

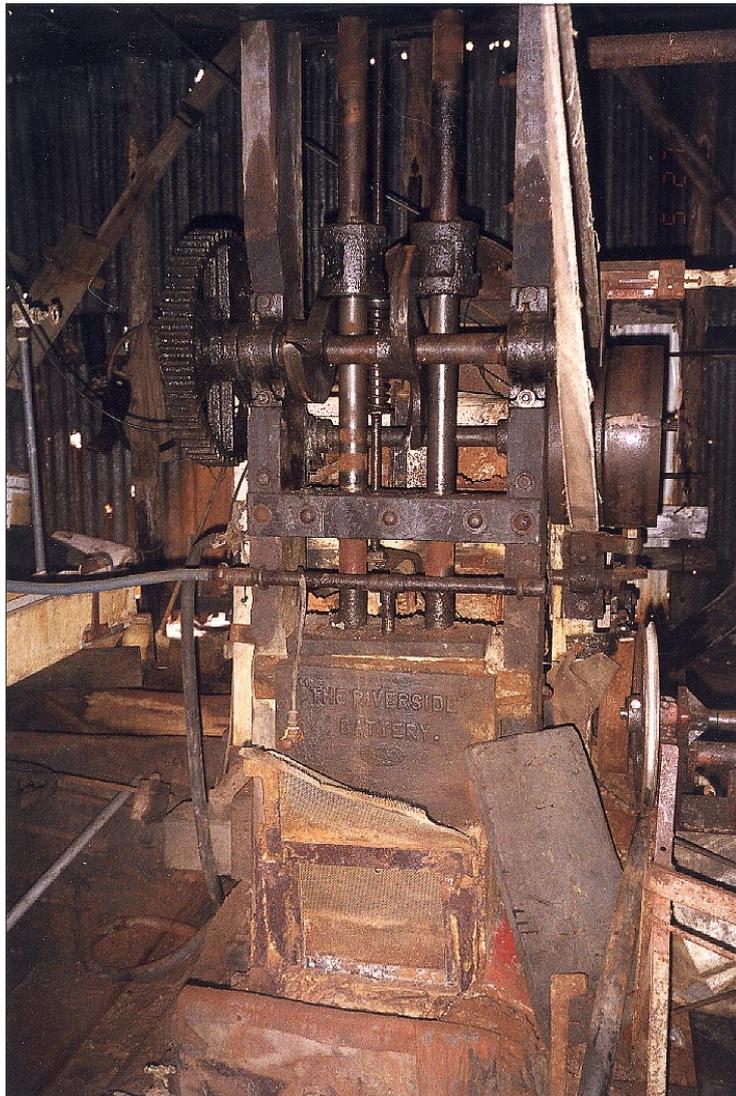


MINERAL RESOURCES TASMANIA

**Archaeological Survey Report
1999/02**

**An archaeological inspection
of historic standing structures
at the Mount Bischoff mine**

By Parry Kostoglou





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CONTENTS

INTRODUCTION	2
Job Brief	2
Methodology	2
Location of survey area	2
Previous work	2
RECOMMENDATIONS	2
Kenworthy's mill	2
Kenworthy's power house	2
Commonwealth shed	4
HISTORICAL OVERVIEW	4
SITE REPORTS	5
Kenworthy's Mill	5
Kenworthy's powerhouse	8
Commonwealth shed	8
BIBLIOGRAPHY	10
APPENDIX: Contemporary survey photographs	11

ACKNOWLEDGEMENTS

The consultant wishes to to gratefully acknowledge the assistance provided by Mr Robyn (Shorty) Halfacre of Mineral Resources Tasmania.

INTRODUCTION

Job brief

This archaeological inspection of Kenworthy's mill/powerhouse and the Commonwealth shed was commissioned by Mineral Resources Tasmania in response to two separate applications to salvage materials and contents from these structures. More specifically:

- The Waratah council wishes to move Kenworthy's mill building and its contents to a location within the township as a display item for tourism purposes.
- A local ratepayer wishes to purchase the timber fabric of the Commonwealth shed for building purposes.

The verbal brief for this assignment therefore required a visit to both sites in order to record the resident structures and their contents, in addition to assessing the two salvage applications.

Methodology

Field work was undertaken over a one day period on 27 May 1999. Buildings at both sites were examined and all resident archaeological features drafted, photographed and inventoried. Half a day was also spent at the MRT library and map rooms in order to compile information on the history of this site.

Location of survey area

The sites described in this report occur at the historic Mount Bischoff mine 1.5 kilometres north of Waratah township. The resident structures appear marked on the current 1:25 000 scale topographic map of the area which appears as Plate I.

Previous work

As part of an archaeological survey of the Mount Bischoff workings in 1986, Townrow recorded the Commonwealth shed. Greg Dickens of Mineral Resources Tasmania completed an inventory of the contents of Kenworthy's mill in 1999.

RECOMMENDATIONS

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

Kenworthy's Mill

Dudley Kenworthy's mill is a perfectly preserved industrial artefact using machinery and technology of historic derivation. The case to preserve Mr Kenworthy's mill and the bulk of its contents is undeniable, although the manner in which it is achieved will require some further thought, given that the brief did not require the consultant to formulate a removal strategy. The following recommendations can however be made.

- The current proposal to dismantle the mill building and re-erect it Waratah is endorsed.
- The dismantling of the building should be done carefully so that the re-erected shed is as faithful to the original as possible, although some sheet iron and timber framework will require replacement. Some asbestos material will also have to be removed.
- The various items comprising the milling plant should be carefully dismantled and then re-assembled in an identical configuration.
- The numerous small items such as tools, spare parts and containers should be sorted and the more interesting items selectively retained.

Kenworthy's power house

Although not referred to in the brief, the powerhouse for Kenworthy's mill was also examined during this survey. The power house building itself appears to have virtually no archaeological and historical significance, and therefore requires no further work. However the marble backed electrical switchboards with attached meters and circuit breakers within the shed should be removed and either incorporated into the Kenworthy mill reconstruction or donated to the museum. If left in situ, these items will undoubtedly be destroyed by vandals.

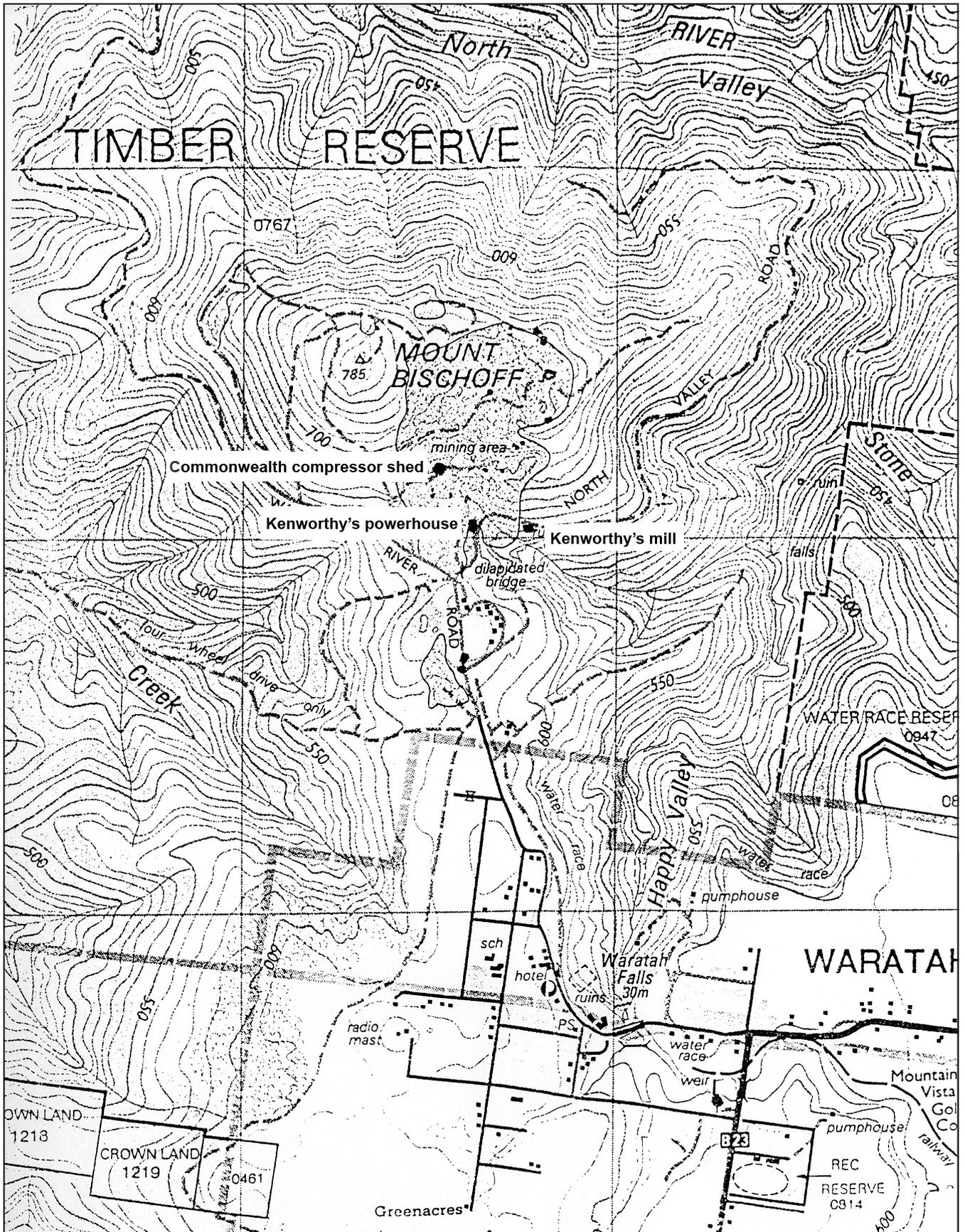


Plate I

Enlarged 1:25 000 scale series map section showing locations of various buildings described in this report.

Commonwealth shed

The so called Commonwealth shed is also an unremarkable wartime structure, with no noteworthy heritage significance. Its extreme deterioration makes the structure a public liability. As such, the proposal that a salvager be given permission to remove all the timber fabric is endorsed subject to two conditions.

- The steel plate pressure receiver is not to be damaged or removed by the salvager or other parties. This item is a well crafted and increasingly rare piece of mining heritage, and should be preserved either on site or at some public facility in Waratah.
- The Ingersoll Rand compressor will also in the future become a coveted heritage item. This should also be offered to the museum.

HISTORICAL OVERVIEW

Mount Bischoff was named after James Bischoff, the chairman of the Van Diemen's Land Company in 1828. The tin bonanza beneath his natural namesake was discovered by James Philosopher Smith on 4 December 1871. After completing his prospecting, Smith returned to Launceston and successfully applied for two 80 acre leases. He returned again in May 1872 and resurveyed his leases to discover that his tin find lay outside the VDL Co's. property boundary by a mere 1.5 miles. Smith then went ahead and formed the Mount Bischoff Tin Mining Company in 1873. Within a year, the company had built its own smelters in Launceston while a further 100,000 pounds was spent on the mine and mill development up to 1878, when the first dividends were paid to shareholders. Both the mine and its attendant mills fostered the growth of Waratah township, which reached a peak population in the 1880s with 2,550 residents. The mine ran uninterrupted until 1914–15, when a co-operative was trialed briefly to offset company overheads and keep the mine open. The company soon resumed full control of the mine and its plant, but in 1929 another stoppage ended only when the mine was manned by tribute labour, a system which now prevailed until the final demise of Mount Bischoff.

As the easily mined and processed ore lodes gave out in the 1920s, the operation died a protracted death during the Great Depression, although the Second World War saw the Commonwealth Government acquire the mine for strategic supply purposes in 1942. When the mine failed to contribute to the war effort, the State Government entered into a joint venture with the Commonwealth to stave off closure in 1945. This was only successful until 1947, when the mine and all remaining assets were closed and the company deregistered. Some very small scale private prospecting, ore recovery and treatment was then done by a number of independent parties including one led by Mr Dudley Kenworthy, whose mill is the partial focus of this report. The mine has lain dormant since the last of these parties abandoned the workings in c.1990.

SITE REPORTS

Reports outlining the locations, histories and current contents of Kenworthy's mill, Kenworthy's power house and the Commonwealth compressor shed, are provided below.

Kenworthy's mill

LOCATION

Kenworthy's mill is located beside the so-called North Valley Road opposite the Happy Valley mine face.

HISTORY

When the Commonwealth government withdrew its support for and then closed the Mount Bischoff mine in August 1947, at least five local parties comprised of local miners immediately sought permission to recover ore from the abandoned workings. One of these parties comprised Messrs Harrington, Kenworthy and Co. In 1948, the Secretary of Mines report for that year noted that "This party was occupied cleaning up around old Mount Bischoff Mill and recovered 4.98 tons of concentrate containing 3.33 tons of metallic tin. Three men were employed".⁽¹⁾

After 1950, production from these small scale operators steadily increased until it peaked in 1953⁽²⁾. Throughout the middle to late 1950s production steadily declined until by 1957 it had fallen to ten tons of tin annually. This figure remained relatively constant for the next 20 odd years. In May 1964, Mr Kenworthy purchased the old Mount Bischoff Company's compressor shed at Happy Valley for £5, and moved his milling plant into this structure. It seems reasonable to assume therefore that Kenworthy's mill building described in this report is in fact the original Mount Bischoff Company compressor shed.

Mr Kenworthy and Company's operation was subsequently described in the early 1970s, when as part of their treatise on the Mount Bischoff workings, Groves *et al.* described the melancholy remains of the once mighty mines, and noted in passing "Beside the North Valley Road amid the old workings stands a neatly built shed of variegated colour, zinc coated and red rusty iron. Inside a 2-head battery and table recover tin for part time fossickers".⁽³⁾

Evidently the operations conducted by Mr Kenworthy and his associated had become somewhat less earnest, although the operation still netted an annual return into the 1980s. The mill appears to have been finally abandoned after failing health forced Mr Kenworthy to cease his ore recovery operations in the early 1990s.

DESCRIPTION

The Kenworthy mill plant consisted of several other features in addition to the mill building and its contents. These are briefly summarised below in conjunction with the mill. Reference should also be made to the scaled plan of the structure provided as Plate 2.

(1) Water pipe and flume

A 20 metre long section of 2 centimetre diameter water pipe follows the south side of the North Valley road line to the mill site. The collapsed remnants of continuous timber trestling beside the water pipe suggest that some sort of fluming to conduct untreated tin ore may have also been erected here.

(2) Ore washing tank

A 2.7 metre diameter x 0.3 metre high steel tank lies beneath a roofed addition to the western end of the mill building. A covered section of timber fluming with a rivetted metal discharge pipe may have delivered untreated ore into this tank for washing prior to it being shovelled through a hatch into the mill for further treatment.

(3) Mill building

The mill building is a rectangular structure with a gabled roof measuring 5.6 x 8.1 x 4.3 metres in height. It is a composite iron and timber structure utilising corrugated iron sheets applied as a wall and roof skin to a timber framework. A 2 x 3.5 x 2 metre high addition has been made at the western end of the mill shed to cover the ore washing tank described above. This addition comprises a timber frame supporting a corrugated asbestos sheet roof. The three walls are equally rudimentary, and consist merely of plastic and canvas sheeting tacked to the timber uprights. A 3.5 metre high timber mast attached externally to the western wall of the mill shed

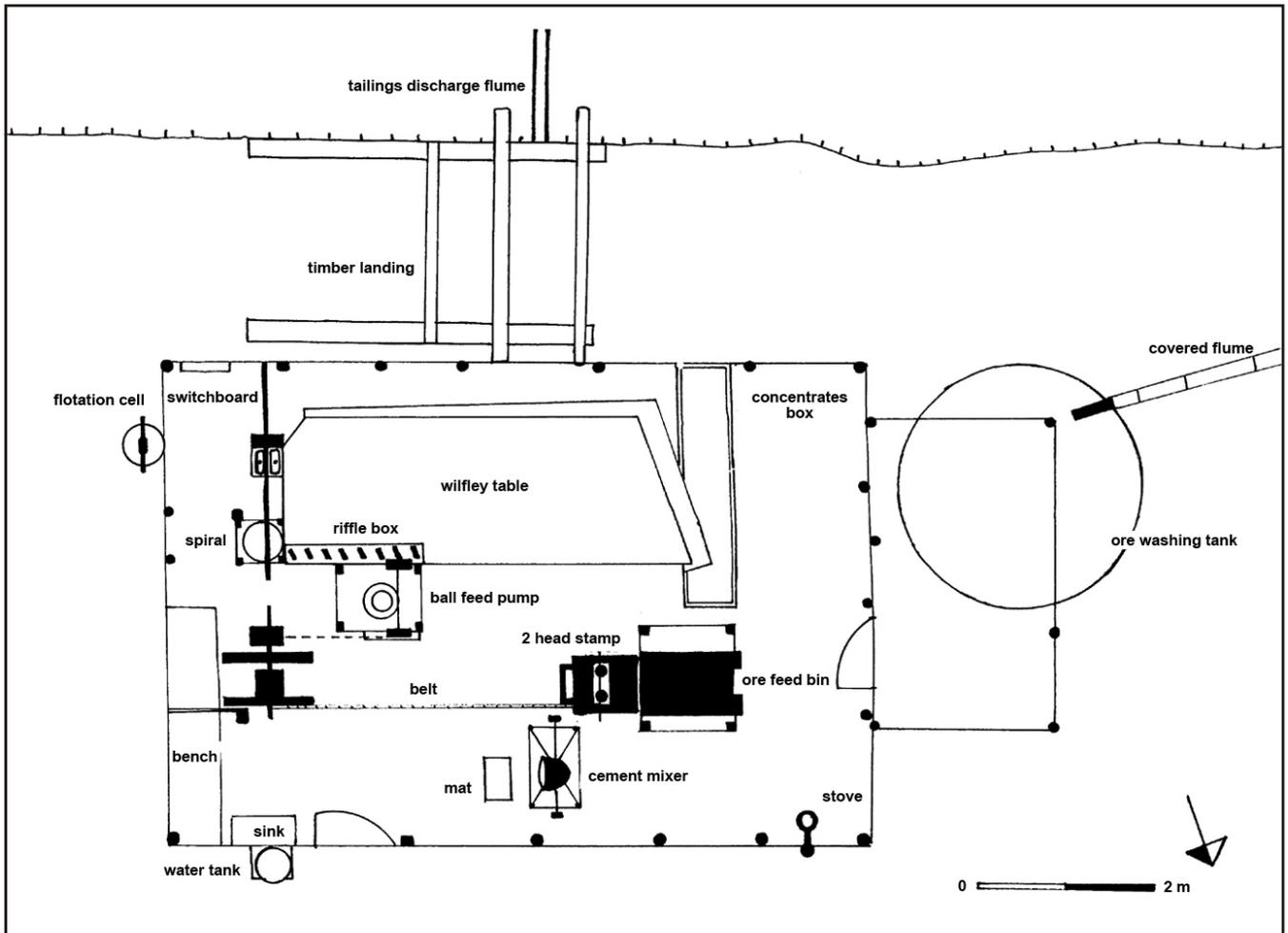


Plate 2

Scaled plan showing Kenworthy's mill and its various constituent features.

supported the power line from the nearby power house. The entire structure rests on a formed concrete slab. The internal contents of the mill building are described individually below.

Ore feed bin

Once untreated ore had been washed in the external tank, it was shovelled through a feed door in the western wall of the mill building and placed in the ore feed bin prior to milling. This ore feed bin consists of a 44 gallon drum elevated on a 1 x 1 x 1 metre high timber frame, which stands immediately behind the stamp battery. Ore from the bin was gradually fed into the mill battery by means of a simple sliding feed slot at the base of the drum.

Stamp battery

The resident mill battery is a two-head stamp battery, which stands immediately east of the ore feed bin. The mortar box at the base of the battery has 'THE RIVERSIDE BATTERY' stamped in high relief on one side of it. This battery is completely intact, retaining both the crushing plant and drive assembly.

Ball feed pump/agitator

The crushed ore from the battery was then fed into an elevated dish where it was agitated and then forced under pressure into a funnel shaped spiral. The agitating dish was powered by a belt driven pump supported by an overhead metal frame.

Spiral

Material from the agitator was pumped under pressure by the ball feed pump into a metal funnel fitted with a mixing arm. After undergoing further mixing, the material was ejected at the base into a riffle box beside a wilfley table.

Riffle box

A 1.5 x 0.2 metre wide riffle box with a series of eleven timber batons or 'clears' on its base served to catch pieces of unwanted waste rock while the smaller particles of tin proceeded onto the adjacent wilfley table.

Wilfley table

The resulting 'fines' were then gravity fed onto a wilfley table for final separation of the tin concentrate from other unwanted material. The roughly rectangular wilfley table measures 4.7 x 1.7 metres in dimension. An overhead water pipe supplied a continuous stream of water onto the top end of the table to move material over the corrugations on the table top. This all timber table has a waste flume built around its southern/western ends to drain off waste material for ultimate removal outside the southern side of the building.

Concentrates box

A 2.8 x 0.6 x 0.35 metre deep timber trough at the western/lowest end of the wilfley table captured the lighter tin particles as they ran over the end of the table.

Cement mixer

Tin concentrates removed from this box appear to have received one final wash in a small portable cement mixer standing adjacent to the mill's stamp battery. Cleaned concentrates were probably poured out of the mixer onto the rubber mat laid out beneath. The presence of two plastic containers of tin concentrates next to the mat and mixer further add credence to this theory.

Electric motor/switchboard

Electric power for the mill was conveyed by overhead wire from the nearby power house to the mill switchboard located in the southeastern corner of the building. This board still retains a circuit breaker switch, although all fuses and the meter have been removed. Power regulated by the switchboard drove a small engine installed immediately east of the wilfley table. A pulley attached to the engine in turn drove, by means of a single canvas belt, the overhead pulley system described below.

Overhead pulley system

The stamp battery, ball feed pump and cement mixer were all run by canvas belts connected to an overhead pulley system at the eastern end of the building.

(4) Waste flume/landing

Waste tailings from the wilfley table and other sources were piped out the southern side of the building to a covered timber flume, which conveyed it down the hill side. The function of a timber landing, measuring 4 x 3 metres, erected outside the southern wall of the mill shed remains uncertain.

(5) External flotation cell and water tank

A toppled corrugated iron water tank and two 44 gallon drums lean against the eastern and northern walls of the mill shed. The drum on the eastern wall appears to have been used as another flotation cell for ore treatment.

REFERENCES

1. Report of the Director of Mines for 1949, page 34.
2. Groves *et al.*, 1971, page 149.
3. Groves *et al.*, 1971, page 151.

Kenworthy's powerhouse

LOCATION

This building stands near the junction of the Pig Valley and North Valley roads some 150 metres west of Kenworthy's mill shed.

HISTORY

The origins of this shed remain uncertain, although it is possible that it had been erected by the Mount Bischoff Company as a power house for their compressor shed, which Mr Kenworthy subsequently purchased in 1964 and converted to his mill. This power house presumably supplied all of Mr Kenworthy's power until the end of his operations in c.1990.

DESCRIPTION

This is a rectangular flat-roofed structure clad in corrugated iron sheeting, which measures 5.3 x 3.2 x 3.5 metres in height. At the time of this survey, the building's contents consisted of two marble-backed switchboards. The structure rests on a form concrete slab.

Commonwealth compressor shed

LOCATION

The Commonwealth shed stands equidistant between the Greisen and Gossan faces approximately 200 metres due north of the junction between the Waratah River and North Valley roads.

HISTORY

The Mount Bischoff mine was acquired by the Commonwealth government in 1942 and early the next year operations as part of the war effort were resumed under the aegis of the Commonwealth Department of Supply and Shipping. In its attempt to lift ore production, the department undertook the expansion of several mine precincts and updated old machinery. At the North Valley mine, modifications included the installation of a new compressor and air lines to the underground workings. In his report to Parliament for that year, the Secretary of Mines noted that at the North valley Mine:

“One 500 cubic feet Ingersoll Rand compressor, receiver, and 100 h.p. motor have been installed. A Jack bit grinder was purchased and “jackbits” are now being used and sharpened at the mine. A new air main was provided to underground workings”.⁽¹⁾

This new underground air supply equipment remained operational until c.1947, when the Commonwealth and State governments discontinued their support and the Mount Bischoff mine closed down for the final time. At least one source claims that the former Commonwealth shed housed milling equipment for a time⁽²⁾, and this may be true, given that various tributers such as Mr Kenworthy are known to have used the building periodically. The building was last used as a drill core storage facility in the 1980s.

DESCRIPTION

In addition to the so-called Commonwealth compressor shed and its contents, this site also consists of a large steel bullet or pressure receiver and two cast concrete footings. Reference should be made to Plate 3, which shows a scaled plan of the site and its constituent features.

(1) Compressor shed

This is a rectangular timber framed structure clad in weatherboards with a gabled corrugated iron roof. The roof has been further fitted with a gabled ventilation ridge running along the top of the roof line. Measuring 5.6 x 11.6 x 5.4 metres in height, the shed's main entrance is a pair of double doors at its southern end, with a smaller single door at its northwestern corner. Two windows have been fitted into the western wall. A former window in the northern wall has been destroyed along with the bulk of this wall section. A great percentage of the weatherboards on the eastern and western walls have also been prized off, leaving the structure in a derelict state open to the elements. As a result of vandalism, only two features comprise the internal contents of the shed.

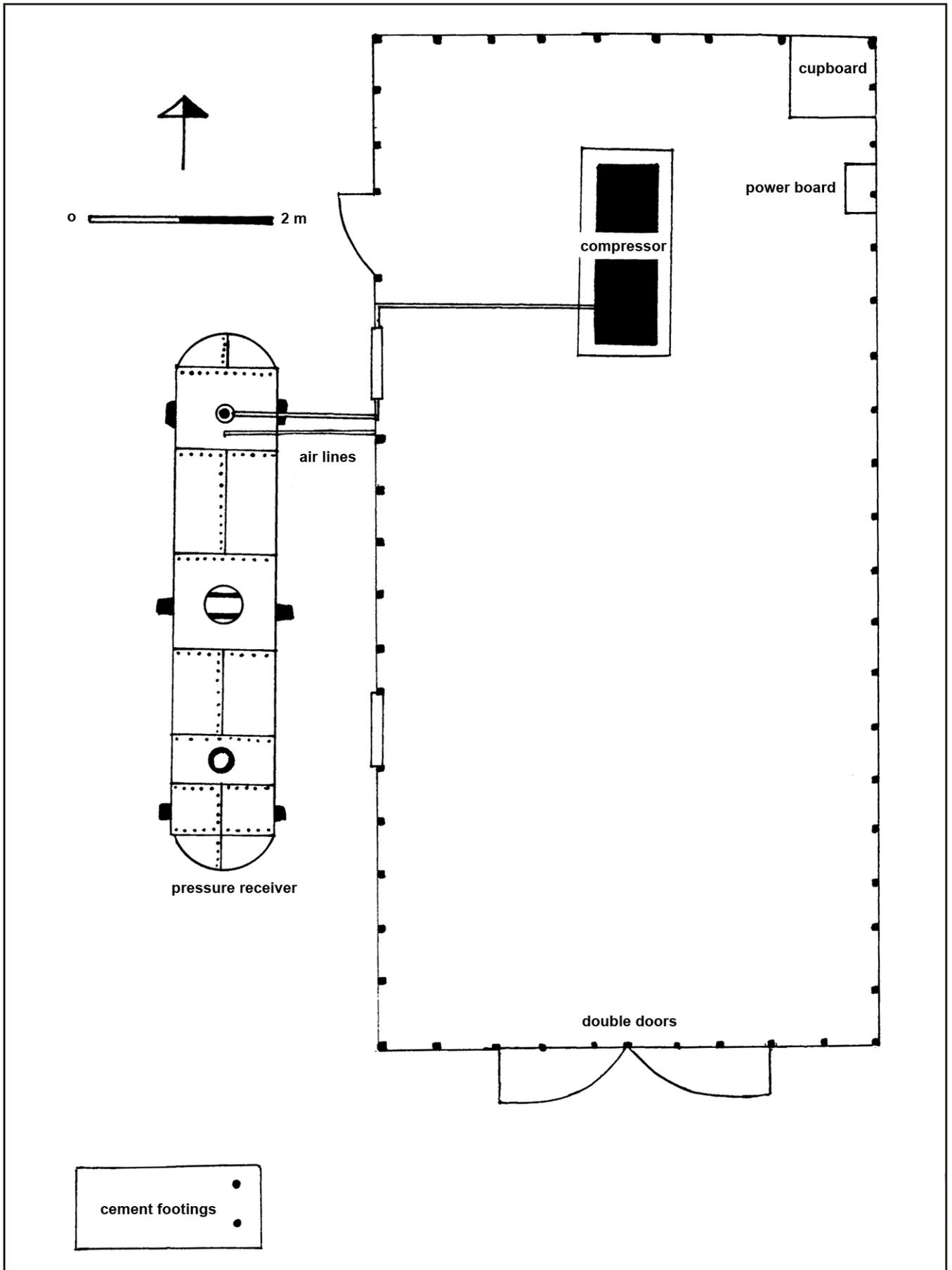


Plate 3

Scaled plan showing the Commonwealth compressor shed and its various constituent features.

Compressor

The Ingersoll Rand compressor still remains in position in the north central section of the shed, although some external components have been removed. The main air pipe linking the compressor to the pressure receiver located immediately west of the shed is still intact.

Drill core debris

The floor of the shed is littered with metal drill core trays and small sections of broken drill cores. There is also a large symmetrical stack of trays in the southwestern corner of the shed.

(2) Pressure receiver

A hot rivetted and airtight plate steel bullet or pressure receiver stands *in situ* immediately west of the compressor shed. This chamber stands on three timber sleepers. The device measures 6 x 1.2 x 1 metre in height, and remains in an excellent state of preservation. These items were used at mines to hold compressed air at a pressure of 90–100 psi, which was then piped to the underground workings to drive an assortment of plant such as rock drills, hoists, mechanical loaders and ventilation.

(3) Concrete footings

A 7.5 x 1.2 metre wide concrete machinery footing commences two metres southwest of the the Compressor shed. Its function remains uncertain.

REFERENCES

1. Report of the Director of Mines for 1943, page 37.
2. Pers. comm. M. Glozier to K. Townrow. Cited in Townrow, 1986, page 22.

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[November 1998]

APPENDIX

Historic map and contemporary survey photographs

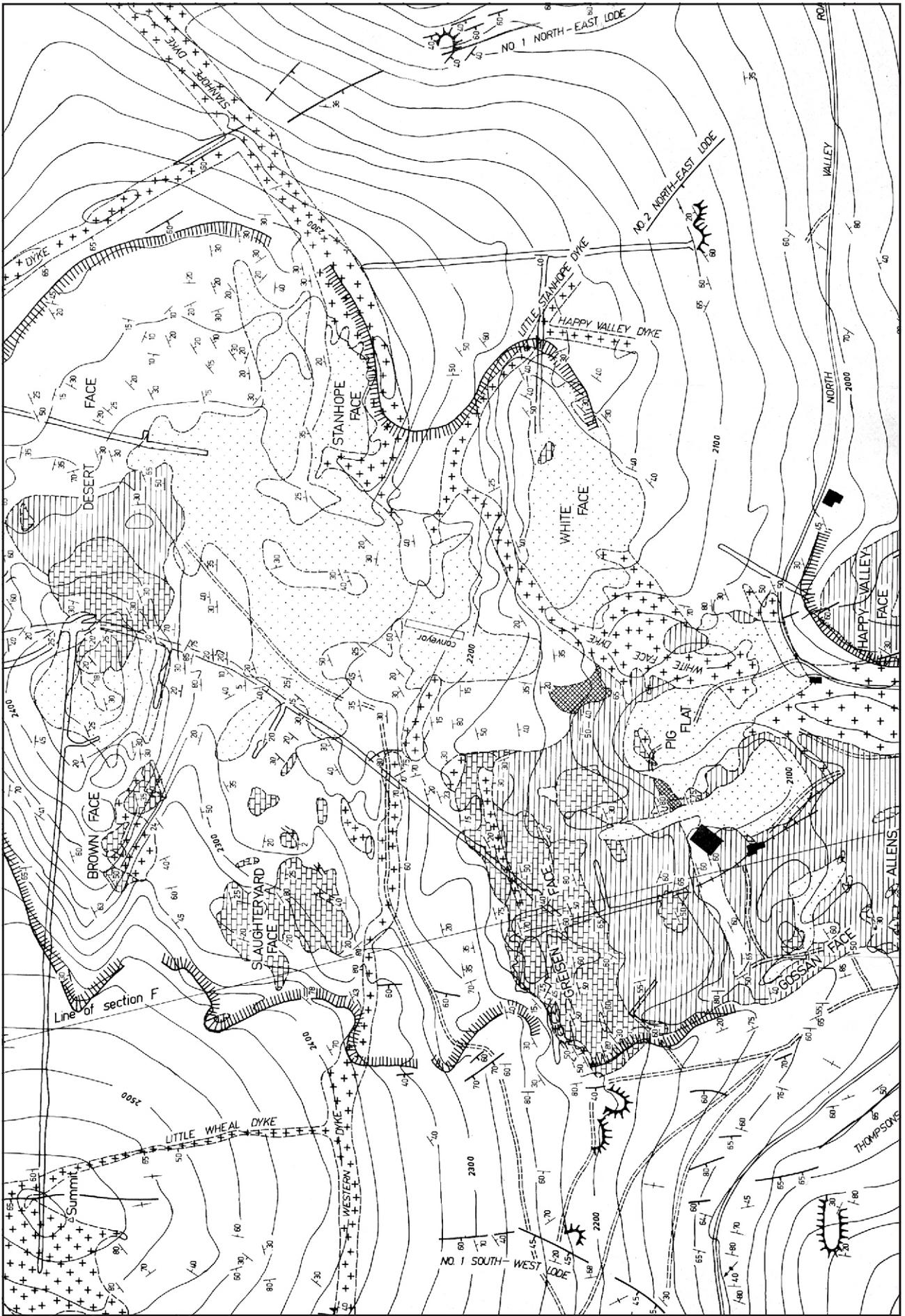


Plate 4

Part of map by Groves et al. (1971) showing various mines and standing structures at Mount Bischoff.



Plate 5

Photo showing overhead power connection, roadside water lines and burnt timber trestling west of mill.



Plate 6

Detail of trestling and water lines.



Plate 7

View of northern side of Kenworthy's mill.



Plate 8

View of eastern side of Kenworthy's mill.



Plate 9

View of western side of Kenworthy's mill. Note shelter over ore washing tank.



Plate 10

Detail of ore washing tank under western shelter.

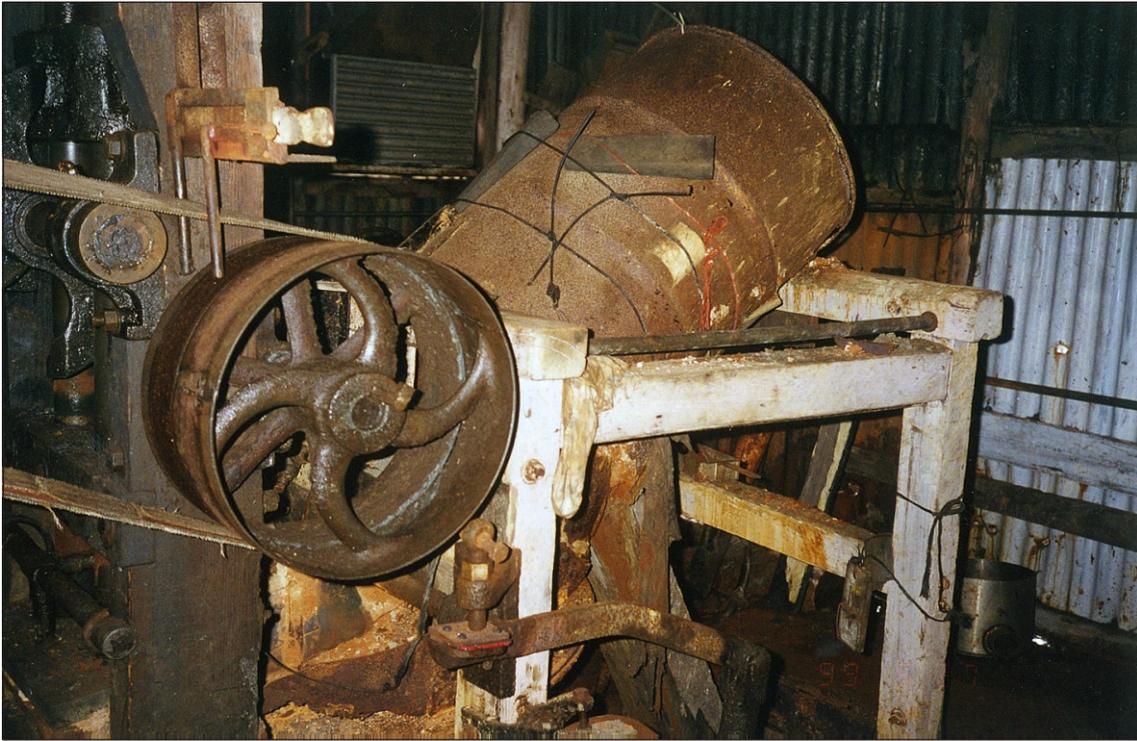


Plate 11

View of 44 gallon drum and timber frame rigged as ore feed bin.



Plate 12

View of two head stamp battery.



Plate 14

View of ball feed pump frame



Plate 13

Detail of embossing on mortar box



Plate 16

View of conical spiral

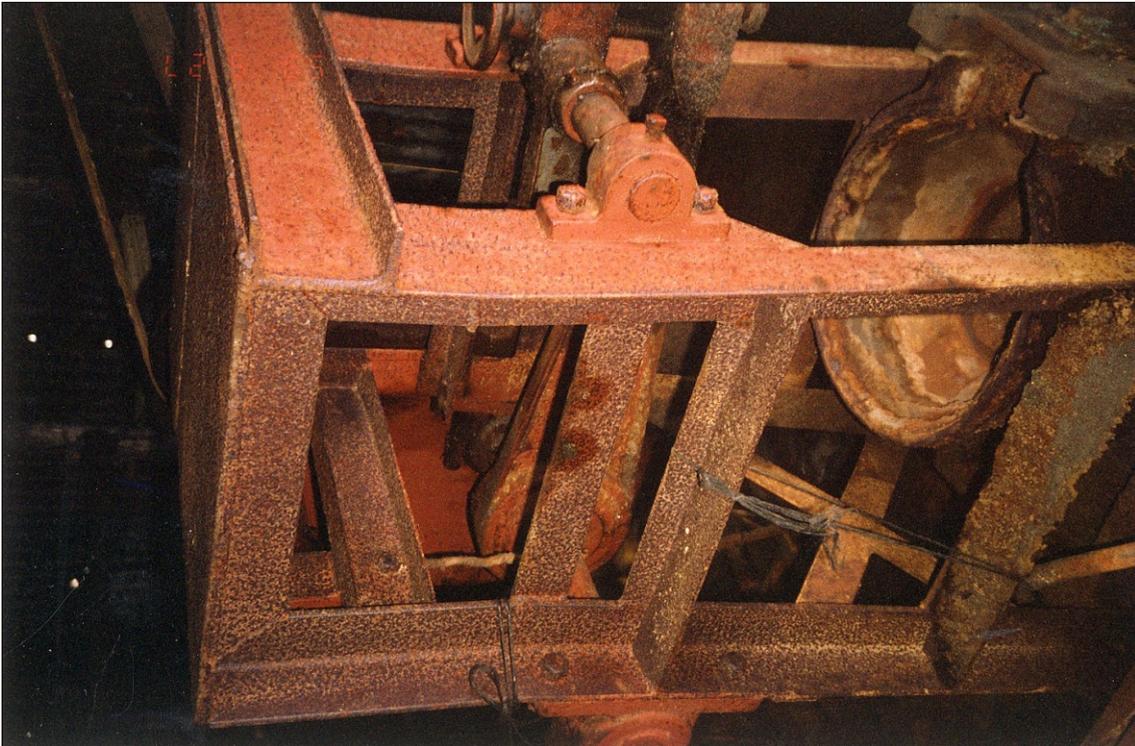


Plate 15

Detail of agitator dish



Plate 17

View of riffle box on wilfley table below spiral.



Plate 18

View of wilfley table.



Plate 19

View of concentrates box below lower end of wilfley table.



Plate 20

View of portable cement mixer used to wash concentrates.

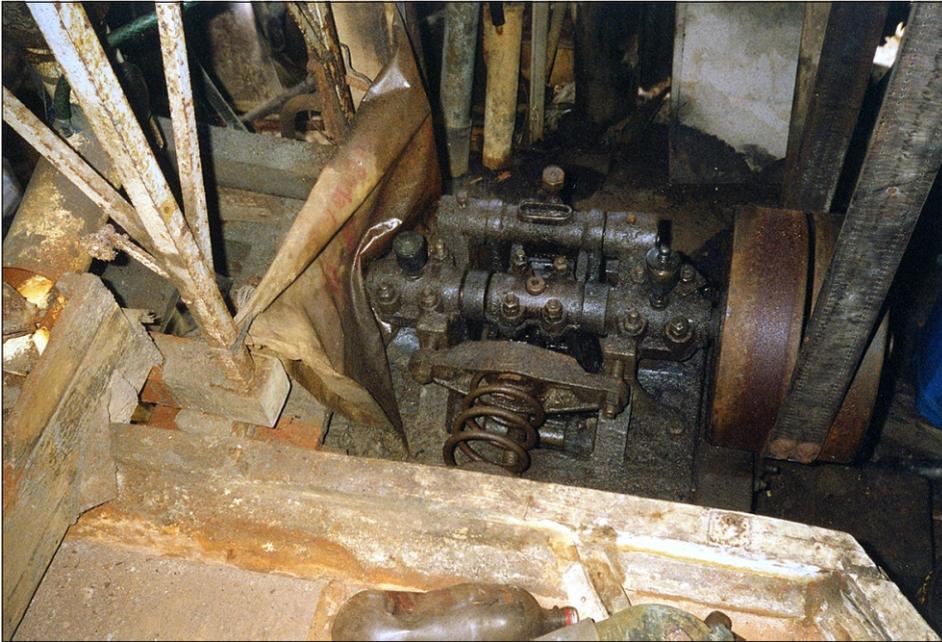


Plate 21

Electric plant used to power overhead pulley system.



Plate 22

View of overhead pulleys and related belting to the stamp battery and cement mixer.



Plates 23

View of overhead pulleys and related belting to the stamp battery and cement mixer.

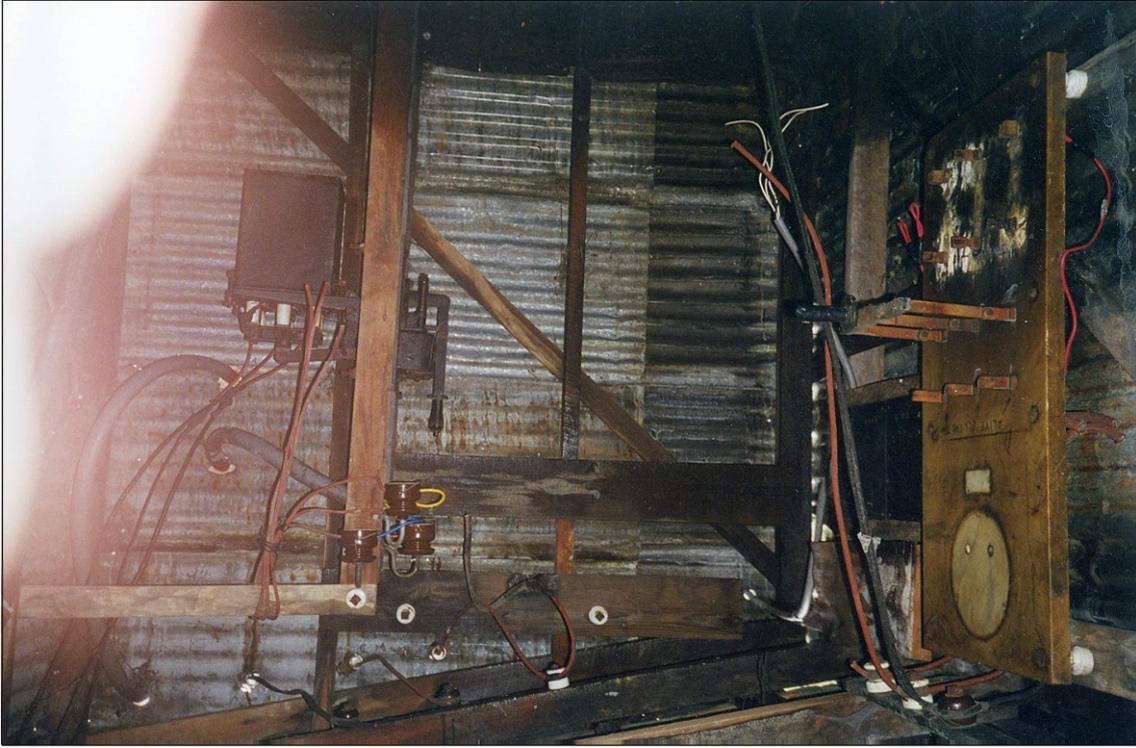


Plate 24

View of concentrates box below lower end of wilfley table.



Plate 25

View of portable cement mixer used to wash concentrates.



Plate 26

Waste tailings flume beneath timber footings.



Plate 27

Flotation cell outside eastern side of building.



Plate 28

Marble backed electrical switchboard at Kenworthy's power house.



Plate 29

Marble backed electrical switchboard at Kenworthy's power house.



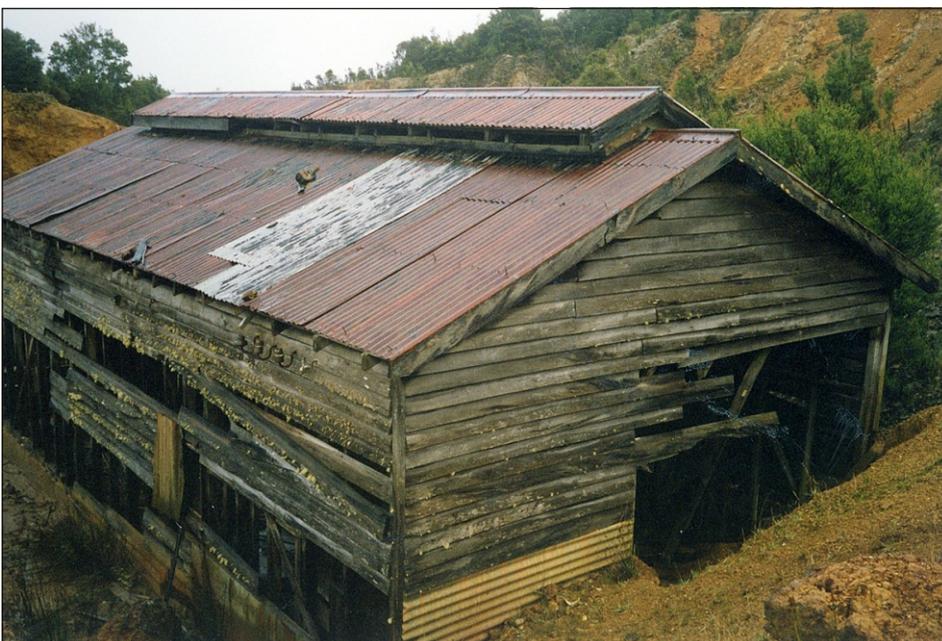
Plate 30

Northerly view of the Commonwealth compressor shed. Note rusted pressure receiver sitting immediately west of the shed.



Plate 31

Elevated view of smashed northern wall and roof line of Commonwealth compressor shed.



Plates 32

View showing northern/eastern wall and elevated ventilation ridge on roof.



Plate 33

Ingersoll Rand compressor within the shed.



Plate 34

Ingersoll Rand compressor within the shed.