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## REHABILITATION OF ABANDONED MINING LANDS TRUST FUND

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### Lefroy Goldfield North East Tasmania

#### Safety program

#### Progress report June 2006

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#### Background/Summary

The Rehabilitation of Abandoned Mining Lands Trust Fund commenced a program in 2005 to address public safety risks posed by abandoned mine workings on the historic Lefroy Goldfields in north east Tasmania. Previous Trust Fund activities at Lefroy include backfilling two open shafts in the vicinity of the Pinafore reef in June 2001.

A budget of \$140,000 was spent in the 2005/06 period to complete safety works on a total of 53 shafts and 2 adits. This includes 45 concrete panels that have been stored for use in the 2006/07 budget period. Further works proposed for the 2006/2007 period should complete safety work on known hazards within the immediate surrounds of Lefroy.

A map of sites worked on during the 2005/06 campaign is attached.

#### Aims

- Improve public safety on Crown Land at the Lefroy Goldfield.

In undertaking safety works, the works program will also aim to:

- Preserve heritage values.
- Preserve or improve natural values.

#### Procedures

Hazards (shafts and adits) were selected based on public safety criteria set out in *Tasmanian Geological Survey Record 2001/04: Strategy – The rehabilitation of abandoned mining lands (Revision 1)*, specifically the **risk** (depth of shaft; extent of excavation) and **exposure** (ease of access; proximity to population). Shafts were targeted for work by their being open to a depth greater than three metres and typically within 40 metres of a road or track (Fig.1).



**Figure 1.** Shaft of the Monarch Mine. Fifteen metres off Forestry road — 2400 mm x 3600 mm and open to 12 metres with drive off right hand side.

General on-ground procedures for site works followed guidelines described in the *Mineral Exploration Code of Practice 1999*, but specifically focused on the following:

- Create minimal disturbance to surrounds while carrying out work.

- Where a track is created to access shafts: rip the track and cover with slash from immediate area upon completion of works.
- Where continued vehicular access to covered shafts is reasonably possible: create a barrier with fallen timber, earth bund or similar.
- Divert surface run-off away from covered shafts where it is likely to cause undermining of concrete panels or subsidence around the shaft opening.

Capping with pre-cast concrete panels was considered to be the preferred option to make open shafts safe on the following grounds:

- Backfilling shafts could lead to uncertain long term results (subsidence for example) because of the depth and complexity of many of the underground workings in Lefroy.
- Removable concrete caps allow for shafts to be re-opened for future mineral exploration.
- Careful capping should preserve the integrity, and therefore the heritage values of shafts.
- Capping with pre-cast panels is relatively cost effective and less intrusive than in-situ concrete footing and cap construction.
- Capping is preferred to fencing because of the possibility of theft and damage of fencing materials.

Existing heritage surveys were used to inform on-ground works where possible (Montgomery, 1897; Purvis, 1998; Webster, 1998). SFM Consulting of Hobart were commissioned to identify heritage issues and provide advice on access routes where insufficient information existed.

Engineering designs and installation specifications for pre-cast panels are attached. Multiple panels were used to cover shaft openings where necessary (Fig. 2). A mid-sized excavator (12 tonne) was used to prepare sites, position panels, and remediate disturbance caused during work.

Fencing was used to enclose shafts in cases where the shaft opening was collapsed leaving a broad deep depression that would require in-situ capping. Three styles of fencing used in this campaign were:

- Welded steel post and rail fencing (Fig 3).
- ‘Armco’ style guardrail.
- Steel dropper and wire strand fencing.

Adit entrances were fitted with galvanised metal grates, secured with galvanised pins grouted into side walls and welded on site to the grating frame.

Table 1 lists the contractors and consultants used during the project in 2005/06. Further details are on file.



**Figure 2.** Gift Main Shaft. Covered with 5 x 3700 mm x 1000 mm panels.

Activity	Contractor/Consultant	Contact
Heritage survey	SFM Consulting	Andrew Morgan
Shaft locations	Ron Gregory Prospecting	Ron Gregory
Engineering design (panels)	Engineering Edge	Jack Pfeiffer
Concrete panel fabrication	Hanson Concrete George Town	Pat Coffey
Earthworks	Coffey Plant Hire	Pat Coffey
Fencing	D & A Brown, Lefroy	David Brown
Signage	Ampersand Signs	Susan Rose

**Table 1.** Activities and corresponding contractor/consultant

### Activities/Outcomes

Safety work was carried out on **53 open mine shafts** and **2 adits** in the Lefroy area (Map 1) during the 2005/2006 period for a total expenditure of **\$140,000**.

Forty-five shafts were capped with pre-cast concrete panels. The dimensions of shaft openings ranged from 600 mm x 900 mm (typically air shafts) to 3000 mm x 5000 mm. All shafts capped were open to a depth of three metres or more.

Eight shafts were fenced: seven using steel dropper and wire strand; one (at the Volunteer Main Shaft) using galvanised steel pipe barrier with an 'Armco' style guardrail. The Volunteer shaft was treated in this way because it is easily accessible to the public and beside a 4WD track (Fig.3).



**Figure 3.** Work in progress on steel rail barrier enclosing the Volunteer Main Shaft.

### Recommendations

1. Audit capping, fencing and signage installed during the 2005/06 period with aims:
  - Check the integrity of installations, particularly in regard to theft and damage to signs and fences, and erosion around concrete caps.
  - Assess the effectiveness of methods and identify possible improvements.
2. Further useful safety work could still be undertaken in the Lefroy area. Details of this are described separately (Lefroy Proposal 2006/07) but priorities in order of importance include:
  - Pinafore main shaft (beside Beechford Road).
  - Open shafts on the Morning Star and Golden Era workings.
  - Abandoned workings adjacent to the Lefroy Cemetery.
  - Large collapsed shafts on Volunteer and Brisbane reefs.
  - Land O'Cakes workings.





**Figures 4-7.** Work on shaft beside Volunteer Road showing positioning of panels, and slash covering access track.



**Figure 8.** Typical small shaft with covering vegetation removed – 1200 mm x 900 mm and open to 8 metres.



**Figure 9.** Single panel shaft beside Forestry road.

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## Reference Documents

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- MONTGOMERY, A. 1897. Lefroy Gold Field, Tasmania: Report on the geological structure and mining development. *Report Secretary for Mines Tasmania* 1896-1897.
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# Lefroy Shaft Safety Program: works completed 2005/2006

