Mineral Resources Tasmania



Tasmanian Geological Survey Record 1996/02

Mining Heritage Guidelines for use by MRT staff:

Re-opening, re-working or exploring a previously worked deposit

by C. A. Bacon

PURPOSE

The purpose of these guidelines is to give a preliminary, easy to understand guide to some of the issues which should be considered prior to the reworking or re-opening of old mines, or the treatment of tailings from previous operations.

Such issues will usually be addressed in detail in the Environmental Management Plan (EMP) prepared for the issue of a *Licence to Operate a Scheduled Premises* by the Department of Environment and Land Management. The licence will detail site-specific conditions relating to heritage matters if these are needed. However, as the EMP is usually not drawn up until after some initial investigations have begun, these guidelines may be of use in the interim.

The guidelines are not intended to impose any undue hardship or inconvenience on the re-opening or re-working of a deposit. In virtually all cases specific sites of cultural heritage value should be able to be protected within the framework of a modern mine. Other issues may be solved very simply by recording of the site being done prior to change.

The care and attention a site should receive prior to re-development can be related to the significance of that site, which may be important at a local, regional, state or national level. As no register of sites and an accompanying statement of significance exists, agency staff and developers will have to work with whatever information is available.

These commonsense guidelines give an outline of issues which should be considered prior to redevelopment, and will be used by Mineral Resources Tasmania (MRT) field staff. Issues are listed under individual items likely to be of cultural heritage significance. The aim of new work should be to avoid disturbance to mining heritage artefacts wherever possible. If disturbance is unavoidable then details of the artefacts being reworked (e.g. mullock heaps) or relocated (batteries, crushers) should be recorded prior to work commencing.

RECORDING OF PHYSICAL EVIDENCE

The physical evidence should be recorded by measurement, sketch and photography, and should include:-

- (1) accurate location of sites and features;
- (2) a detailed description of components of a site, and how it was worked. (What was mined or processed? How i.e underground, open cut, underhand stoping etc.? Who did the work? When? Where on site was the mining, the processing, the tailings disposal etc.?);
- (3) a statement on the condition of site (i.e. whether the operation of the site can be understood from the remaining features).

Ideally the recording should be done by persons with training or expertise in this type of work, and the records should be lodged with Mineral Resources Tasmania.

RELOCATION

This should only be done where the artefact (battery, etc.) would otherwise be destroyed by the new work. The fact that the machinery is old, rusty, falling apart and in a state of disrepair is **not** a sufficient reason alone to move the item.

Professional help should be sought prior to **any** relocation work being done.

MULLOCK HEAPS / TAILINGS / ORE STOCKPILES

Mullock heaps and tailings dumps from yesterday's mining can nearly always be considered to be today's raw material. Tailings from washeries and mills are highly prized as construction material, being used instead of sand or gravel in a wide variety of uses. Tailings are commonly crushed, sized and graded piles of excellent quality aggregate and road material, and are frequently re-worked. In some cases tailings can be re-treated to remove minerals which were not captured in the previous treatment/s. Modern technology can extract, at a profit, gold and other metals which were missed by earlier processing.

In practical terms, preservation or conservation of all tailings and mullock heaps is not possible. In some cases, mounds of fine tailings may also be an environmental dust and siltation hazard. Fine tailings are often difficult and slow to revegetate, due to the material being of uniform grain size, easily compacted, with poor drainage and low in plant nutrients. Retreatment can remedy a visual and environmental problem by recycling the tailings.

In most cases, if the mine was of regional significance, the tailings/mullock heap should be photographed and measured prior to being reworked. If covering an extensive area (more than one hectare), the area of tailings should be estimated and a record made of the extent of the deposit (for any large-scale operation this would have to be done in any case).



JIG FLOATS

These are often favoured as a source of gravel, containing ready-sized crushed rock fractions from previous treatment. Floats are usually piled up around old treatment plants and the landforms produced should be recorded prior to re-mining.

SHAFTS: FILLING IN

Sometimes shafts close to new workings are filled in for safety reasons. The mound of tailings surrounding a shaft is usually of more interest (both geologically and archaeologically) than the actual hole.

Shafts should be made safe by fencing, capping, or filling with material OTHER THAN the material around the shaft collar.

A photographic record and measurements of the dimensions of the shaft and timbering should be taken prior to work commencing.



SHAFTS: RE-OPENING

A photographic record should be made of the opening to the shaft, and a description made of the timbering therein.

NOTE: For safety reasons, detailed examination of any abandoned shaft is **not** recommended.

ADITS: CLOSING

If closed by blasting, pulling timbers or filling the entrance, a record should be made prior to closure. The dimensions of the adit, direction of heading, dip, sizes of timbering or other supports should be made. The reason for closure should be noted (e.g. to close access, coal seam on fire, etc.).



ADITS: RE-OPENING

A photographic record should be made and measurements taken of the height and width of the adit and the sizes, spacing and type of timber used in the original supports, e.g. legs, sets, horizontals, lagging (if any), props, stulls. If possible note if there is more than one phase of timbering.

Note length of original adit after re-opening and retimbering prior to any new extensions. Note crosscuts or galleries, and any deviations from existing plans prior to new work commencing. Such recording must only be made when the adit is in a SAFE condition. Inspection of abandoned adits is DANGEROUS.

ABANDONED MACHINERY AND EQUIPMENT

Under the provisions of the *Mineral Resources Development Act 1995*, abandoned mining machinery belongs to the Crown. On re-opening an old mine every effort should be made to leave such machinery as it is, where it is. Under no circumstances should such items be bulldozed 'out of the way'.

Pieces of old 'machinery' should not be 'souvenired' by workers or visitors to the site. The remains of old machinery can give a valuable insight into the history of working a deposit, and every effort should

Tasmanian Geological Survey Record 1996/02

be made to have such relics left as they are found. The inclination to 'rebuild' or 'reconstruct' machinery by cannibalising parts from a number of sites should be resisted. Machinery should not be moved simply to be in a place which is more convenient for visitors to view.

In re-opening an old site, the developer should **not** gather into a central heap pieces of equipment such as skips, pulley wheels, stamper shafts, chains and so on. Leave items where they are — undisturbed.

Similarly, such items must not be 'tidied up' and buried just to improve the aesthetic appearance of a site.



BATTERIES, STAMPERS, CRUSHERS

If at all possible, leave the machinery in place; try and locate tracks/dumps/dams/building sites so that existing machinery does not have to be moved.

If this is not possible, record item by photographing, sketching and measuring. Note manufacturer's name and date.

As a last resort, equipment can be moved — but only after a proper assessment has been made. Professional help should be sought **before** the item is moved. The principles embodied in the Australian ICOMOS Burra Charter (1992) must be followed.



Pieces of machinery should **not** be used as convenient sources of scrap metal.

HOUSE SITES

House sites and camps are almost always of interest, and every effort should be made to avoid any disturbance. If this is not possible photograph and record the site.



BUILDINGS

Few buildings are usually left standing at old mine sites. Safety is the first consideration. Is the structure sound? Cladding firm? If possible leave, or incorporate, old buildings in the new development. If demolition is needed for development of the site or safety considerations, the structure should be recorded and photographed prior to work commencing.



Tasmanian Geological Survey Record 1996/02



CHIMNEYS

Some chimneys, connected to workings for ventilation, are of great interest and assist in demonstrating previous mining techniques. Chimneys connected to processing works are also important. Every effort should be made to avoid disturbance of either ground-hugging chimneys or stacks.



WATER RACES – DUG AND PIPED

Many hundreds of kilometres of water races have been constructed throughout Tasmania. Races of regional significance, such as the Mt Cameron Water Race, or large races built to service a particular mining field, are generally of greater significance than small races built to a particular set of workings. More caution is required when developing around a large, regional race than for work near small, minor races. As a general rule, avoid any unnecessary disturbance and build bridges (or use temporary iron supports) over large races instead of destroying the banks to make a ford.

If disturbance is unavoidable ensure that details of the race (width, depth, flow rate, length, location) are recorded.



WATER RACES — AQUEDUCTS AND SYPHONS, INTAKES

Almost all are quite significant. Try to avoid disturbance.



PILES OF FORKINGS NEAR RACES

On occasions these will be seen as 'walls' built near races. Try to leave wherever possible. If forkings are in an area of proposed development, a record should be made prior to disturbance. Forkings must **not** be used routinely as pot hole filling in nearby tracks.

ALLUVIAL WORKINGS - SLUICING

Sites of ground sluicing are extremely common and are unlikely to be of great significance, but an effort should be made to record the area of previous work before new work starts.

Sites of hydraulic sluicing are also common, but most have now collapsed under natural forces. The position of these faces, which moved daily when the mines were in operation, is of some interest and should be recorded.



MACHINERY SITES AND FOOTINGS

Occasionally the site of an old machinery shed, engine house or battery house will be discovered. As the position of these sites is of importance in establishing how the mine previously worked, the sites should be avoided where possible, or at least recorded prior to any new disturbance. Protruding bolts and metal pieces may be cut off footings for safety reasons, but the concrete bases should not be removed.



OLD COSTEANS ('UNDERHAND STOPES')

Old mine workings, which demonstrate in a practical way the technology available at various

times, are always of interest and disturbance should be avoided if at all possible. At least a representative portion should be left if development is planned.

QUARRIES

Safety is an issue where high faces are exposed, even if the rocks were convict hewn. Very old quarries are usually of historic interest, and some quarries expose rock types or formations which are of great scientific interest and geological importance.

If a quarry of historic or geological interest is to be reworked, at least a part of the area of interest should be preserved.

Old pits and quarries in the vicinity of new workings can be fenced off for safety reasons.

PITS

Prospecting pits, of which there are sometimes thousands in any one mining field, are probably of little interest and can be filled in or re-opened with little or no recording needed.

PUDDLING CIRCLES

These are rare, of small size, and confined (now) to old goldfields. Every effort should be made to conserve these features, and no alluvial mining or exploration should be permitted to obliterate these circles.



DAMS – WATER

Alterations to dams of 2000 m^3 capacity or greater can only be made in accordance with plans submitted to, and approved by, the Chief Inspector of Mines.

Recommissioning or reconstruction plans should aim to incorporate as much of the original structure as is commensurate with sound engineering principles.

Small dams should be left undisturbed wherever possible, where safety and pollution issues are not a concern.

RAILWAY CUTTINGS

Try to leave in an undisturbed state.

RAILWAY FORMATIONS

Usually these have been used subsequently as 4WD tracks, and are quite robust. Care is needed when upgrading these tracks, as every effort should be made to retain the formation structure.



DAMS - TAILINGS

Often these are the largest piece of tangible evidence of a previous phase of mining. Tailings are often favoured for retreatment, in which case the original dam should be photographed and properly recorded; size, location, height of wall, depth, size of tailings, volume of tailings, metallurgical characteristics. These details should be collected for the retreatment process and should not impose any extra burden on the developer. Alterations to dams above 2000 m³ capacity can only be made with the approval of the Chief Inspector of Mines.

ORE BINS

Provided the structure is sound these should be left as is.

OLD TRACKS

Re-opening old tracks usually causes less environmental disturbance than creating a brand new track. Usually no special treatment is needed. See relevant section of the *Mineral Exploration Code* of *Practice*.

CORDED TRACKS/PACKHORSE TRAILS

Whilst there were hundreds of kilometres of these tracks in Tasmania at the turn of the century, most are now overgrown. They are usually of historic interest and disturbance is to be avoided wherever possible. Such tracks can be re-opened for foot or 4WD bike access with little disturbance.

However, if a development is planned which will obliterate a portion of such a track, then a record should be made (on a 1:25 000 scale map or better) or on an air photo of the location, and details of construction should be noted.

REFERENCES

Requirements for assessments of Features of Significance in Historic Mining Reserves. Department of Conservation and Environment Victoria.

[26 February 1996]