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NEWHAM EXPLORATION & MINING SERVICES



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RL 8810

SHEPHERD & MURPHY MINE

MINE WORKINGS HAZARD AUDIT

MICROFILMED
FICHE No. 013840-

622.8
new

Prepared for:

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A handwritten signature in cursive script, appearing to read "L.A. Newnham".

26 August 1995

96-3831^R

SHEPHERD AND MURPHY MINE - RL 8810
MINE WORKINGS HAZARD AUDIT 1995
CRA & ACACIA RESOURCES - NEWHAM L.A.

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MAPS

1. RL 8810 Location Plan
2. Mine Workings Plan

1. **DISCLAIMER**

The writer of this report has made every reasonable attempt to locate and identify all significant mine workings associated with the Shepherd & Murphy Mine. However, in an old mining field as complex as this one, it was beyond the scope of this exercise to identify all minor workings and disturbances, and this report does not claim to have identified and assessed all workings.

An assessment of the level of hazard presented by any particular mine working is a subjective matter and difficult to quantify. The assessments and recommendations contained herein are therefore the personal views of the writer, who thereby accepts that other parties may assess the hazard level differently in other circumstances.

2. SUMMARY

The former Shepherd & Murphy Mine lies 40 kilometres south of Devonport within Retention Licence 8810, held by CRA Exploration Pty Ltd and Acacia Resources Ltd.

The mine closed in 1957 and little or no rehabilitation or securing of the mine workings has taken place since then.

The area is reasonably accessible to the general public.

This report identifies the nature of the workings and assesses their potential hazard to persons accessing the area. It further recommends actions which might be taken to reduce the hazard level and make the workings safer.

Two large, prominent signs warning people of the presence of unmarked mine workings were erected on the property by the tenement holders on 9 July 1995.

The workings consist of a number of shafts, tunnels, stopes, open cuts, trenches, mill foundations and dams, spread over a 30 hectare area in timbered, moderately rugged country.

Summary conclusions are:

- ◆ The principal hazards to the general public are **open shafts and open stopes**. In particular, the Main Shaft is readily accessible and open. It is considered dangerous. The open Vent Shaft on No. 5 lode is less accessible but is also dangerous.

Open stopes are widespread and dangerous to persons who may locate them. Most are difficult to access but several near the Main Shaft are reasonably accessible.

- ◆ Five of the six significant adits are open. Four of the five open adits are moderately difficult to find and not readily accessible.

The fifth open adit (No. 3 adit) is readily accessible and is assessed as the most hazardous of the adits.

These adits would present a danger to anyone entering them both from ground stability and air quality points of view.

- ◆ The mill exists as a number of concrete foundations. It is highly visible and readily accessible. It would present a low level of hazard to persons climbing or playing on it.
- ◆ Numerous trenches, small open cuts and waste dumps exist over the property. Most are overgrown and not readily accessible. They present a level of danger to anyone walking through the bush but no more so than natural gullies, cliffs and steep hills.

- ◆ Several dams on the property are not considered particularly hazardous. They are not readily accessible and all have shallow dipping banks.

Summary recommendations are:

- ◆ The Main Shaft and No. 5 Vent Shaft should be capped with a heavy steel grate and sign posted.
- ◆ An attempt to fill the open stopes around the Main Shaft (No. 6 lode) should be considered. If this is too difficult, they should be fenced off and signs placed on the fences.
- ◆ A barbed wire fence should be constructed around No. 3 adit portal and signs placed on the fence. A portal grate should be considered.
- ◆ The open stopes on No's. 2, 4 and 5 lodes are too extensive to backfill. However, a sign warning of their presence should be erected on the main access road near No. 1 adit.
- ◆ A sign should be erected adjacent to the old mill warning of the potential dangers of climbing on the foundations.
- ◆ No work is recommended on the remaining adits, trenches and waste dumps other than maintenance of the existing warning signs.

An indicative cost estimate to complete this recommended work is \$16,000.00.

3. LOCATION & ACCESS (Maps 1, 2)

The mine lies approximately 40 kilometres south of Devonport adjacent to the sealed Cradle Mountain Road.

It is accessed from this road by way of a four kilometre, good quality, all weather, 2-wheel drive dirt road which leads to the Iris River.

The mine lies only 100 metres south of this road and access to the actual mine workings is by way of several short 4-wheel drive tracks, the principal one of which leads to the Main Shaft and mill area.

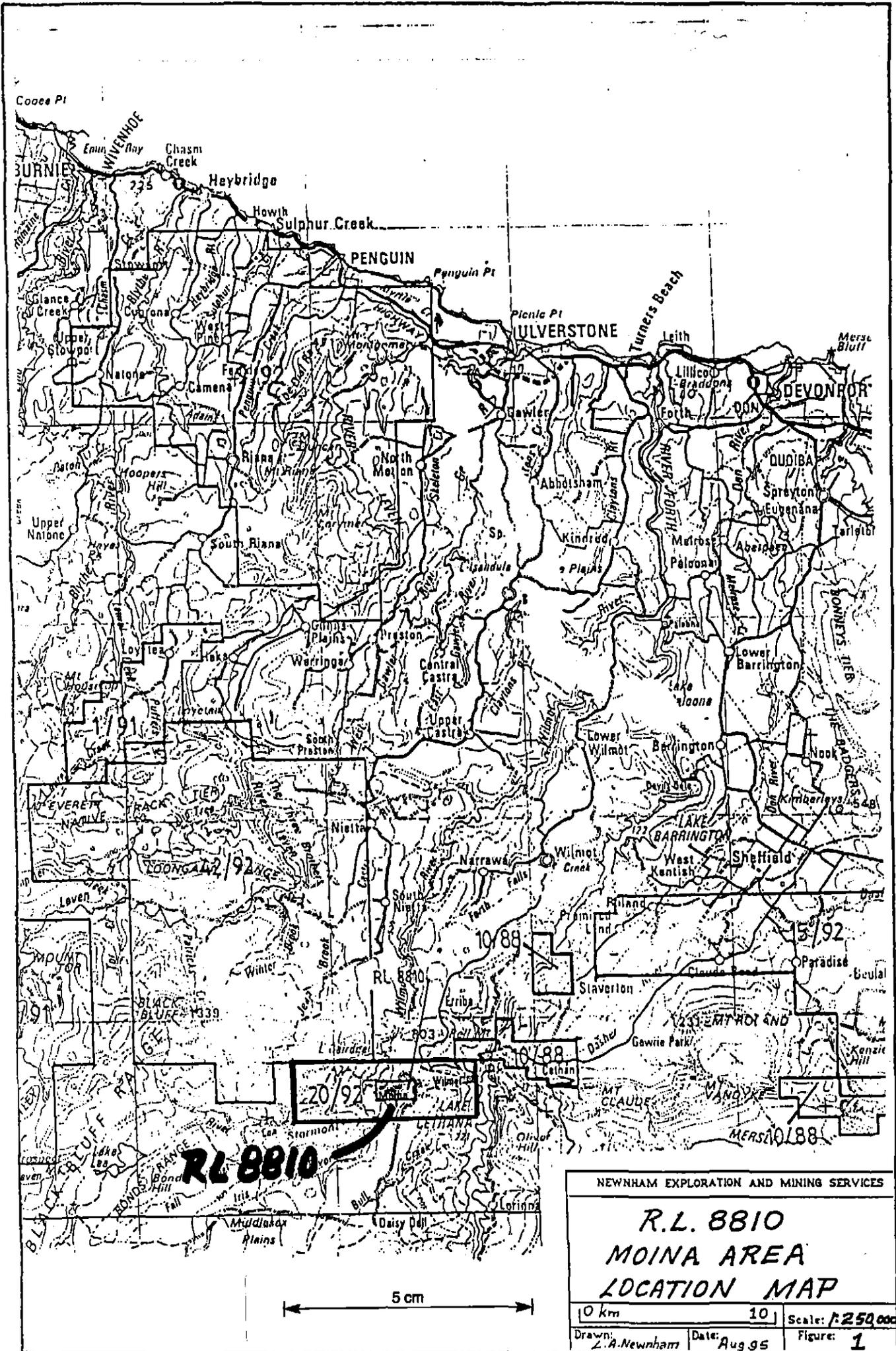
This track does extend from the Main Shaft to the No. 4 Creek Drive, thereby accessing most of the workings. However, beyond the Main Shaft area it is blocked by numerous trees and is therefore only accessible on foot.

The mine is located in moderately rugged country southwest of Bismuth Creek. The area has been burnt out in the past and is now covered by wattle and eucalypt regrowth. The understory varies from man fern filled gullies, to dense blackberry and dogwood, to open fern covered hill slopes.

Some areas are reasonably accessible to casual bush walkers, picnickers, etc, whilst other areas are, for all practical purposes, only likely to be visited by persons either doing some serious "bush bashing" or specifically looking for the former mine workings.

The area is elevated (750 metres), cold and wet for much of the year but is a popular and well frequented area by family groups and fossickers in better weather periods.

The former Moina township, which serviced the mine, has essentially vanished and all that remains are a few concrete house stumps.



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**R.L. 8810
MOINA AREA
LOCATION MAP**

10 km	10	Scale: 1:250,000
Drawn: Z.A. Newham	Date: Aug 95	Figure: 1

4. MINING HISTORY

The deposits were discovered in 1892 and closed in 1957. Intermittent production during that period resulted in the recovery of 525 tonnes tin, 255 tonnes wolfram and 71 tonnes bismuth from approximately 100,000 tonnes ore mined from a series of narrow, near vertical quartz veins hosted by Ordovician limestones (skarns) and sandstones.

There were seven eastwest veins, with strike lengths up to 360 metres and average widths of 200 millimetres, worked to a maximum depth of 150 metres below surface.

The veins were largely quartz filled but carried a varied mineral assemblage including coarse cassiterite, wolframite, bismuthinite, fluorspar, beryl, topaz and molybdenite. It is this assemblage which makes the area popular with fossickers and gem collectors.

On closure, resources on these veins were estimated as 80,000 tonnes 0.21% tin and 0.37% wolfram. More recent exploration has highlighted the potential in the area for fluorite, magnetite, gold, silver and bismuth mineral resources.

There were four main eastwest lodes worked: the No. 2, 4, 5 and 6 lodes. The principal access was the Main shaft, sunk to 150 metres on the No. 6 lode, with cross cut access to the other three lodes.

The No. 3 adit was driven south to intersect all four lodes, and the No. 1 adit was driven south to intersect No's. 2, 4 and 5 lodes. No. 2 adit was driven west along the No. 6 lode from the bottom of an open cut developed on the east end of No. 6. The No. 4 Creek Drive was driven west along the No. 4 lode. Goodwins Adit was driven to explore for additional lodes north of No. 6 lode.

Alluvial material was mined in a shallow open cut as a sub basaltic deep lead over the central outcrop sections of No's. 2, 4 and 5 lodes, and a short unnamed adit was driven beneath these alluvial workings. The No. 5 lode was developed west beneath a tertiary basalt cap and this was ventilated with a 30 metre rise through the basalt to surface (No. 5 Vent Rise).

Narrow shrink stopes were developed on the main veins and these were carried through to surface.

Exploration for additional veins or strike extensions of known veins was by shallow trenching.

Ore was treated in a mill located just north of the Main Shaft.

5. POTENTIAL HAZARDS & RECOMMENDATIONS

Accurate plans of the old workings exist at Mineral Resources Tasmania in Hobart. These were used to locate and evaluate the safety of most of the workings over a two day period.

The Shepherd & Murphy Mine was a significant operation and there exists a vast number of minor workings such as pits, trenches, water holes, tracks, etc. Most of these are not considered to represent a high level of safety risk to casual visitors to the area because they are not significantly different to many natural land forms in the area.

This report concentrates on the major workings. Recommendations are strongly influenced by ease of access. Some workings, which are difficult to locate or access, are arguably best left alone, because to undertake any significant safety improvement would mean improving access to them thereby making them more obvious and accessible to visitors to the area.

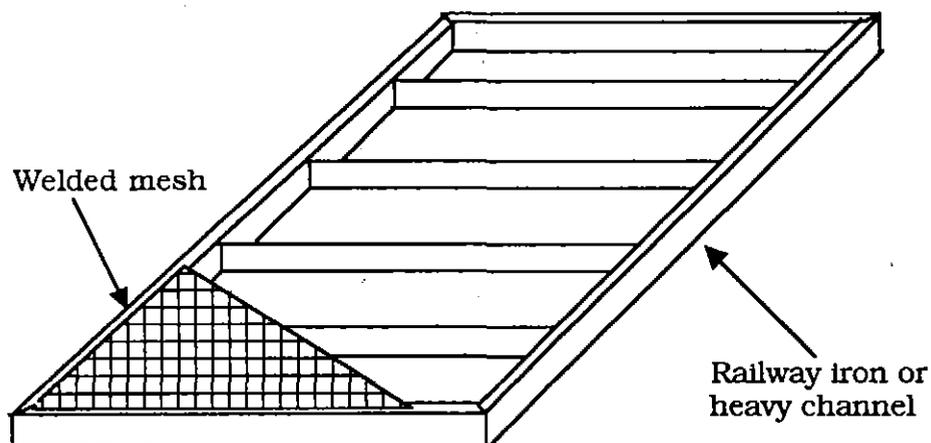
5.1 MINE WORKINGS (Map 2)

5.1.1 SHAFTS

Plans show three significant shafts: Main Shaft approximately 150 metres deep; No. 5 Vent Shaft approximately 30 metres deep; and a shaft on No. 5 lode. The first two were located but the latter was not - it may in fact now be a part of the No. 4 lode open stope to surface.

The **Main Shaft** is accessible and open (photos). It measures approximately 3000 x 1500 mm and is currently surrounded by a flimsy mesh wire fence. It was sunk on the No. 6 lode and stoping appears to have taken place right up to the brace.

This shaft is considered dangerous and a safety risk. It is recommended that it be capped with a large, heavy steel grate with mesh welded on top.





Main Shaft - readily accessed and poorly fenced



Main Shaft - open and considered dangerous

The area should then be fenced with barbed wire, with appropriate mine working warning signs attached. The fence should enclose the open stope (?) adjacent to the brace.

The **No. 5 Vent Shaft** (photos) is a small shaft, difficult to locate but lies in relatively open fern covered country. (This writer nearly fell down it!)

It is largely overgrown with water standing at about 10 metres. A steel rung ladder is installed in the shaft to surface thereby making it tempting and dangerous to visitors.

This shaft is considered dangerous and represents a significant safety risk.

A steel grate made of heavy channel or railway iron with mesh welded on top should be placed over this shaft and a barb wire fence with appropriate signs erected around it.

5.1.2 ADITS

Plans show six significant adits. All were located in the field. This writer did not enter any of the adits hence their internal conditions and air quality are unknown.

◆ **No. 1 Adit:** (photo)

Driven south to intersect eastern end of No's. 2, 4 and 5 lodes. Difficult to locate above the main access road (walking track). Portal is open with some standing water. Adit is considered hazardous for entry by unskilled persons.

Short of blocking the adit with soil and rock, it would be difficult to prevent access. Fences are not particularly successful. To place a grid or gate over the portal would require reopening the access road to an excavator.

Recommended that an appropriate warning sign be placed at the portal:

<p style="text-align: center;">WARNING Old Mine Tunnel Because of unknown ground conditions and air quality, access to this tunnel is considered dangerous. DO NOT ENTER</p>
--

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**Water filled shaft on No 5 Lode
with ladders in shaft -
accessible but largely concealed**



225013



No 1 Adit

◆ **No. 2 Adit:** (photo)

This adit was driven west along No. 6 lode from the bottom of a small overgrown open cut. The adit is relatively difficult to locate and the same comments and recommendations as for No. 1 adit apply.

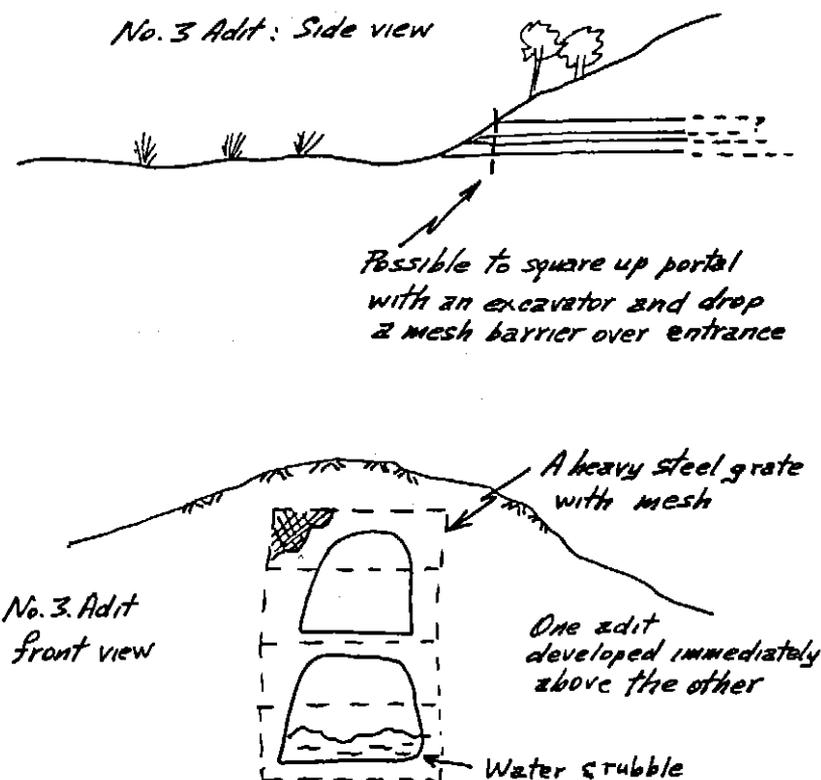
◆ **No. 3 Adit:** (photos)

This adit was driven south to intersect all main lodes and connects with the Main Shaft.

It is considered dangerous, firstly because it is very accessible being adjacent to the main vehicular access track, and secondly because of its rather peculiar portal construction, whereby a second shallow adit appears to have been driven above the main lower adit which contains deep water.

Recommended that this adit should be fenced with barbed wire and signs attached.

It may also be prudent to square up the portal of this adit with an excavator and place a vertical steel grid/mesh panel over the entrance.





Open cut on No 6 Lode east of Main Shaft - heavily overgrown



No 2 Adit - driven from end of open cut onto No 6 Lode



Entrance area to No 3 Adit - readily accessible



No 3 Adit - portal area



Goodwins Adit - portal largely collapsed



**No 3 Adit -
two adits,
one above
the other
very
accessible**

◆ **No. 4 Creek Drive:** (photos)

This adit was driven west along No. 4 lode. The portal lies on the banks of Bismuth Creek and it is very difficult to access and locate.

Any significant work here would diminish its inaccessibility and would probably impact on the creek.

Recommended that a sign be erected near the portal as for No. 1 adit.

◆ **Goodwins Adit:** (photo)

Short adit driven to explore for new lodes north of No. 6 lode. Portal now collapsed. Moderately difficult to locate and access. This adit is not considered particularly dangerous and no action is recommended.

◆ **Unnamed Adit:** (photo)

Adit driven into sub basaltic lead adjacent to alluvial workings. Moderately difficult to locate and access.

Recommended it be sign posted as with No. 1 adit.

5.1.3 STOPES

The four principal veins have all been stoped to the surface over varying strike lengths. Hence, there are long lines of narrow "crevasses" across the side of the hill.

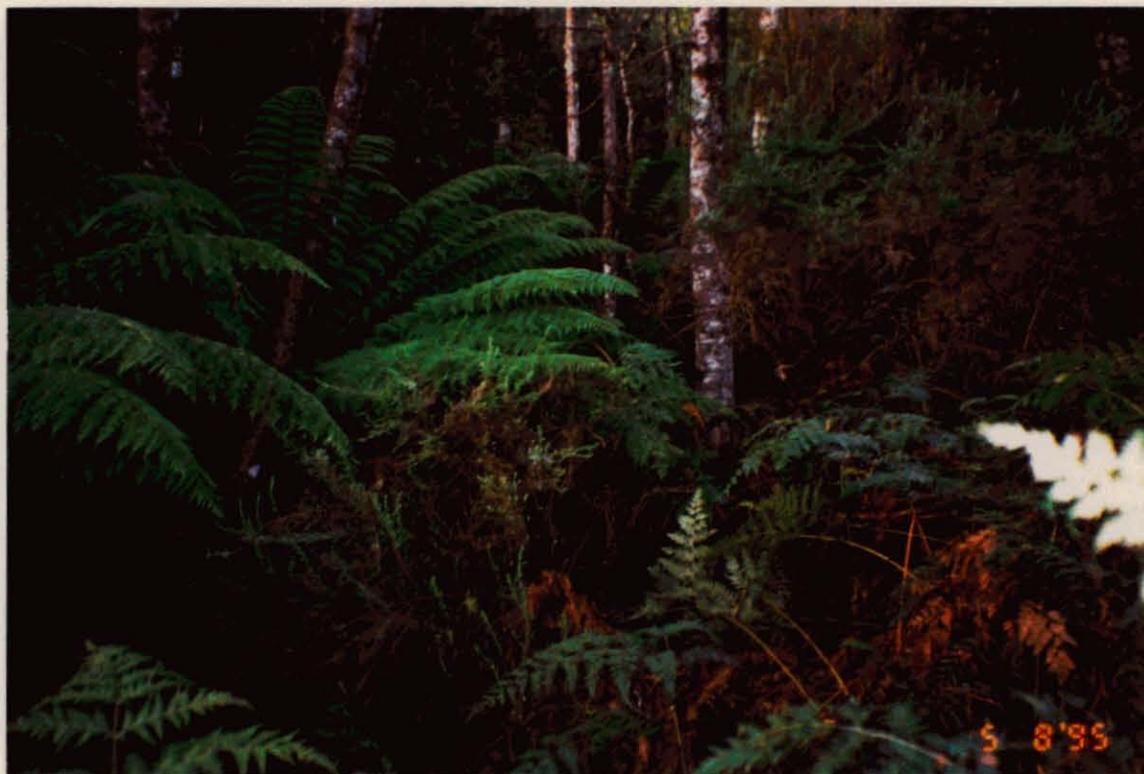
◆ **No. 6 Lode Open Stopes:** (photos)

These appear to be mainly developed between the Main Shaft and No. 2 adit open cut area. As such, they are reasonably accessible and easy to locate. They are considered dangerous and a safety hazard.

However, to attempt to fill them would be quite difficult and would result in considerable local disturbance of the bush.

Recommended the open stope area be fenced off and sign posted and a general warning sign be erected.

Some filling with an excavator should be considered.



No 4 Creek Drive Portal - behind ferns Adit is well concealed and difficult to access.



No 4 Creek Drive Portal is open



No 6 Lode open stope (?) adjacent to Main Shaft



**No 6 Lode open stope east of Main Shaft
Accessible and considered dangerous**

◆ **No's. 2, 4 & 5 Lode Open Stopes: (photos)**

These are located on the side of a timbered hill south of the main access track, which can now only be accessed, with difficulty, on foot.

The stopes are certainly dangerous for anyone who comes across them. However, they are remote and relatively difficult to access. To attempt to fill them in seems impractical and the area affected is too large to fence.

Recommended that a sign, similar to those erected in July near the main access, be erected on the access track.

5.1.4 OPEN CUTS

There are two "open cut" developments, one on the eastern end of the No. 6 lode, and one on the sub basaltic lead over No's. 2, 4 and 5 lodes.

◆ **No. 6 Lode Open Cut**

This is an excavation which appears to be a combination of shallow alluvial workings and a portal cut for No. 2 adit. There are no benches as such and whilst the sides are steep, they are not regarded as more hazardous than a natural steep gully.

The area is now filled with man ferns, eucalypt and wattle regrowth.

This area is moderately accessible but is not considered to be particularly hazardous to people accessing this type of bush.

Recommended that no action be taken.

◆ **Sub Basaltic Deep Lead**

This is a collection of shallow alluvial workings over a considerable area. It consists of a multitude of trenches, small cuts and generally reworked ground.

It is moderately accessible, covered by dense regrowth, and not considered to be particularly hazardous to persons walking through the bush.

Recommended that no action be taken.



Narrow open Stope - eastern end of No 2 (?) lode



Open Stope - eastern end of No 4 lode

225022

5.1.5 TRENCHES & PITS

As with many old mining fields, the principal form of shallow exploration was to dig trenches and pits in prospective areas.

The Shepherd & Murphy area has abundant such workings. They are generally shallow (<1000 millimetres), often with slumped sides and vegetated.

A number exist east of Bismuth Creek where presumably exploration was for extensions of the main lodes. These workings are regarded as no more hazardous than the many natural depressions and cliffs in this region.

Recommended that no action be taken.

5.1.6 WASTE DUMPS

◆ Waste Rock Dumps:

These dumps exist outside each of the major adits as classical elongated mounds where mine trolleys were dumped. These are not particularly high or steep and are now well vegetated. They are not regarded as specially hazardous.

Recommended no special action be taken.

◆ Mill Waste Dumps:

These dumps exist to the north of the mill area. They are not fine tailings but rather a fine crushed product together with coarse jig tails. The dump area is quite stable and the material is used locally to top dress roads, driveways, etc.

No fine/slime tailings as such were identified, although it is known that the mill contained buddles and kelves.

Recommended that no special action needs to be taken on the mill product dumps.

5.2 MILL (photo)

All that remains of the mill are the large concrete foundations. No buildings as such exist. These foundations are structurally stable but represent a hazard to anyone who might be climbing on them and fall. They are very easy to find and are vehicular accessible.

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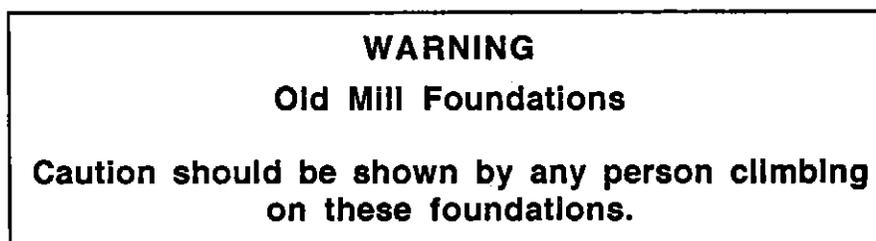


**Unnamed Adit in
sub-basaltic drift
open cut**



Treatment Plant remains - very accessible

Recommended that two warning signs be erected on the site:



5.3 DAMS (photos)

- ◆ The mine was fed by a water race from the Iris River. A number of small dams were located on the mine for various mining and milling needs. The most significant of these was developed on Bismuth Creek and consists of a rock wall and concrete spillway. It is well constructed and appears stable. The dam itself has shallow, low banks and is home to platypuses.

The dam is not particularly easy to find and is not frequented by casual visitors. It is not considered to be any more hazardous than other well constructed small dams.

Recommended no action be taken.

- ◆ Two other small dams exist, one to the immediate south, and one to the immediate east of the Main Shaft. They are very small, have low banks and probably not deep. They are accessible but not regarded as particularly hazardous.

Recommended no action be taken.

- ◆ Another small dam which is little more than a marshy area exists on the creek above the sub basaltic open cut. It is remote and difficult to access.

Recommended no action be taken.



Small dam east of Main Shaft



Main water supply dam on Bismuth Creek



Small dam south of Main Shaft



**Small dam southeast of Main Shaft -
inaccessible and not considered hazardous**

6. COST ESTIMATE TO COMPLETE RECOMMENDED WORK

This estimate is a "ball-park" figure, and not based on specific quotations.

The main cost item is the three steel grates. Their cost would vary significantly depending on materials used.

6.1 FREE STANDING SIGNS

◆ Nine signs at \$150 each (five adit signs; two main signs; two open stope signs)	1,350	
◆ Materials at \$100 per sign (posts, cement, bolts, etc)	900	
◆ Erection time - 2 days x 2 people at \$700 per day	1,400	
	<u> </u>	\$3,650

6.2 FENCES & ATTACHED METAL WARNING SIGNS (Main Shaft; Vent Shaft; No. 6 Lode Open Stopes; No. 3 Adit - 4 sites)

◆ Materials at \$400 per site (wire, droppers, signs)	1,600	
◆ Labour - 2 days x 2 people at \$700 per day	1,400	
	<u> </u>	\$3,000

6.3 GRATES

◆ Main Shaft	2,000	
◆ No. 5 Vent Shaft	1,500	
◆ No. 3 Adit	1,500	
◆ Placement time - 1 day x 2 people	700	
	<u> </u>	\$5,700

6.4 MACHINERY HIRE

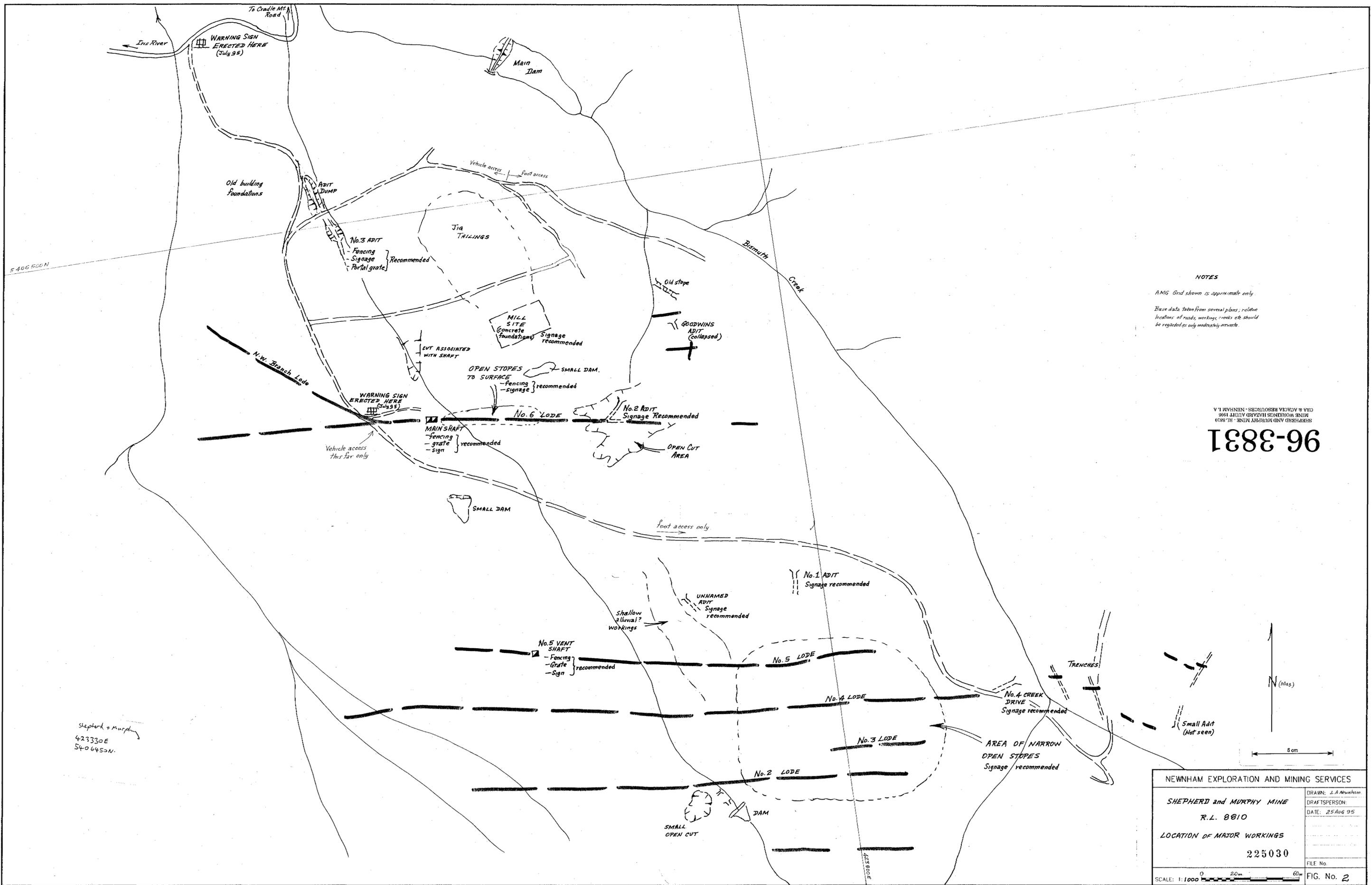
◆ Excavator placing grates, filling No. 6 lode open stopes, No. 3 portal area - 2 days at \$750 per day	1,500	
◆ Truck hire for excavator & grates for 1 day	800	
	<hr/>	\$2,300

6.5 TRAVEL & ACCOMMODATION

◆ 1,200 kms at \$0.35 per km	420	
◆ 4 nights accommodation	600	
	<hr/>	\$1,020

ESTIMATE TOTAL

\$15,670



NOTES
 AMG Grid shown is approximate only.
 Base data taken from several plans; relative locations of roads, workings, creeks etc. should be regarded as only moderately accurate.

96-3831

Shepherd & Murphy
 423330E
 5406450N.

NEWNHAM EXPLORATION AND MINING SERVICES	
SHEPHERD and MURPHY MINE	
R.L. 8810	
LOCATION OF MAJOR WORKINGS	
225030	
SCALE: 1:1000	FIG. No. 2