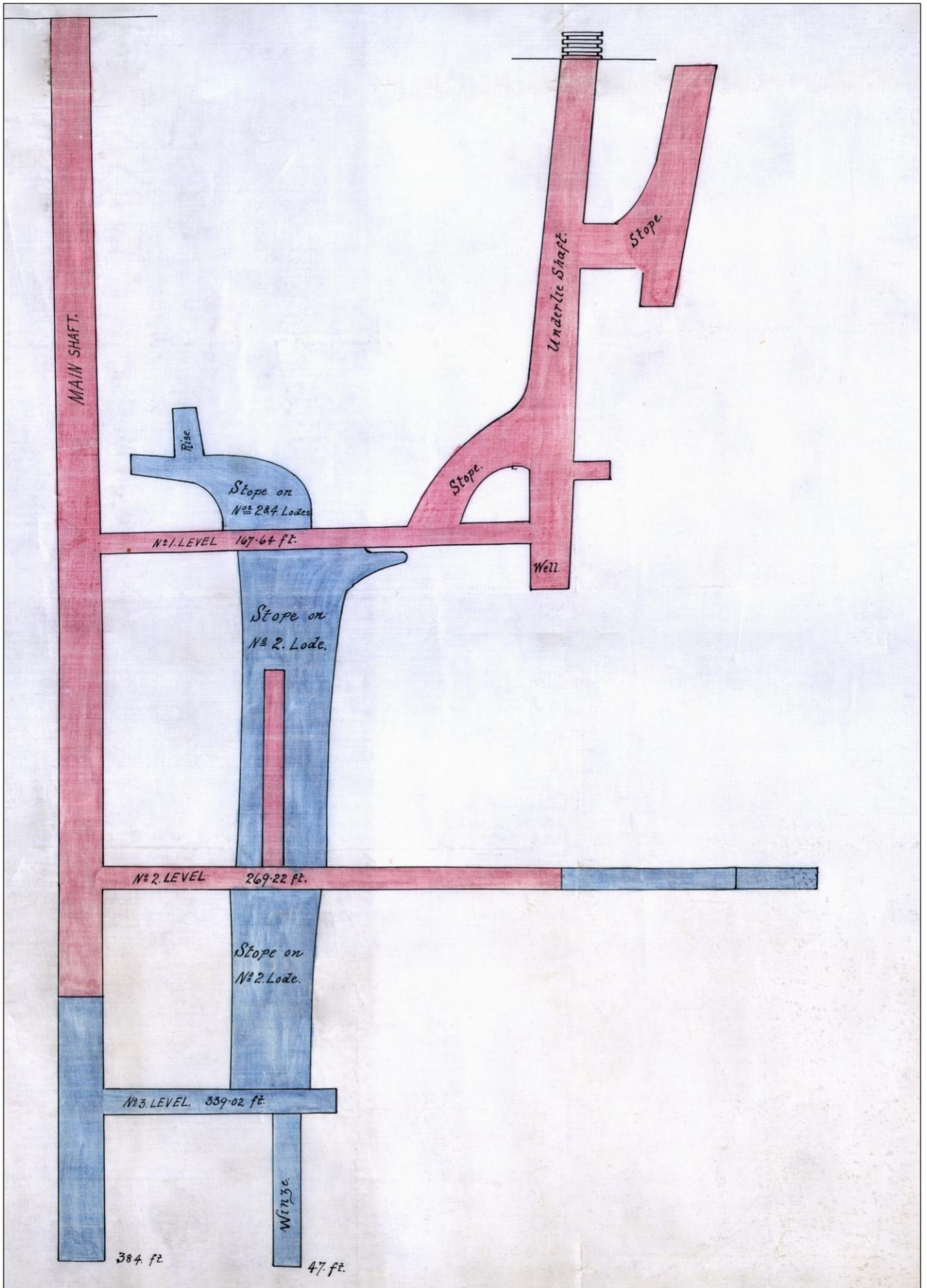


Plate 18

Longitudinal section of Great Republic mine dated 31 December 1892.
[MRT Mine Plan 279-01]

TRANSVERSE SECTION.

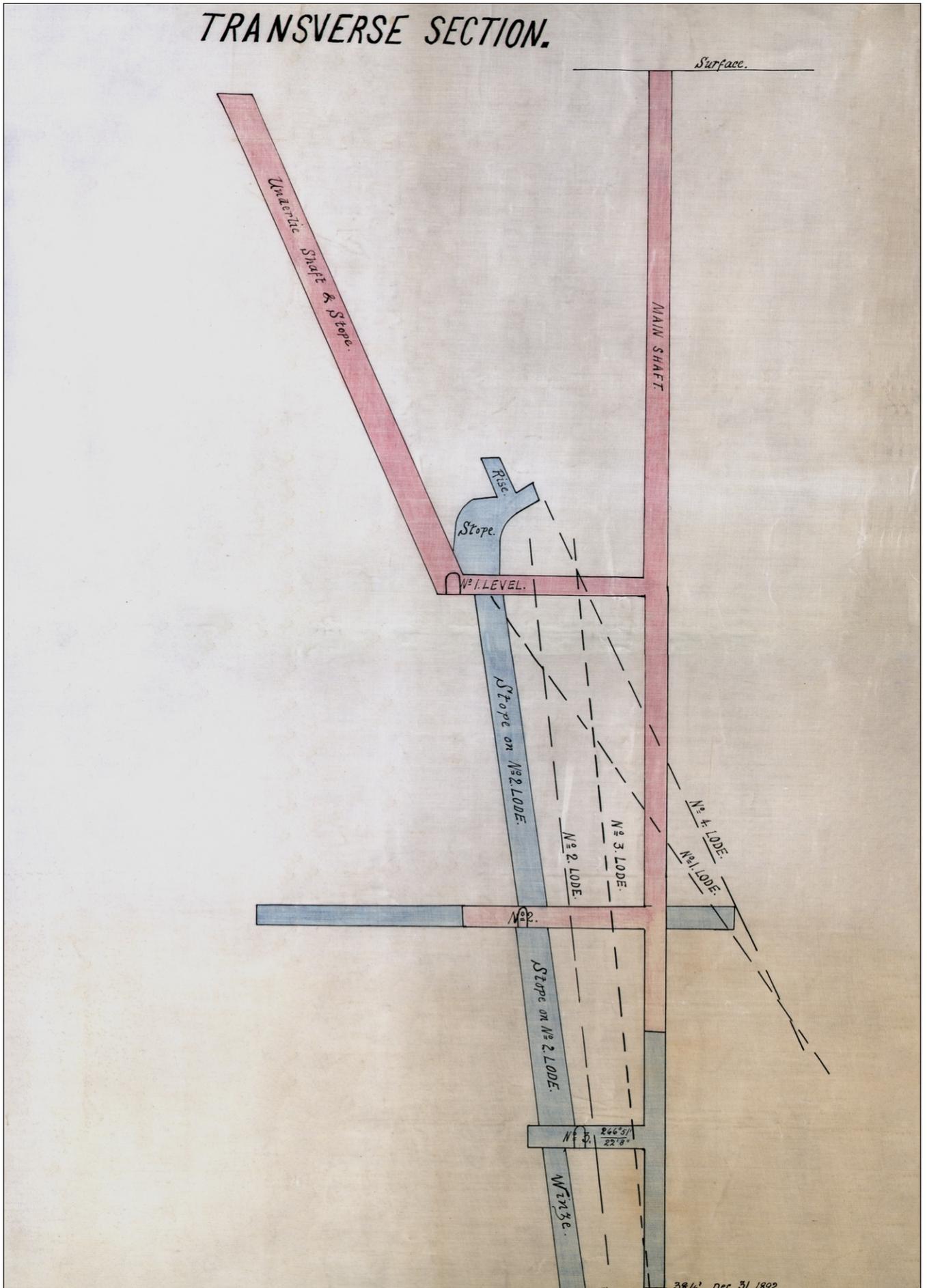


Plate 19

Transverse section of Great Republic mine dated 31 December 1892.
[MRT Mine Plan 279-01]

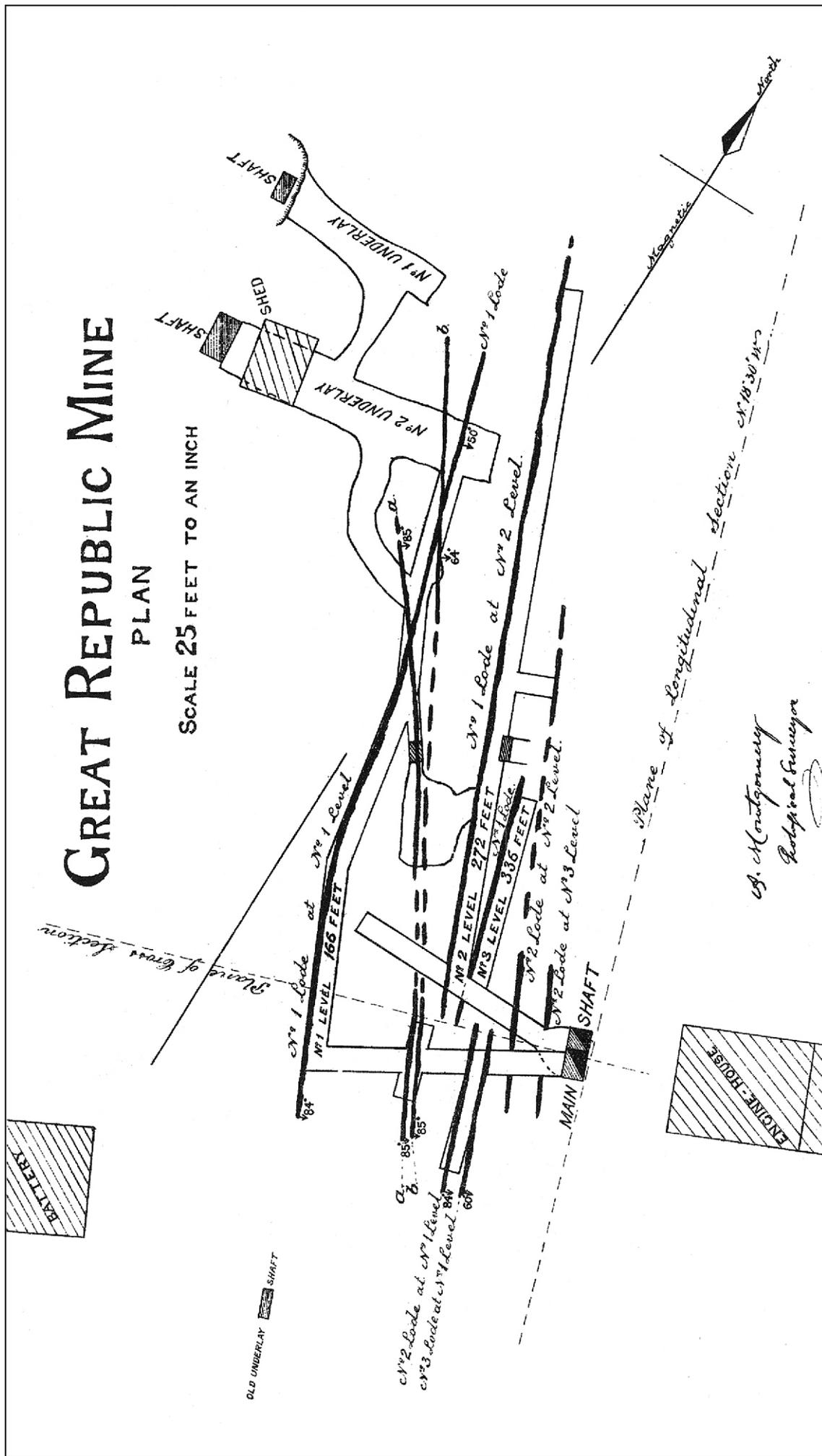


Plate 20. Great Republic mine plan (from Montgomery, 1892).

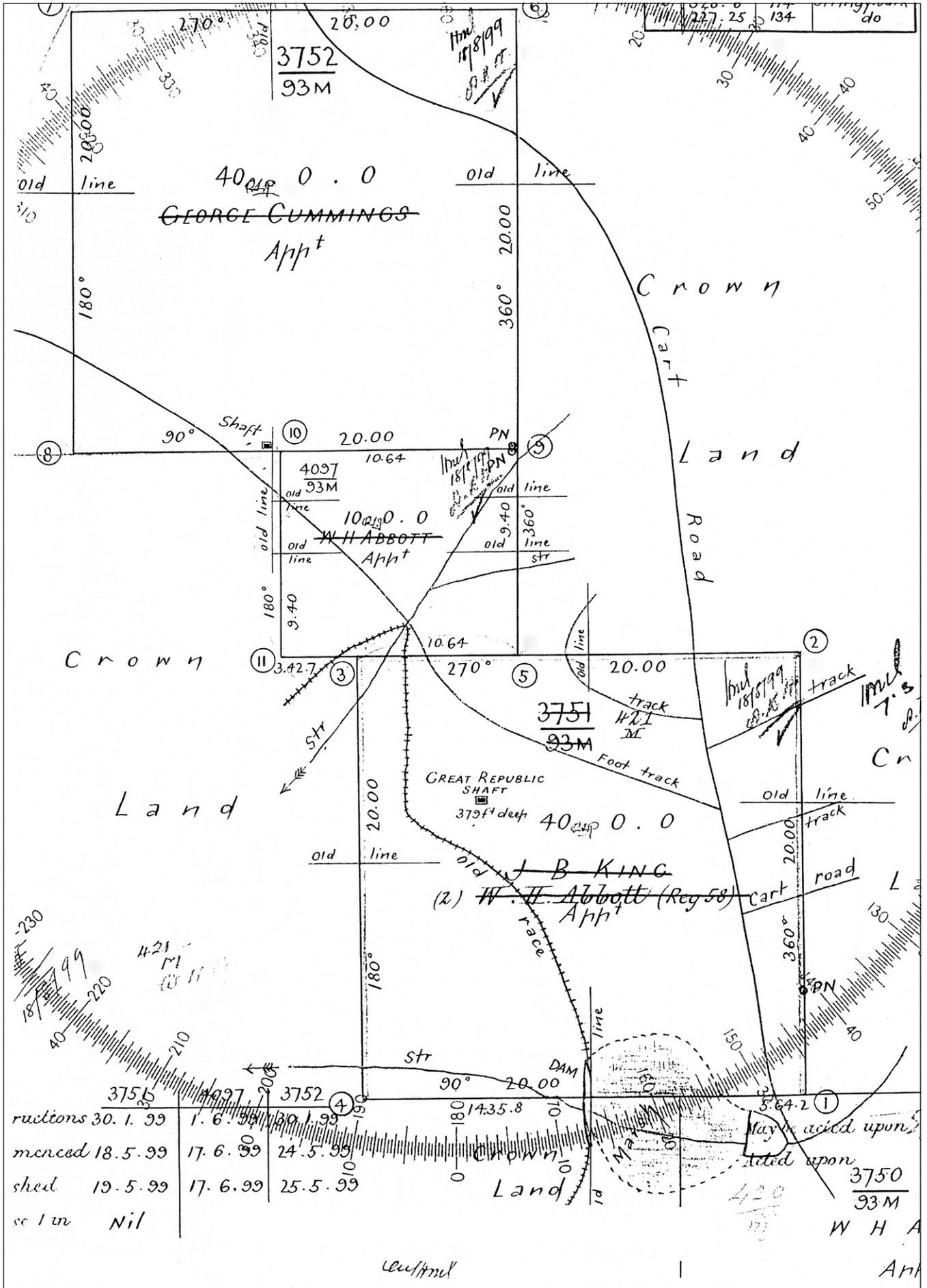


Plate 21

Crown survey of Great Republic mine leases, dated 1899.

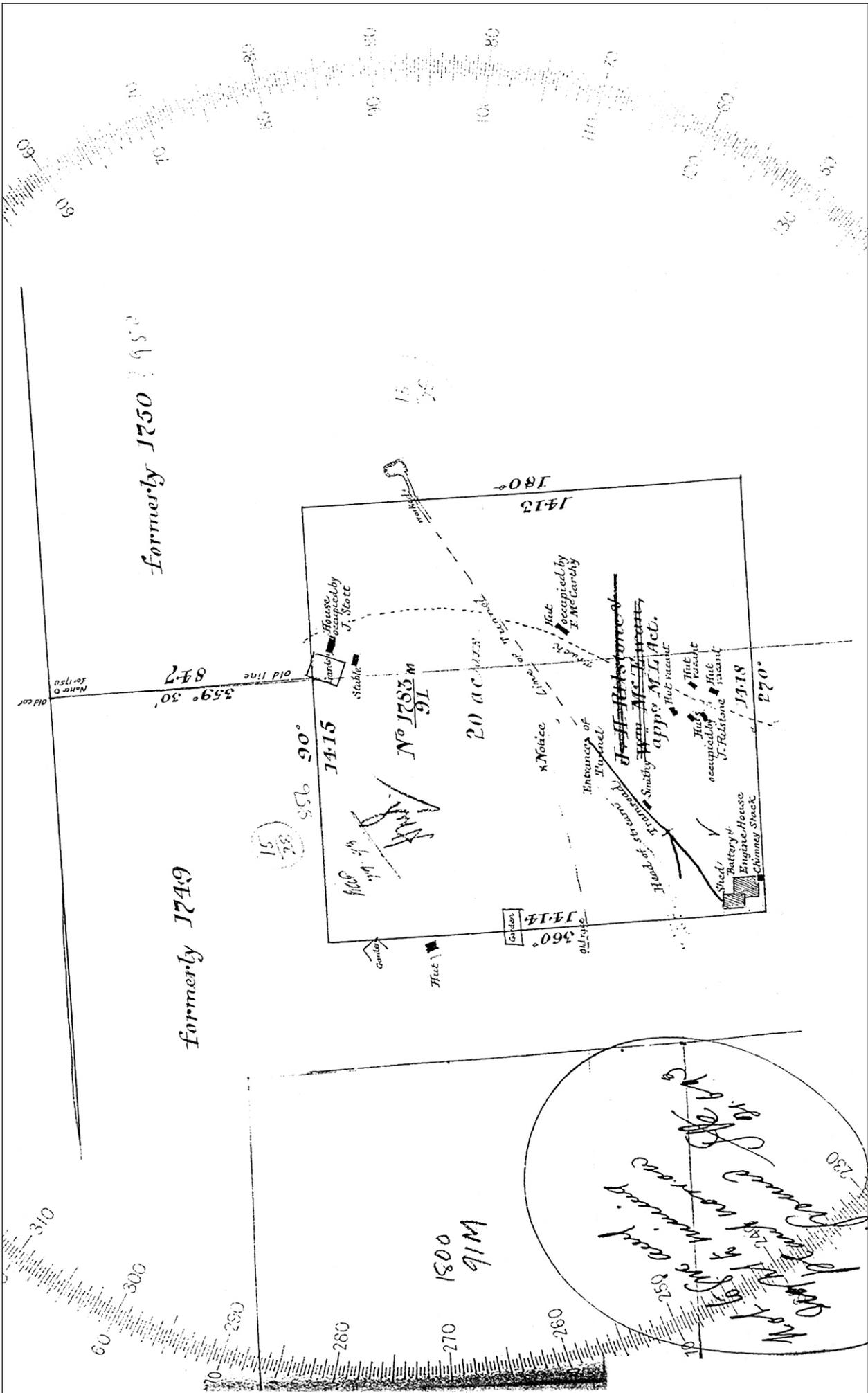


Plate 22. Crown survey of Ben Lomond Company's 20 acre battery/mill site, dated 1893.

BEN LOMOND TIN DEPOSITS

Scale 20 Chains to an Inch

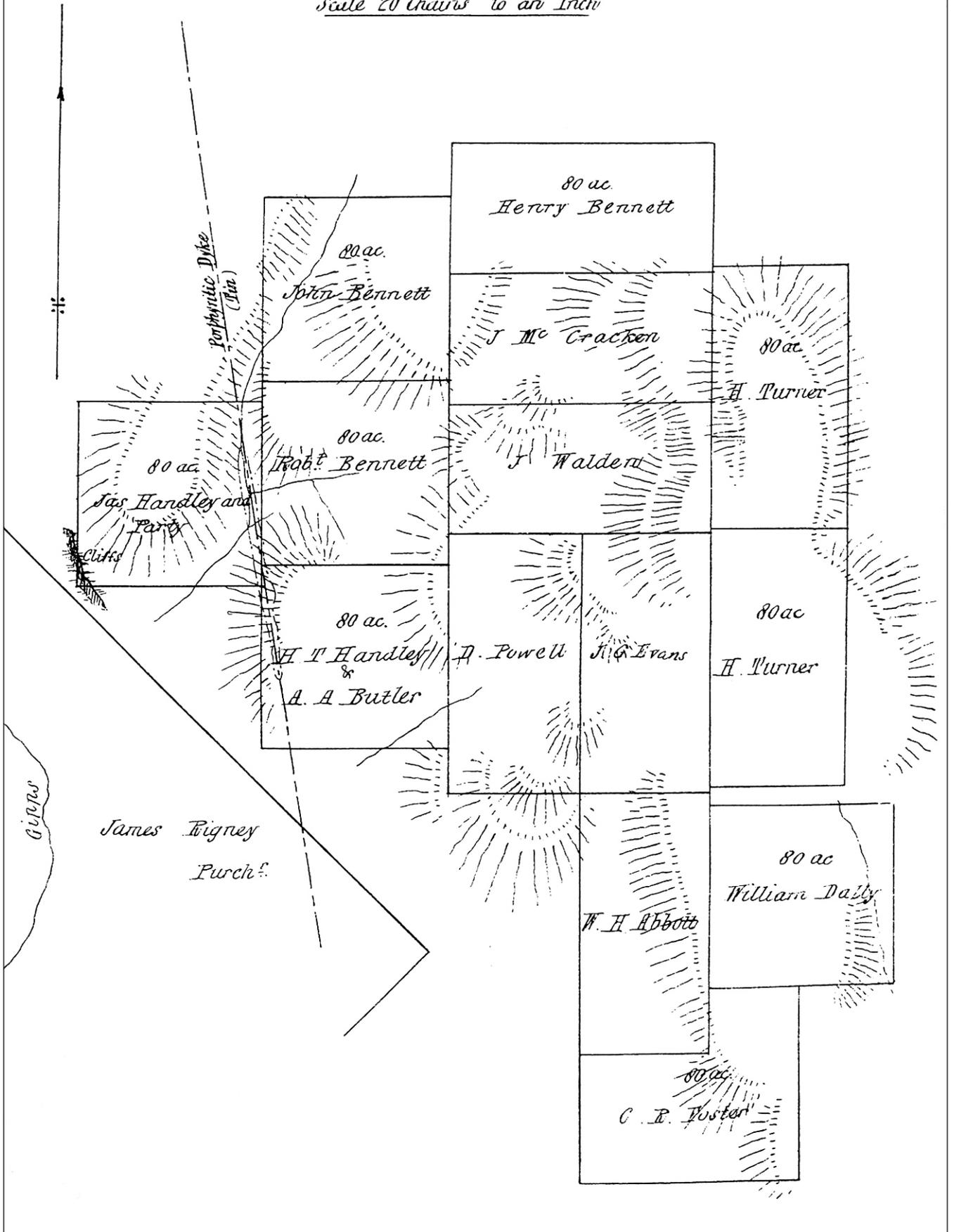


Plate 24

Thureau's 1881 survey of leases on the Ben Lomond line of lode.

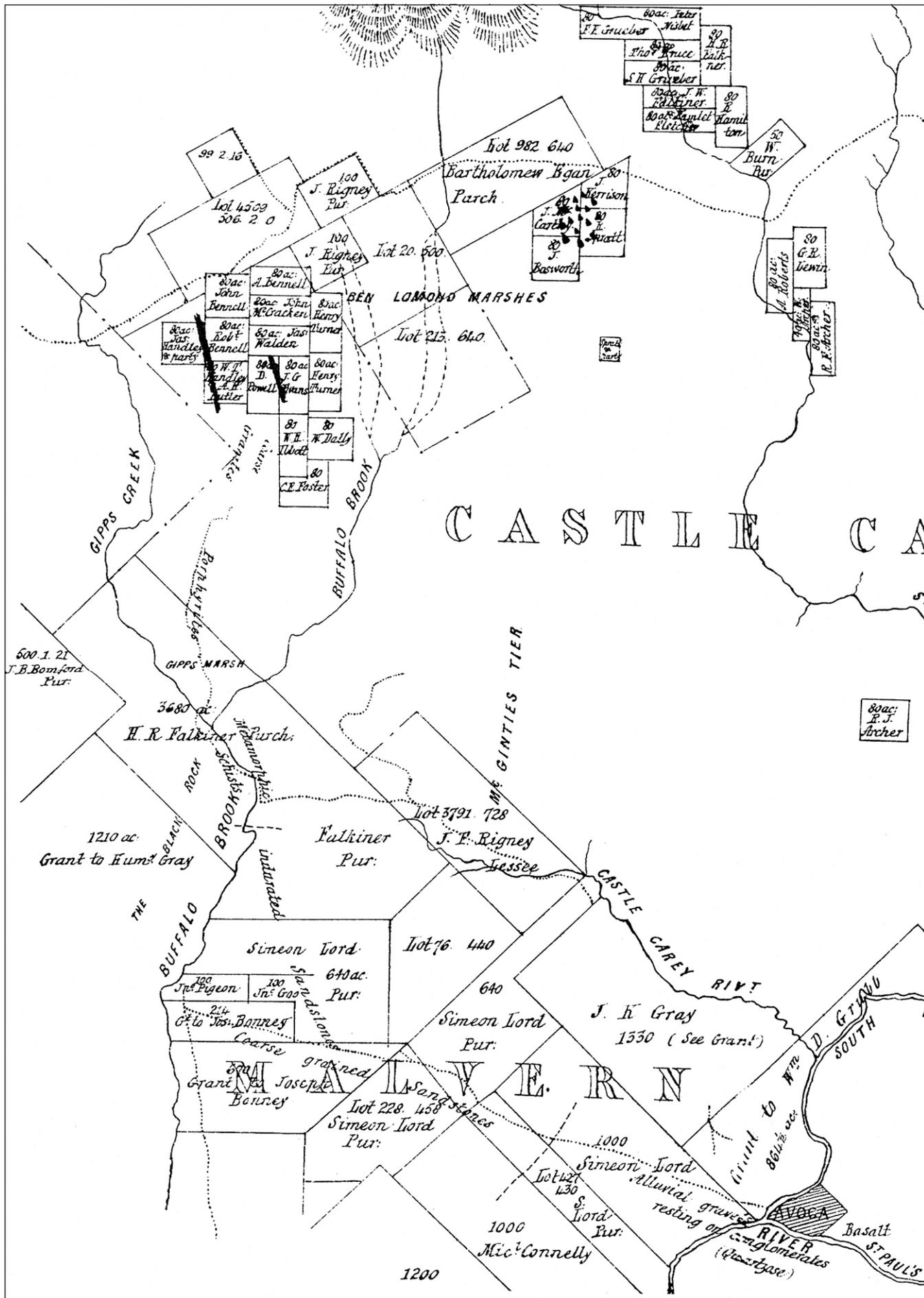


Plate 25

Plan accompanying Thureau's 1881 report showing disposition of leases around the two lines of lode at Ben Lomond. The easternmost lode will be exploited by the Republic and Ben Lomond mines.

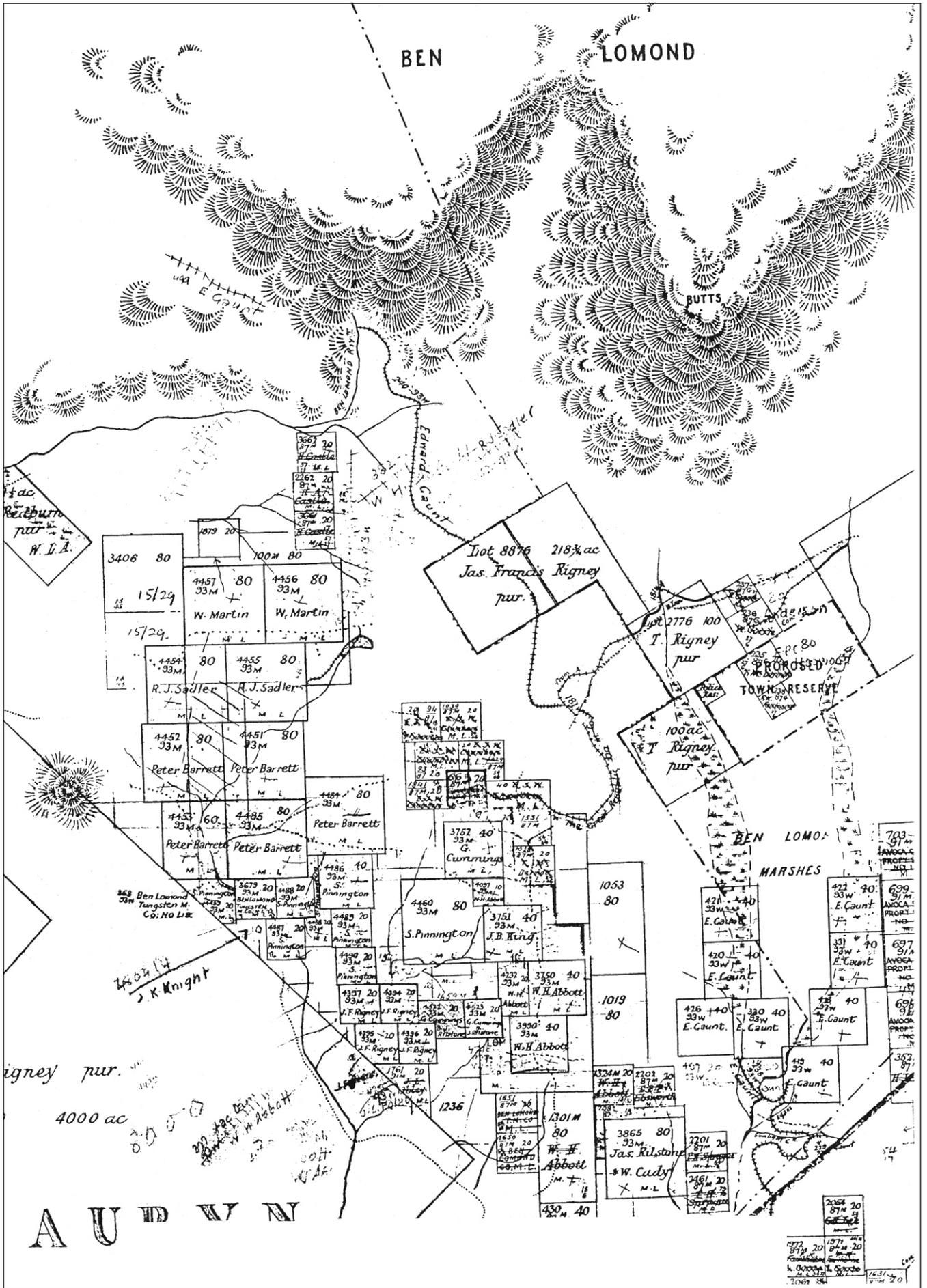


Plate 27

Cornwall county chart current between 1887 and 1900 showing modified leases.

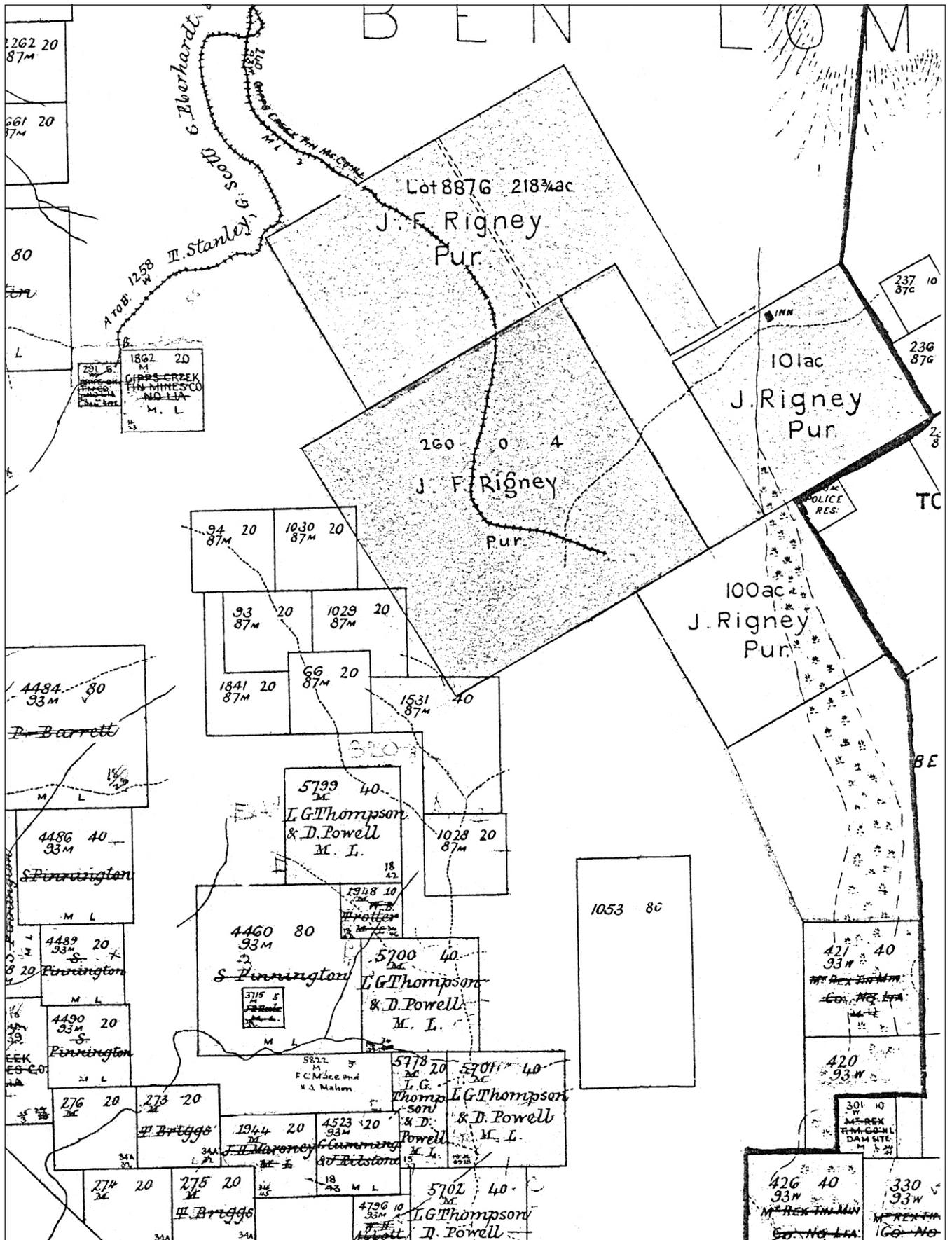


Plate 29

Cornwall county chart dated 1900–1912 showing Ben Lomond Company's dominance over the field. Note this company is not to be confused with the Ben Lomond Tin Mining Company.

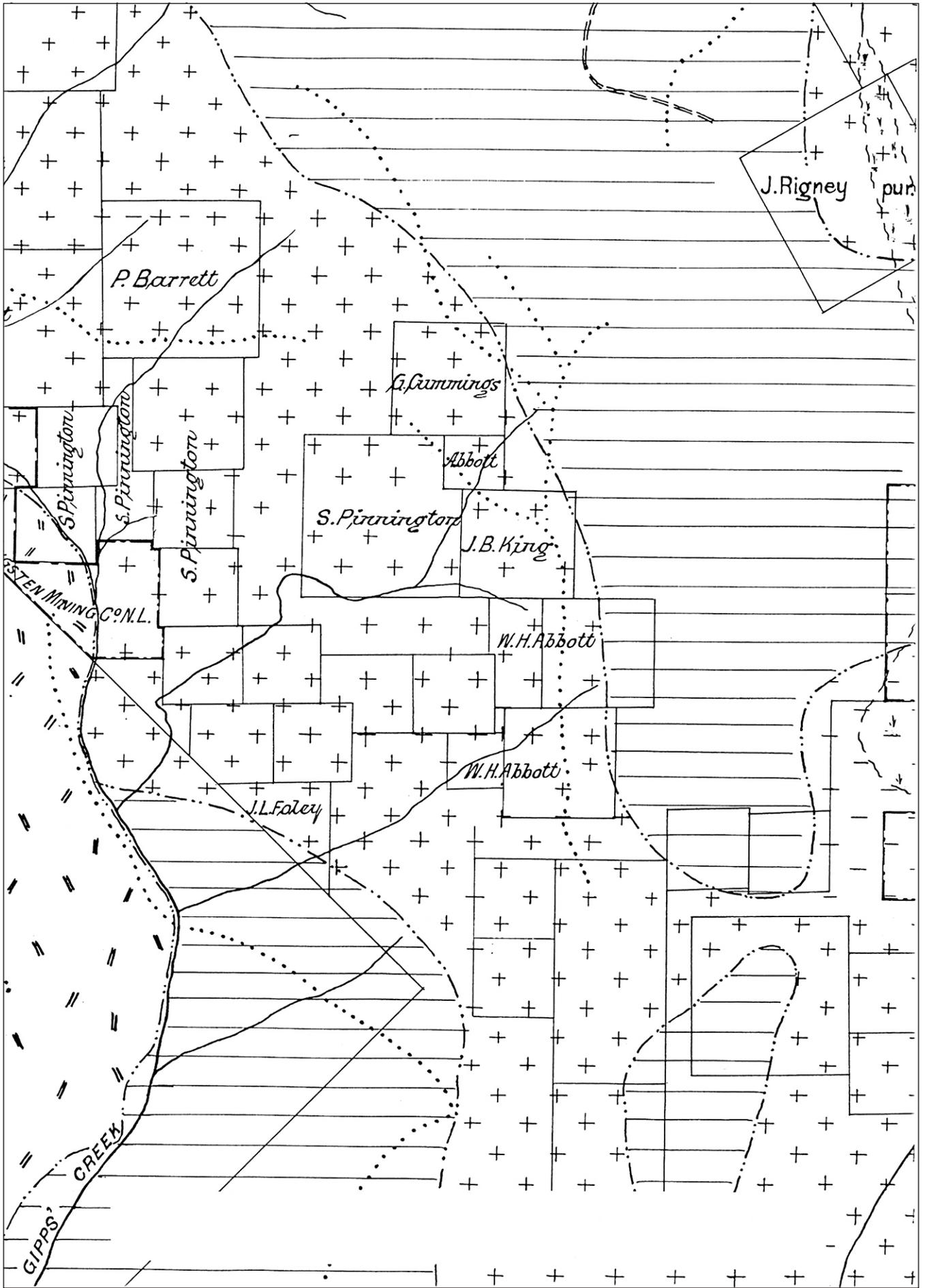


Plate 30

Geologist Waller's 1901 survey of the Ben Lomond mine leases.

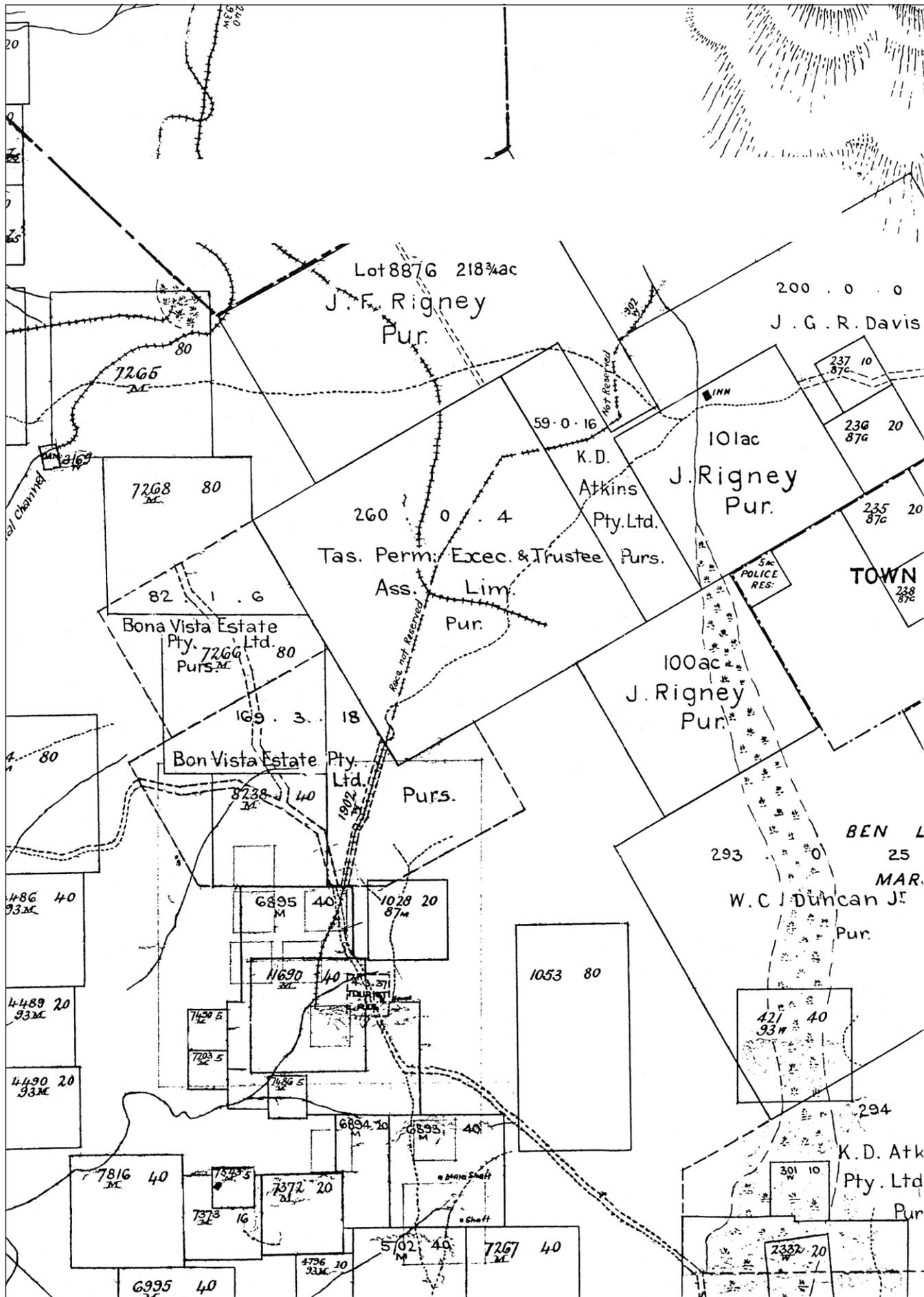


Plate 31

Cornwall county chart dated 1950 showing the Ben Lomond mine leases totally abandoned.

APPENDIX 3

**Illustrations showing historic ore
dressing/concentrating machinery**

AUSTRALIAN MINING AND METALLURGY.

**W. ANDERSON & SONS,
ENGINEERS,
IRON & BRASS FOUNDERS, BOILERMAKERS.**

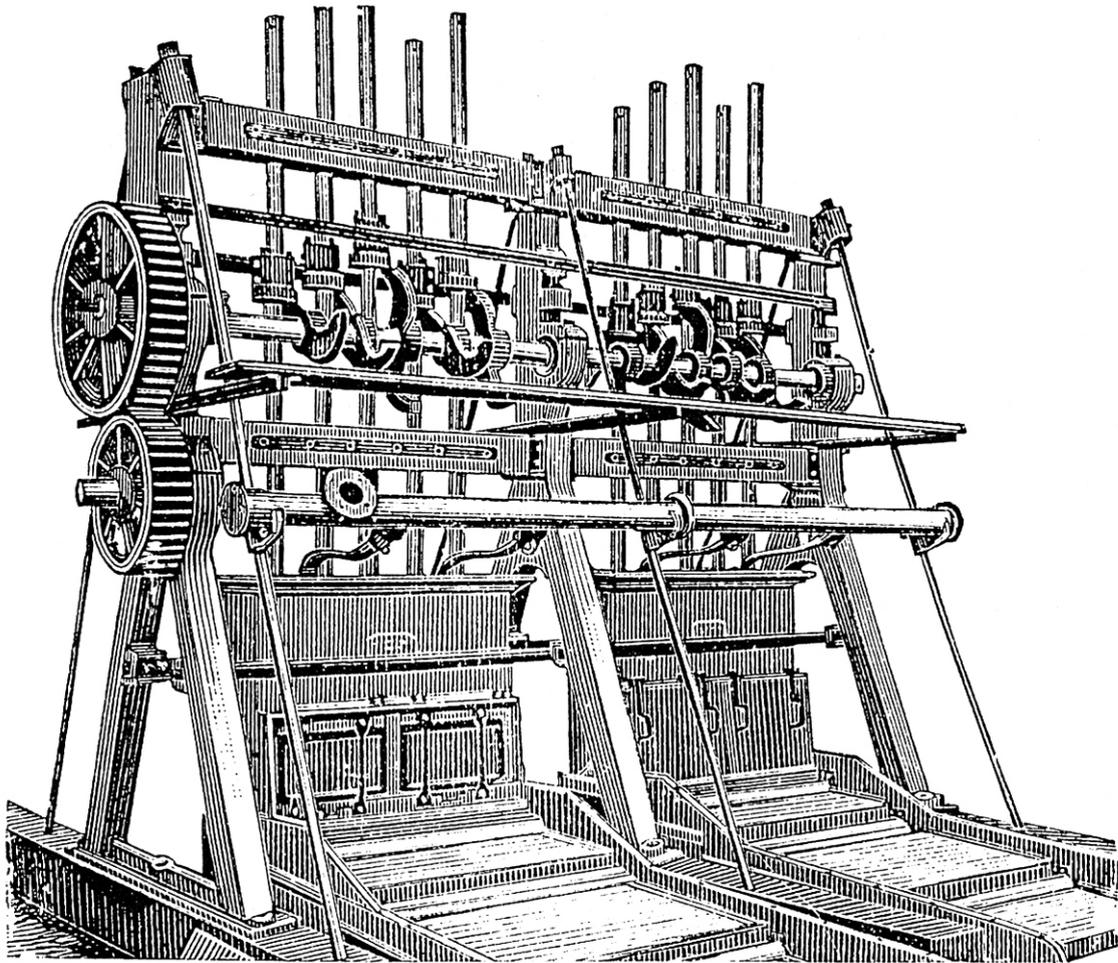


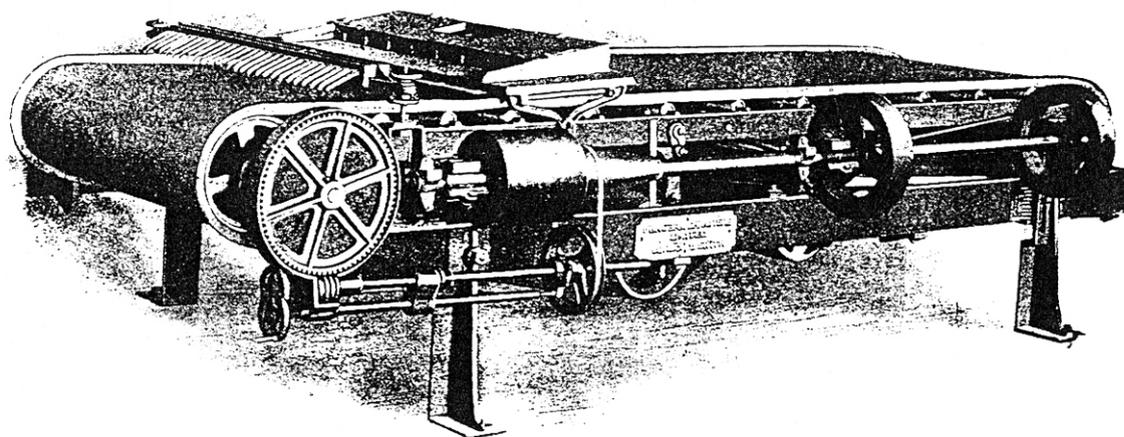
Plate 32

Ten-head stamp battery similar to that used at the Great Republic/Ben Lomond mills.

STAMP BATTERIES

With Mortar Boxes specially adapted to
Preparing Ores for Concentration

**FRUE VANNERS, VANNING BUDDLES,
WILFLEY TABLES AND WILFLEY SLIMERS,**
FOR DRESSING TIN ORES.



(FRUE VANNER)

WATER JACKET SMELTING FURNACES,

Of Latest Approved Design for Tin Slags and Copper, Lead,
and Nickel Ores.

REVERBERATORY FURNACES,

AND

Equipment for **ROASTING & SMELTING** Tin Concentrates.

All kinds of

MINING, MILLING & SMELTING PLANTS.

FRASER & CHALMERS, Ltd.,
3, LONDON WALL BUILDINGS, E.C.

Works:
ERITH, KENT, ENGLAND.

Cable Address:
"VANNER, LONDON."

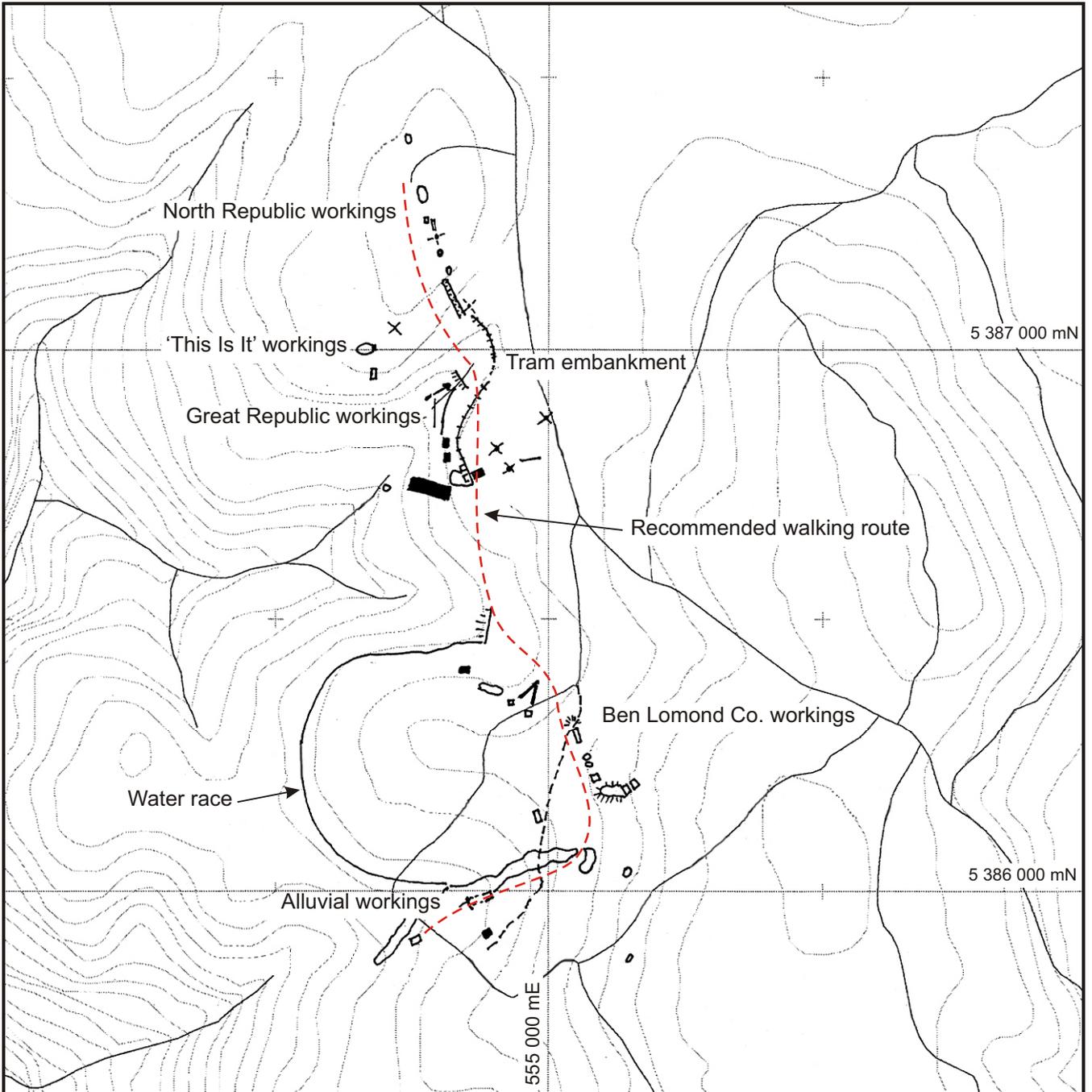
Catalogues on Application.

Plate 33

Frue's patent vanner which was used at the Great Republic mill.

APPENDIX 4

Map showing recommended walking route for school groups



Map showing recommended walking route for school groups

APPENDIX 5

Contemporary survey photographs



Plate 34

Home-made headframe at the 'This Is It' workings.



Plate 35

Windlass mounted on tree trunk beside main shaft at the 'This Is It' workings.



Plate 37

Adit at the 'This Is It' workings.



Plate 36

Underlay shaft at the 'This Is It' workings.



Plate 38

Hut chimney base at the 'This Is It' workings.



Plate 39

Collapsed timber structure at North Republic main shaft. Compare this frame with Plate 13 showing same site 20 years previously.



Plate 40

Main shaft collar at the North Republic site.



Plate 41

View showing northern end of the North Republic open cut.



Plate 42

Collapsed hut next to southern end of North Republic open cut.



Plate 43

Great Republic tramway embankment east of collapsed hut.



Plate 44
*Water (head) race near the
Great Republic overlay shafts.*



Plate 45
D. Hayes screening site near underlay shafts, Great Republic mine.



Plate 46
*Mullock dumps beside
the main shaft,
Great Republic mine.*



Plate 47
*Stone boiler bed footings
at winding house site,
Great Republic mine.*



Plate 48
*Outer skin section from
Cornish-type boiler at
winding house site,
Great Republic mine.*



Plate 49

Concrete footings for primary crushing plant,
Great Republic mill site.



Plate 50

Timber footings for screens/wilfley tables, Great Republic mill site.



Plate 51
Concrete floor at lowest level of Great Republic mill site.



Plate 52
General view of Cornwall buddle.



Plate 53
Close-up view showing central island of buddle.



Plate 54

Hut chimney beside track, Great Republic mine site.



Plate 55

Hut chimney at Jack Death's camp.



Plate 56

Artefact scatter near chimney at Jack Death's camp.



Plate 57

*Ben Lomond mine's
water race passing near
Jack Death's camp.*



Plate 58

*Hahl and Quillerat's
crushing plant near
Jack Death's camp.*



Plate 59

*Ben Lomond mine's
dam north west of
Jack Death's camp.*



Plate 60

Adit portal at north end of Ben Lomond Co.'s workings.



Plate 61

Mullock fingers at Ben Lomond Co.'s main shaft.



Plate 62

Open cut operation on Ben Lomond Co.'s lease.



Plate 63

Flooded Ben Lomond adit near old Ben Lomond Co.'s mill site.



Plate 64
*Concrete dam wall built by
Quillerat to retain water
in Ben Lomond adit.*



Plate 65
Remains of Quillerat's mill on the same site as original Ben Lomond Company mill.