

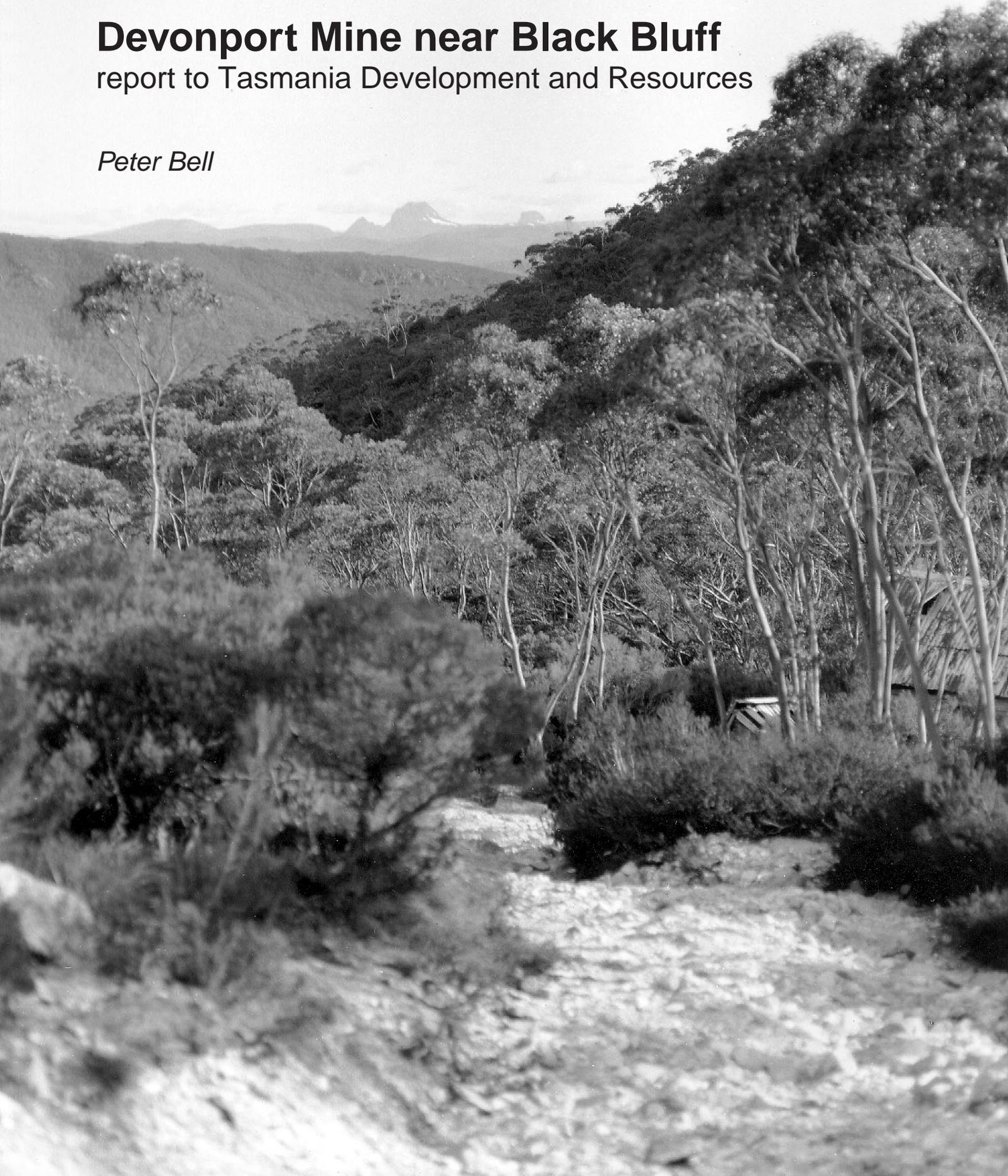


**MINERAL RESOURCES TASMANIA**

**Archaeological Survey Report 1995/03**

**Devonport Mine near Black Bluff**  
report to Tasmania Development and Resources

*Peter Bell*



# **Devonport Mine near Black Bluff**

**a report to Tasmania Development and Resources**

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# **Devonport Mine near Black Bluff**

## **a report to Tasmania Development and Resources**

### **Project**

The brief for the project requires a record to be made of the Crossley engine and associated features at the Devonport Mine. In addition to this report, the photographs listed in Appendix B and some additional research notes have been lodged with the Industry, Safety and Mines Division, Tasmania Development and Resources.

### **Location**

The Devonport Mine is located in north-western Tasmania on Devonport Creek, a tributary of the Lea River, near grid reference 169074 on the Lea 4040 1:25,000 mapsheet. The site is at about 880m altitude in eucalypt forest on Crown Land about 5km ESE of the summit of Black Bluff and 8km nearly due west of the town of Moina. The mine can be reached by a road south from Nietta through Smith's Plains, then by a forestry track which climbs up Jean Brook through State Forest, and crosses the open heath of Tiger Plain at about 1000m altitude before dropping into Davenport Creek. The track has eroded into a boulder-strewn gully in some steeper sections and is impassable even by four-wheel drive vehicles.

### **Background**

This project was initiated by a request from the Industry, Safety and Mines Division, Tasmania Development and Resources, to have a record made of the Crossley engine and its surroundings at the Devonport Mine. The Mining Heritage Committee has given approval for the engine to be removed from the mine site, reconditioned and exhibited as a working engine at Pearn's Steam Museum at Westbury.

This report is based on a site visit by Peter Bell and Greg Dickens of the Industry, Safety and Mines Division on 27 October 1995.

### **History**

This summary of the history of the mine is based on research by Greg Dickens, taken principally from Mines Department publications and information supplied by Zane Woodberry. No further original research on the Devonport Mine has been done for this report.

The Devonport Creek area was probably known to prospectors from the 1860s onward. An early track over the range from Smiths Plains into the Lea River valley ran across Tiger Plain, and an easterly branch of this track runs down the creek close to the mine site. Old tracks in the open heath country seem to remain visible for a very long time.

Gold was discovered in the vicinity of Devonport Creek and leases were taken up from 1895 onward. The site appears to have been under lease more or less continuously from 1895 to 1967, although mining activity was confined to sporadic episodes. The first description of work on the site was given by government geologist W.H. Twelvetrees in 1913, when an adit, apparently the existing one, was being driven but had not yet intersected the lode formation.

Another report on the mine by government geologist E. Broadhurst in 1934 described an adit driven 40 metres, with two branches, and shallow workings above it, a description which

seems a close match for the appearance of the workings today. In 1939 government geologist Q.J. Henderson gave a very discouraging report on the mine's prospects, recommending against the erection of a battery or any further exploration.

No description of the mine to that time makes any mention of machinery or treatment plant. The mine was leased by a syndicate headed by Bernard McCann in 1948, and there appears to have been intensive development shortly afterward. A photograph of the site from the north in 1959 shows a long building of planks or slabs, presumably a mill, running down the creek bank below the adit. A smaller plank building, perhaps housing the tool sharpener, stands near the entrance to the adit. The photograph suggests that production at the time was coming from the open-cut rather than the adit. The mullock heap south of the mill is plainly visible, and its size and form appear much as they are today.

When the photograph was taken the mine was not working, and had presumably been recently abandoned. The mine changed hands a few more times, but there are no reports of further production before the lease was finally cancelled in 1967. The sparse documentary evidence and the single extant photograph suggest that the installation and use of machinery on the Devonport Mine occurred entirely in the period between 1948 and 1959.

### **Physical Description**

The most prominent element of the site is the Crossley oil engine on its concrete foundations. This is a one-cylinder horizontal engine with a bore of about 11" (28cm) and a stroke of 20" (51cm), implying power of around 30 bhp. It has the cylinder jacket and frame cast in one piece nearly 2.5m in length, and is fitted with a beltwheel and a flywheel nearly seven feet (2m) in diameter. Minor parts such as the crankshaft bearings, cylinder head, bulb heater, governor and oil pump have been removed.

There is some confusion in recent sources about whether this is an oil or a gas engine, as the two are very similar in appearance. This is definitely an oil engine, fitted with a hot bulb for ignition. There is no sign of a gas producer in the vicinity, and the engine was fuelled from an oil drum.

The engine is mounted on reinforced concrete foundations, obviously made with precision and skill, presumably from the original blueprints. There is a large concrete block supporting the engine proper, a smaller one beside it supporting the crankshaft, and a third even smaller block beside the flywheel which supports a fulcrum for levering the flywheel to position the piston for starting. A small block with four machine bolts close to the cylinder head and a large block with six machine bolts some distance from the belt wheel have had machinery of unknown function removed from them.

The engine stood on a concrete floor, probably laid without reinforcing and now reduced to a few fragments close to the engine foundations. It also stood within a building, of which the only trace remaining is a few crumpled sheets of a corrugated iron wall which was parallel to the engine and stood 66cm from it, but which has been crushed by soil moving down the slope and now partly covers the engine. A single concrete footing for a round timber post has eroded into the creekbed below the engine.

It is not immediately clear what purpose the engine served, as the crankshaft with its beltwheel faces southwest toward the bed of Devonport Creek, very close to it; in fact the creek has undermined one of the machinery foundation blocks. The engine must have driven the treatment plant on the opposite bank of the creek - there is no other explanation for its location. In other words the mill appears to have built with a creek flowing through the building, between the engine and the milling machinery! Or perhaps, less probably, they were housed in separate structures facing each other across the creek and connected by an exposed belt drive. The only evidence which might clear this up is the 1959 photograph, but unfortunately vegetation obscures the lower end of the mill building and the present location of the engine.

The most conspicuous piece of milling plant is a Forwood Down grinding pan standing on the steep slope about twenty metres south of the engine. The pan is 5' (1.5m) in diameter, and cast in its side is:

IMPROVED GRINDING  
& AMALGAMATING PAN  
FORWOOD DOWN & COLTD  
MAKERS  
ADELAIDE & KALGOORLIE  
PATENTS  
AUSTRALIA & S AFRICA

The pan stands on a level space, with a stone retaining wall behind it, and the remains of a timber staircase collapsed beside it. The pan proper is in situ and standing on its legs, but its working parts have been dismantled and some are identifiable in the vicinity. Its central driving column is lying beside it, curved shoes and dies are scattered nearby, and its muller is lying on the creek bank near the Crossley engine. The muller has fractured across its diameter and has been repaired by brazing the cast iron.

No other treatment plant is evident in the vicinity of the mill, but the site is heavily overgrown, making observation difficult. A small one-cylinder Lister oil engine lies dismantled with its cylinder head and other parts missing inside the mill perimeter, but no other machinery is present, nor are there any foundations or other indications of what was there or where it was located. The mill building has apparently collapsed where it stood, for there are some posts standing, and other heavy timbers and a few sheets of corrugated iron are lying on the site. However there appears to be insufficient material present to account for the whole building. There are no indications of fire. Near the top of the slope there is an area of bare earth and stone, mixed with planks and heavier timbers, and it appears that a timber ore bin has collapsed onto the site, spilling its contents down the slope and perhaps hiding other evidence. The stone is soft, white and friable, and seems an unlikely ore of gold. There are a few lengths of tram rail on the slope amongst the ore bin debris.

The location of the Crossley engine has no obvious relationship to any machinery on the mill site today. The alignment of its beltwheel is a long way to the right of the grinding pan, as one looks at the mill site. The only physical evidence of the mill building in line with the engine is a single leaning post which must have been part of its northwestern wall. The belt drive from the engine must have entered the building near this wall, and the grinding pan must have been located on the opposite side of the building, just inside the southeastern wall. Of the beltwheels, shafts and belts which transmitted power within the mill there is no trace except for a single corroded beltwheel lying loose near the Crossley engine.

On level ground immediately above the mill site is the mine adit, still open. On the ground near the entrance to the adit is a small two-cylinder steam winding engine. There is no boiler, and the engine is not aligned with the adit or mounted on a foundation. East of the adit, mullock has been run out on a heap shaped like three diverging fingers of a hand.

Loose items connected with the mine and the mill are scattered in and around Devonport Creek below the Crossley engine. A grindstone and part of its stand are lying in the creek near the muller, an ore cart and a single tramwheel, a beltwheel, and a cast iron pressure vessel of unknown function are nearby.

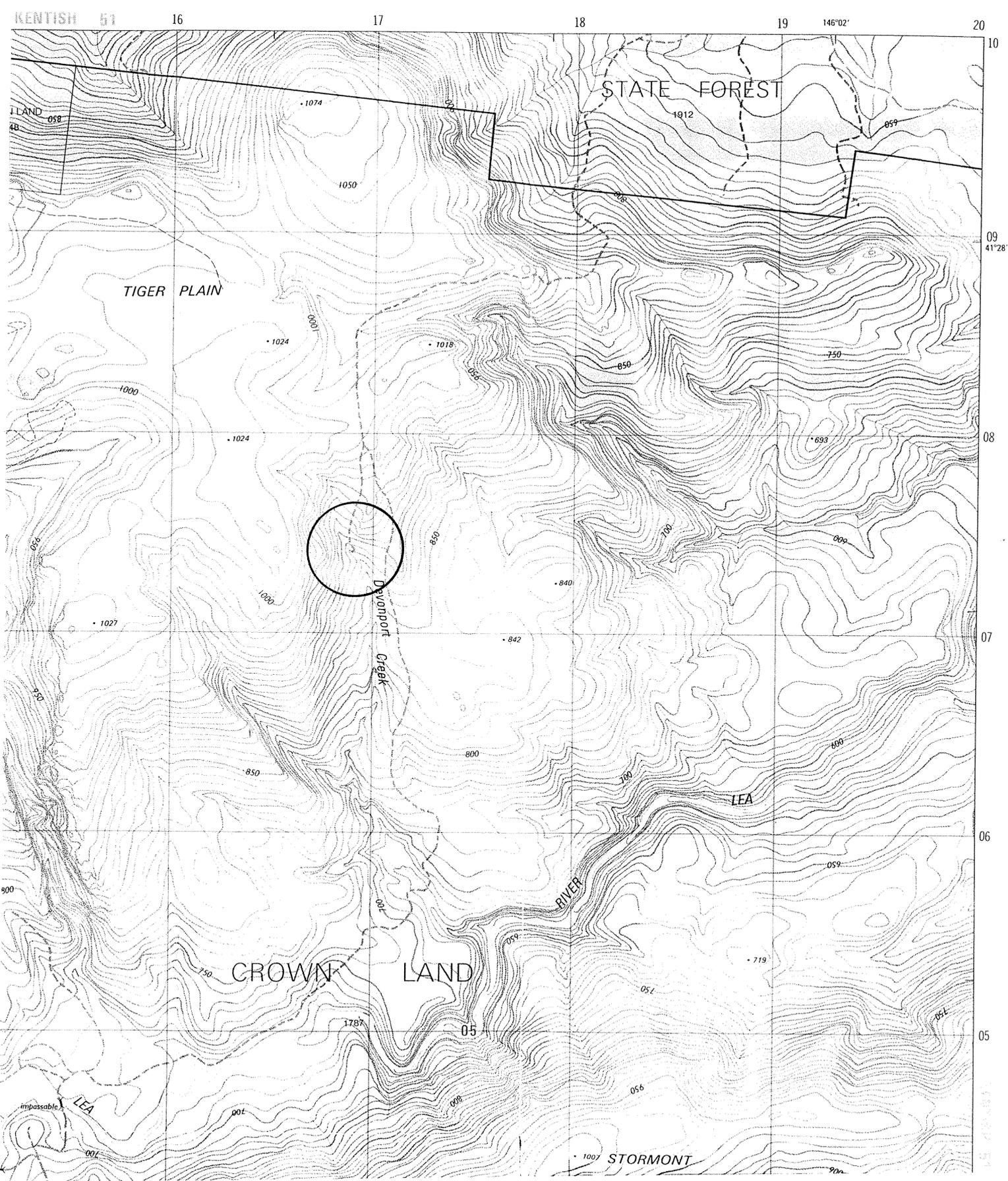
All of this evidence forms a reasonably coherent scatter of mine- and mill-related machinery extending about forty metres down the slope from the adit entrance across the creek to the Crossley engine. Twenty metres northeast of the engine is another small scatter of machinery centred on the track which leads on down the creek in the direction of the Lea River.

There is half of a heavy cast iron flywheel about 9' (2.7m) in diameter beside the track. On the other side of the track is a bin or hopper about 2m high, made of welded steel plate. Between

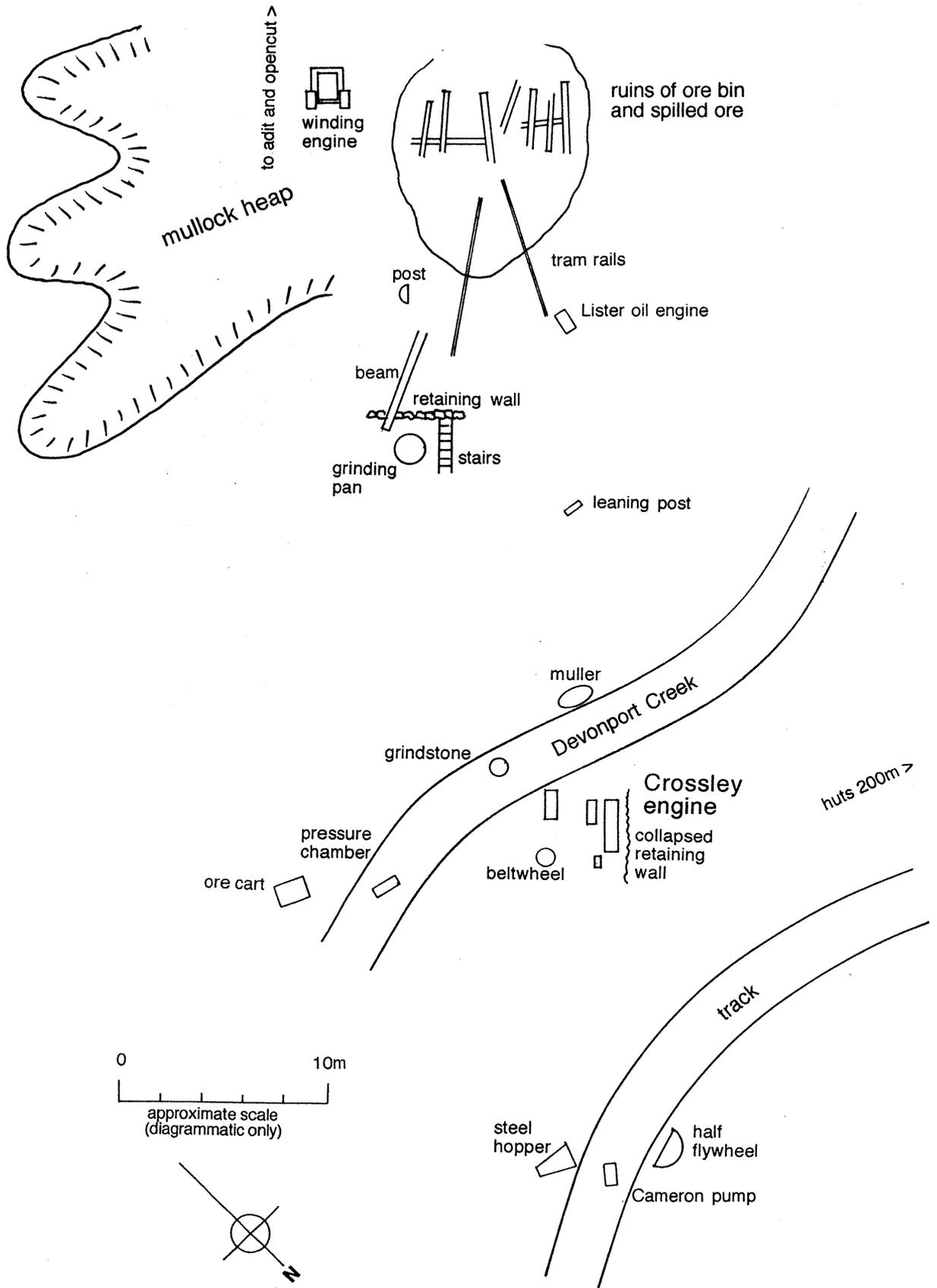
them, lying in the track itself is a small steam-operated pump, fitted with a hook and designed to hang vertically. It is a one-cylinder single-acting reciprocating pump, in other words one that operates in very much the same way as a bicycle pump. The pump is marked:

THE  
CAMERON  
SIZE Gx4 & 6x7  
No. [illegible]  
A.S. CAMERON  
E. 23 ST. N.Y.

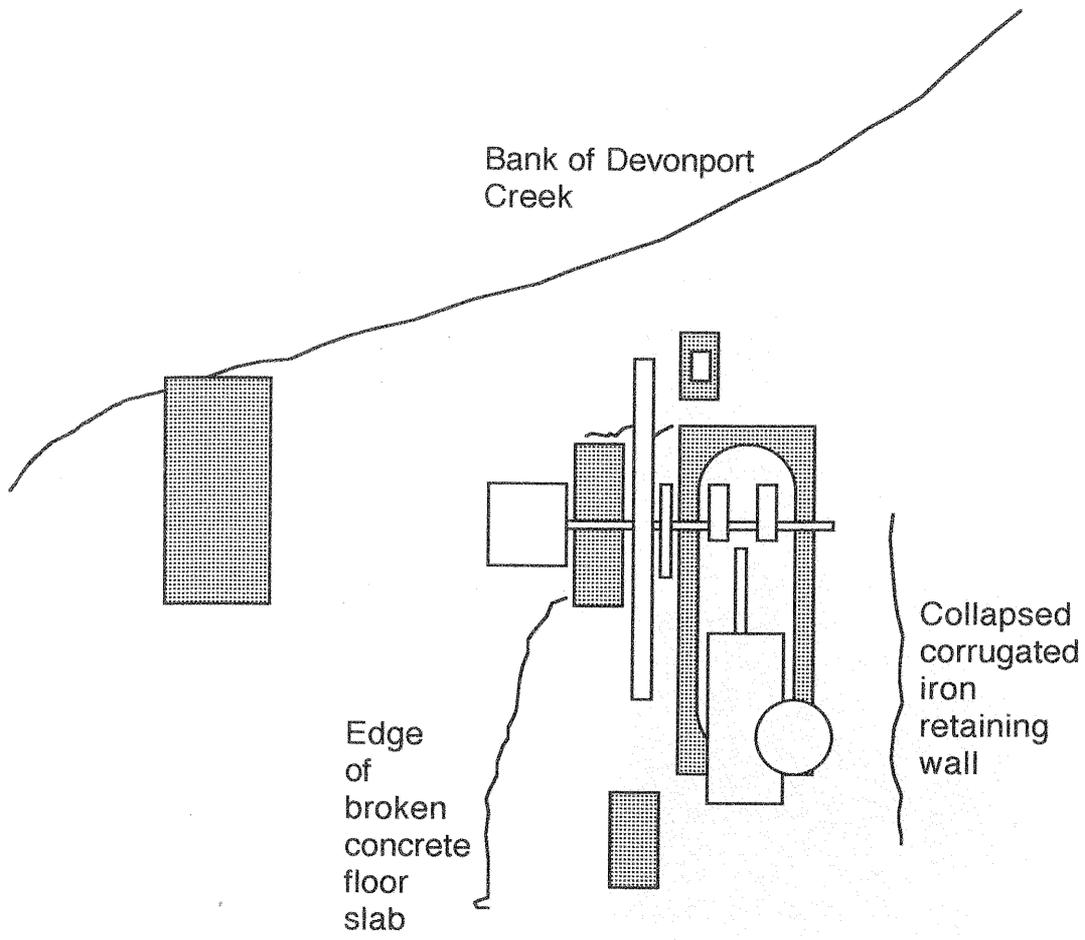
None of these three pieces of machinery is in situ or in any apparent context. They seem to have no relationship to each other, nor to any of the other items on the site.



Location of Devonport Mine (Lea 4040 1:25,000 mapsheet)

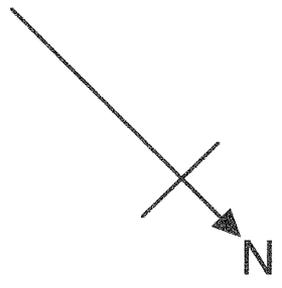


**Sketch Plan of Devonport Mine Site**

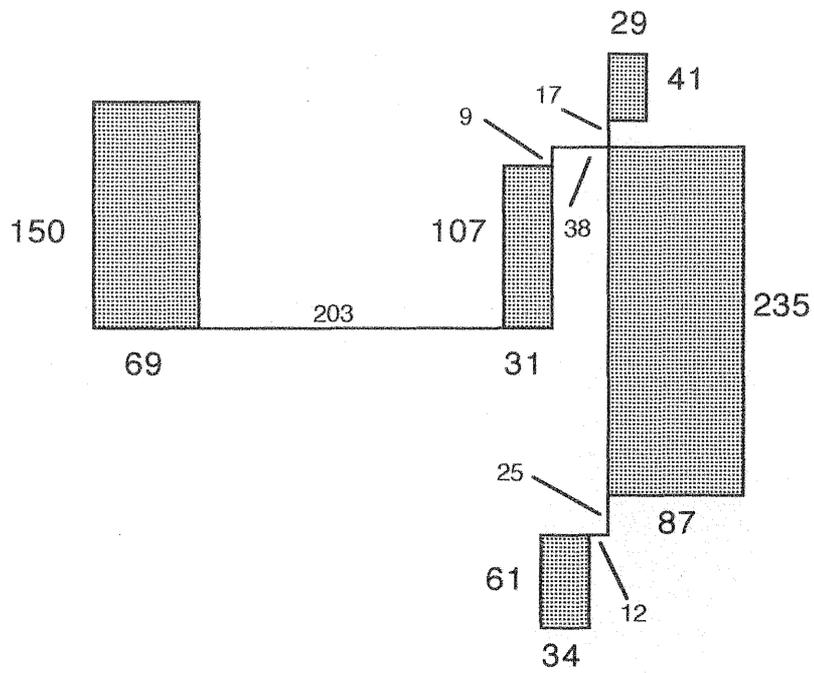


Scale

 Concrete foundation



**Plan of Crossley engine surrounds at Devonport Mine**



**Dimensions of Concrete Foundations (in centimetres)**



**Looking south down track to Devonport Mine site,  
Cradle Mountain and Barn Bluff in background (Film 4 neg 44)**



**General view of Crossley engine and mill site from northeast (Film 2 neg 55)**



**Crossley engine from northeast (Film 2 neg 54)**



**Crossley engine from northwest (Film 2 neg 49)**



**Forwood Down grinding pan from east (Film 3 neg 49)**



**Lister oil engine on mill site,  
note tram rail at lower left (Film 3 neg 50)**



**Two-cylinder steam winding engine near adit (Film 3 neg 53)**



**Cameron reciprocating steam pump (Film 2 neg 43)**

## **Origins of the Machinery**

Broad date ranges can be suggested for some of the plant items on the site because of their design or the maker's name on the machinery.

### **The Crossley engine**

Francis and William Crossley established a steam engine manufacturing plant in Manchester in 1866, and soon diversified into gas engines. The firm became a public company in 1897 or 1898, and the name "Crossley Brothers Limited" dates from that time. They commenced manufacturing oil engines in 1904, and in the early twentieth century were highly regarded internationally as makers of stationary oil and gas engines. Manufacture of oil engines ceased in 1925, and the company bought the Premier Gas Engine Coy in 1919 and became Crossley Premier Engines in 1935. (Short 1978, Simpson 1988 p. 130) Thus the engine must date from the years between 1904 and 1925.

Information provided by Mr Zane Woodberry to the Industry, Safety and Mines Division identifies the engine as a Type 'O' model 120, manufactured in 1923.

### **The Lister engine**

RA Lister & Coy were established in Dursley, Gloucestershire in 1867. They made oil engines from 1907 to about 1930. Small units of the kind at the Devonport mine were manufactured in hundreds of thousands, and used very widely on farms and small mines all over the world in the 1920 and 30s to power pumps and lighting plants. The company was later absorbed into the Hawker-Siddeley group. (Simpson 1988 p. 138, Edgington 1980)

### **The Forwood Down grinding pan**

Walter Forwood and Thomas Down formed the engineering and iron-founding firm of Forwood Down in Adelaide in 1873. They began manufacturing mining machinery immediately, and supplied the Northern Territory gold boom of the 1870s. They became Forwood Down & Coy Ltd in 1897, and established an agency in Western Australia in 1899, although all manufacturing was still done in Adelaide. The company traded under that name until 1954, when it became Forwood Johns and Waygood, and was later absorbed by Perry Engineering in 1966. (Needham & Thomson 1987 pp. 50-51, Cumming & Moxham 1987 p. 64) Thus from the evidence on the pan, it could have been cast at any time between 1899 and 1954.

Grinding and amalgamating pans of this type were in common use in gold mills from the 1870s onward. The pans were used for fine grinding after another crushing machine had reduced the ore to a relatively small particle size. Even in the absence of other milling machinery, this logical relationship between the pan and other elements of a mill allows some assumptions to be made about where they would have been located. Flat-bottomed grinding pans are often known in Australia as Wheeler pans, which was a specific brand name; there were many other similar models. In America they were known as Californian pans. By the early twentieth century they had been replaced by ball mills for fine grinding, and most mining textbooks regarded them as inefficient and old-fashioned. However they remained in occasional use much later in Australia and were probably manufactured until the Second World War. Forwood Down patented an improved version of the Wheeler pan sometime before 1905, and Taggart describes this Forwood Down pan as still in current use in 1945. (Quartermaine 1981 plate 7.7.83, Taggart 1945 p. 5-133).

### **The steam winding engine**

There is no maker's name anywhere on the engine. It is a small two-cylinder steam winding engine with a bore of about 6' and a stroke of about 10', mounted on its own wrought iron

frame. A number of manufacturers offered winding engines of this general kind in a range of sizes, of which this would be one of the smallest. It could date from any time in the late nineteenth or early twentieth century, say 1870 to 1914. There is no sign of a boiler to provide steam to the engine, and it is not in situ, i.e., not mounted on a foundation, as Davies recommended in his description of two-cylinder winding engines:

Engines of this type require solid foundations of masonry, and as their use would imply that the mineral wealth of the undertaking was fully established, they should be covered in with a substantial engine house, from which all loafers should be rigorously excluded. (Davies 1894 p. 73)

### **The Cameron steam pump**

The pump was patented and manufactured by A.S. Cameron of New York, but no date is given. Cameron patented a single-acting reciprocating pump in 1875, and that pump design was subsequently manufactured under licence by Tangyes of Birmingham. (Two Tangye pumps made to Cameron's patent, but larger than this one and different in detail, were installed at the Louisa mine in North Queensland in 1881: Bell 1987 p. 35) If this pump is made to the same patent design, then it probably dates from the late nineteenth century, say the 1870s to the 1890s. A pump similar to this one is illustrated by Davies (1894 p. 130), who describes it a small model which can be hung in the sump to keep the bottom of the shaft dry during shaft-sinking. The pump's general appearance is consistent with late Victorian design, and centrifugal pumps were generally replacing reciprocating pumps by the early twentieth century. The likelihood is that the pump dates from the period 1875-1900. There is no sign of a boiler to provide steam to the pump.

### **The welded steel hopper**

The steel hopper lying beside the track appears to be one of the newest plant items on the site. Its function is uncertain; it is made of 3mm steel plate, and is not large enough or robust enough to have been an ore bin. Its welded fabrication points to a recent date: almost certainly post-1945.

### **Miscellaneous plant items**

The half flywheel clearly belongs to a large engine. However, it does not belong to the only large engine now on the site, the Crossley oil engine, which has its own flywheel in place. The straight-spoked design of the flywheel differs from the curved-spoked wheel invariably used on Crossley engines. Even if the flywheel were intact, it could not be fitted to the engine without significant modifications both to the engine and its foundations.

The pressure chamber lying in the creek is of unknown function, but apparently does not relate to any other plant item on site. It appears to be designed to take air or steam under great pressure, and could possibly be the pressure bulb of a very large reciprocating pump, the air receiver of a compressor, or the steam chest of a boiler. It does not seem entirely right for any of these functions, and in any case there is no boiler, compressor or large pump on the site.

The tram rails lying on the mill site, the ore cart on the creek bank, and the tram wheel beside the Crossley engine collectively imply that there was a simple system of skip haulage from the mine to the mill. The three-fingered plan of the mullock heap also suggests that mine waste was dumped from a central source along a system of tramways.

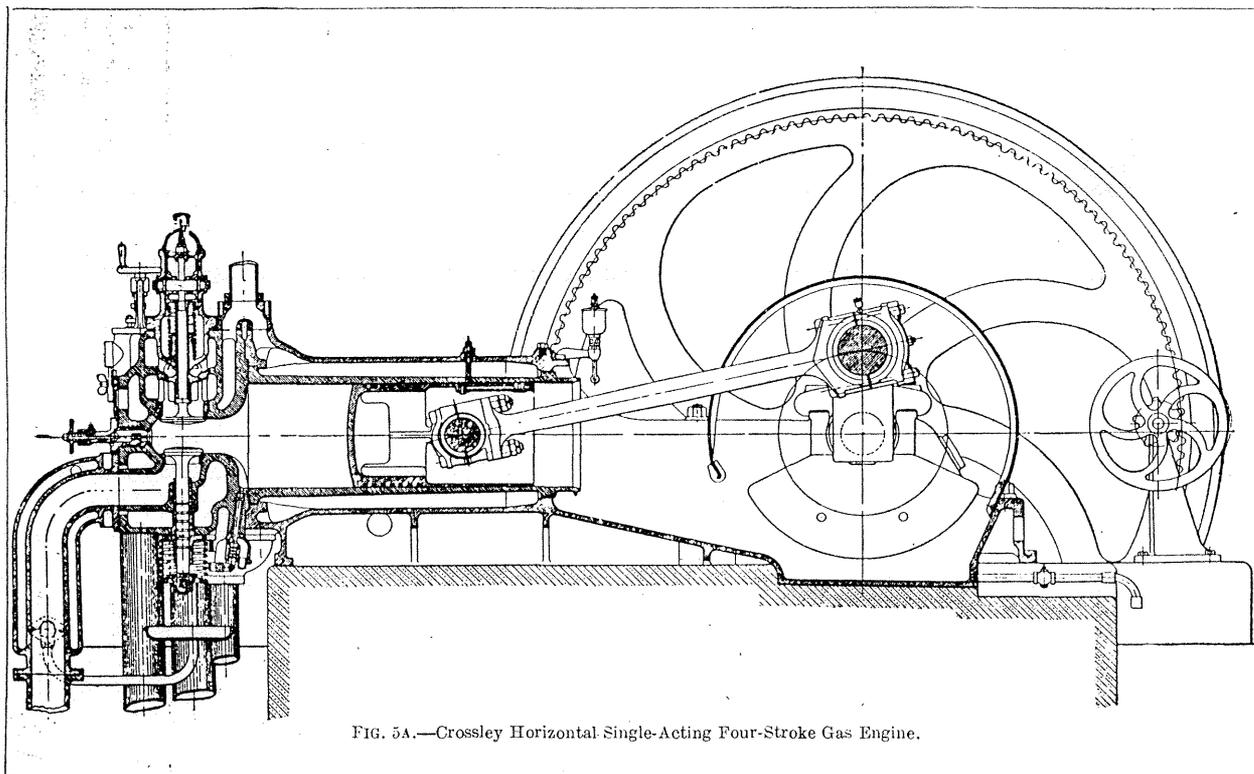
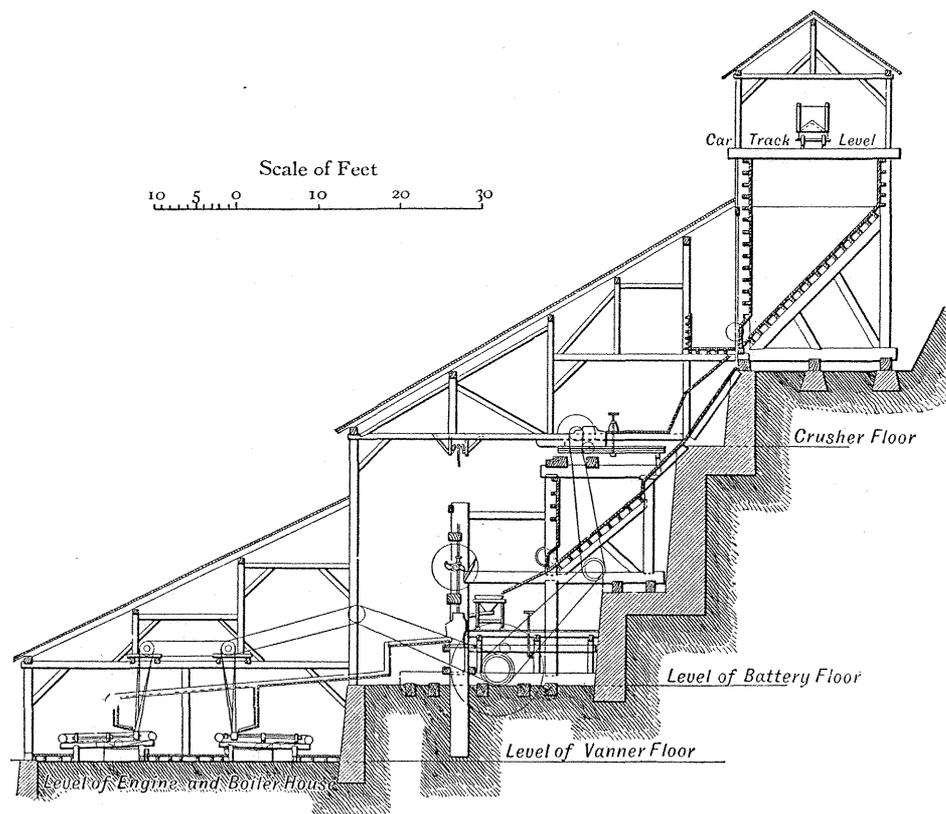
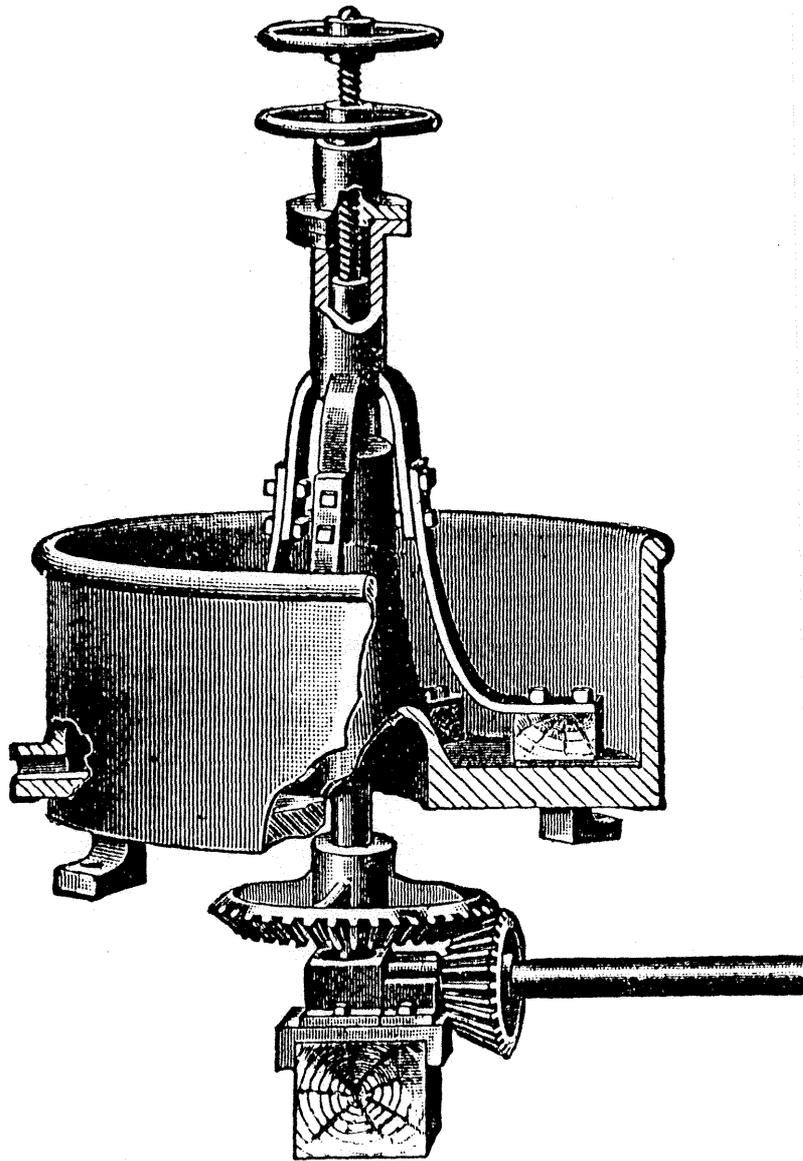


FIG. 5A.—Crossley Horizontal Single-Acting Four-Stroke Gas Engine.

Crossley gas engine of generally similar model (Kempe 1915 p. 1259)



**Cross section of orthodox gold crushing mill (Louis 1902 p. 266)**



Cutaway view of a grinding and amalgamating pan (Richards & Locke 1940 p. 62)

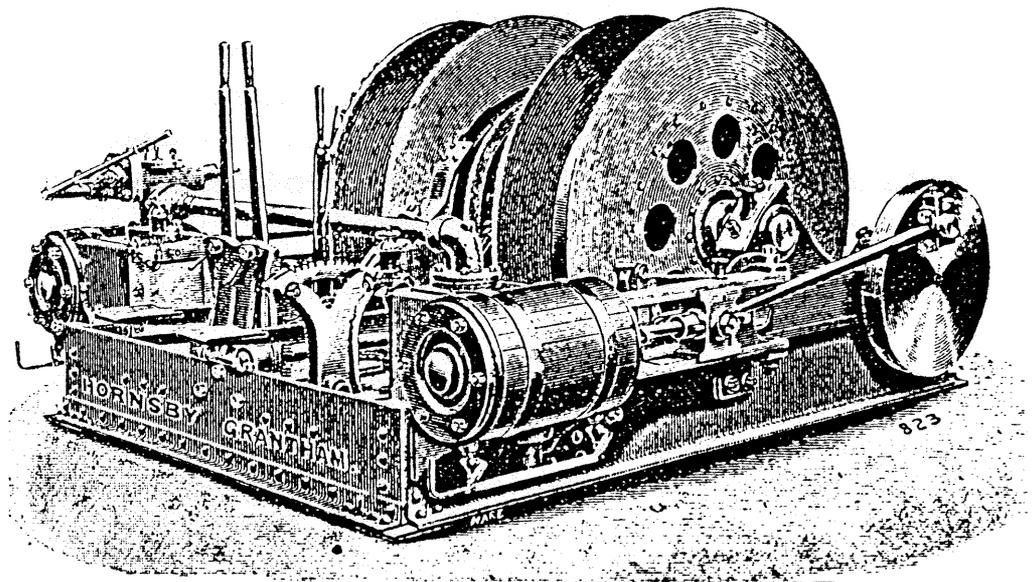


FIG. 45.—DOUBLE CYLINDER WINDING ENGINE ON IRON GIRDER FRAME.

Small two-cylinder steam winding engine (Davies 1894 p. 73)

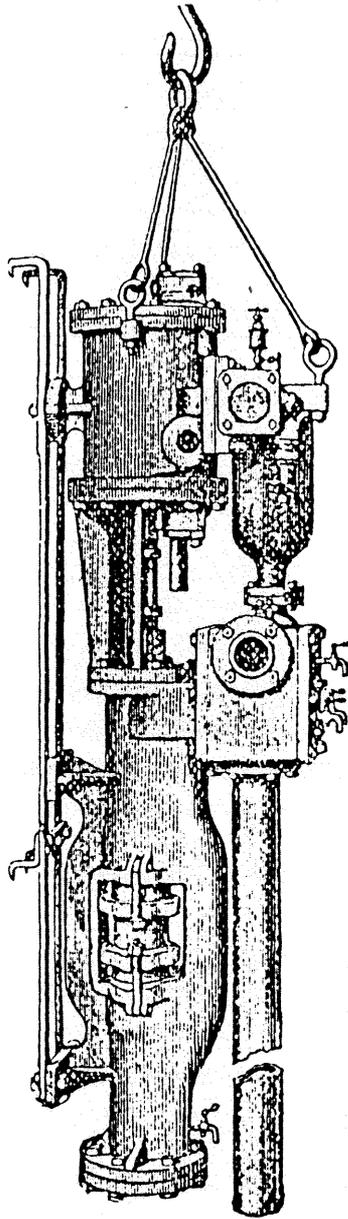


FIG. 92.—THE CAMERON PATENT SINKING PUMP.

Small Cameron reciprocating pump for shaft-sinking (Davies 1894 p. 130)

## Problems in Understanding the Site

It is very difficult to make sense of the Devonport mine site. Normally on a mining site such as this there are patterns of function, and agreements in location and date which add up to a picture of the site's history. The obstacles to understanding this site are as follows:

- The lack of documentary information. The written and pictorial records give little information except that there were underground workings in existence by the 1930s and there seem to have been surface developments on the site between 1948 and 1959.
- The dates of the physical evidence on the site. The dateable machinery still at the Devonport mine comes from a variety of sources, and ranges in date from perhaps the 1870s to the 1950s. Some of the major items appear to fall into two periods of origin, one in the late nineteenth century, the other in the 1920s.
- The lack of clear economic motive. The documentary evidence portrays the Devonport Mine as a hopeless duffer which the government geologist recommended not be developed or equipped with machinery. There is no report that it ever produced any gold. As a result it is not clear what we are looking at on the site: a producing mine or an over-equipped prospecting operation? Did its operators know what they were doing or not?
- The eccentric layout of the operation. It appears that the creek flowed through the mill, which must have been inconvenient, to say the least. This state of affairs was brought about by utilising the slope of the creek bank for gravity feed in the milling operations, the adit determining the location of the top of the mill, but then not having enough room for the engine on the same side of the creek. There is simply no level site to install the machinery between the adit entrance and where it stands. This implies there must have been other machinery in the mill, now removed.
- The site has been seriously disturbed since the mine closed. Of all the plant items on the site, only the Crossley engine and the grinding pan are in situ, that is, still standing where they were operated, and even these have lost most of their minor portable parts. The mill building has been stripped of machinery, building material and drive mechanisms so comprehensively that there is little indication of how it operated.
- The anachronisms. There are things on the site whose times of manufacture span a period of about eighty years, for example the Cameron steam pump and the welded steel hopper, which are literally lying side by side. Whether they actually operated together on this site at any time is questionable.
- The things that are missing. These include for example, most of the machinery in the mill building. It must have had crushing plant, perhaps stamps or a ball mill, although the stone in the ore bin is so friable that simple rolls would have been sufficient. There must have been some sort of separating mechanism: a jig or a Wilfley table, perhaps. If there were stamps, there would have been amalgamating plates, and one would expect a retort to distil mercury. The mill does not seem to have used stamps for crushing, as they usually leave behind substantial foundation blocks, and worn parts such as shoes and dies are invariably abandoned in the course of crushing.

Further, there are two steam engines on the site - a pump and a winder - and no means of providing steam to them. There is no boiler, or a foundation for one, or any of the other usual evidence such as an ash deposit or firebars.

There is only one fuel drum for the Crossley oil engine and the Lister engine. An oil engine in a remote location usually has a scatter of empty drums nearby, as there was no economic incentive to return them to the supplier.

- The incongruous things that are present. The Cameron steam pump is completely anomalous; it is designed for pumping from a shaft, but there was no shaft at the Devonport Mine, nor any workings that required pumping. It may possibly have been intended to pump water for the mill, but then it would require its own boiler. It would make more sense to run a centrifugal pump from the Crossley engine.

Why does a mine that consists of only a forty metre adit need a steam winding engine? Why are there two oil engines? Where is the engine that turned the flywheel that probably weighed two tonnes? Why take away half a flywheel and leave the other half?

## Conclusions

Despite these anachronisms and incongruities in the physical evidence, much of it is broadly consistent with the documentary evidence. The mine was equipped after 1948, and there is evidence from that period on the site: the welded steel hopper, and the modern pattern 44 gallon fuel drum. But the mine also had a greater quantity of machinery assembled from a number of other sites. The hut standing about 200 metres north of the mine site presents an analogy for the method of collecting mining equipment. The hut is a collection of building materials of different shapes and sizes, standing on a concrete foundation which is the wrong size for the building it supports. There are three different profiles of weatherboard in the walls, and bricks from three different brickworks in the chimney.

The Devonport Mine plant was similarly assembled out of whatever plant was available, resulting in the juxtaposition of pieces which do not belong together, and which probably did not function very effectively together. The Crossley engine was used to power the mill, which must have had crushing and separating machinery that is now gone; it could not have consisted simply of a grinding and amalgamating pan. Why there is a second smaller oil engine only a few metres away is a mystery, as the Crossley engine should have provided more than sufficient power for the mill. There is no indication where the Lister engine was installed, or what it did.

The steam winding engine near the adit probably never worked at the Devonport Mine. There was no use for it in such a small mine, there is no indication that it was ever installed on a foundation, and there was no boiler to power it. It may have been a legacy of an older mining operation, but this seems unlikely. There is no record of any such plant being installed earlier, and the other two problems remain: no apparent use for it, and no context of installation.

Most of the other plant items between the Crossley engine and the adit are consistent with the operation of a small mine and mill. However it seems likely that the plant never did much work. The mullock heap is relatively small, the workings now do not seem to be significantly greater in extent than they were in 1934, there is no deposit of tailings from the mill (although these may have been dumped in the creek and swept away), and the lack of empty fuel drums is puzzling. The venture may even have been abandoned before the plant was completed; possibly some of the missing items were never installed.

The Devonport Mine never produced much gold; indeed it may never have produced any. Which raises the question of the motivation for investing so much energy in dragging so many tonnes of machinery up such a difficult road to a mine that was never likely to repay the costs of establishing the plant. It was presumably done by a small syndicate with very little capital, using their own labour and very cheap or even free machinery. Anomalous plant such as the winding engine may simply have been taken to the mine because it cost nothing and it might have come in handy one day. Was the mine seriously intended to go into production, or was the operation simply a lavishly over-equipped prospecting exercise? In either case it was ill-advised, as nothing in the mine's history suggested it was worth the outlay of capital or labour.

There remains the problem of the machinery scatter by the track. It is most likely that these three plant items had nothing to do with the Devonport Mine. The hopper may possibly have performed some task in the mill, but otherwise the objects are quite incongruous, unrelated to each other and having no connection with any other machinery on the site. It is difficult to attribute any functions to them in the operation of the Devonport Mine or its mill. It is remotely possible that, like the winding engine, they may have been brought from other sites and stockpiled in case they were ever useful, although it is difficult to imagine how half a large flywheel could be useful to a small mine.

Their position on the track may be the most significant clue to their origin. The only person with a use for half a flywheel is a scrap metal dealer. The three machinery items may be from mine sites further south in the Lea River valley, and were probably abandoned by a scrap metal scavenging expedition which for some reason never came back for them. If this is correct, their connection with the Devonport Mine is simply that it was another stop on the expedition's route. The three items may have been dumped from a load to make room for something more attractive from the Devonport Mine plant.

\* \* \* \* \*

To sum up this interpretation, there are four historical phases of site formation visible at the Devonport Mine:

- 1 1895-1939 The mine was worked in a series of episodes, giving rise to the adit and the opencut in nearly their present form. No machinery or structures on the site can be attributed to this phase.
- 2 1948-1959 The site was intensively developed. The Crossley engine was installed and the mill was built. A period of mine development followed, probably extending the opencut. By 1959 the mine was abandoned. Most of the machinery and structural remains on the mine and mill site date from this phase.
- 3 1959-1995 The mill was dismantled and building materials and machinery were removed, probably in several episodes. The site was greatly disturbed in the process, and creek erosion and other forms of natural decay have also contributed to degradation of the site during this phase. Removal of small items from the site has continued until very recently.
- 4 Date unknown, but between 1959 and 1995. Additional machinery was deposited on the site at some time after the abandonment of the mill, probably in conjunction with an episode of removal of other plant.

## **Recommendations**

The brief for this project does not require policy advice on whether or not the Crossley engine should be removed from the Devonport Mine site. However, I am happy to concur in the decision to give approval to remove the engine. The site is not of great significance either historically, technologically or for any other reason, and it has been disturbed to the point that it has very little integrity: that is, it no longer tells a clear historical story.

The single item of greatest significance on the site is the Crossley engine, and given its rarity and the relatively complete state of this example, it is appropriate that the engine should be removed from the site for conservation and public display. This raises some questions about the engine's future custodianship, physical problems of removal, damage to the site and its future management.

The difficulty of removing the engine from the site should not be underestimated. The only access is along a track which is very rough for the last three kilometres. The 300m climb up Jean Brook is steep and covered in loose rocks; it is a demanding drive for a four-wheel drive vehicle. The most difficult parts are the steep gradients on both sides of the ridge immediately above Devonport Creek, particularly the last 600m of the track, descending about 120m vertical distance into the mine site. Several hundred metres of the track have been scoured by runoff and become a river bed, strewn with large boulders. These sections of the track are impassable to an ordinary off-road vehicle.

The engine probably weighs more than five tonnes. Its heaviest single component is the casting incorporating the frame and cylinder which cannot weigh less than two tonnes. These have to be taken apart, loaded onto a vehicle, and transported up the track out of Devonport Creek. The vehicle has to have large wheels and a high clearance, and be capable of moving very slowly with a very low power ratio. The proposal to use a purpose-built trailer hauled by a winch is probably the best option available to solve the track access problem.

It will be necessary to get the vehicle and some sort of lifting gear onto the site. Fortunately the engine is readily accessible on level ground, but it should be made clear that the rest of the site is to be respected, and damage to the engine's surroundings must be kept to a minimum. No other plant items should be removed from the site.

Road access to the site is also crucial to its future preservation, and if improvements are made to the track in the course of removing the engine, it should not be left in a condition that will facilitate entry by casual visitors. It is in the interest of the site that future access remain difficult.

The removal and conservation of the engine should not be undertaken lightly; it should be clear that this is a public historical resource and its custodianship imposes responsibilities.

These considerations should be spelled out in an agreement with the party proposing to remove the engine before any work commences.

I recommend:

- That the engine remain the property of Tasmania Development and Resources wherever it is located in future; its future custodians acknowledge that it is significant in the history of technology, and agree to take responsibility for it, make it accessible to the public and conserve it to a high professional standard.
- That the engine's custodians may not dispose of the engine in any way without the approval of Tasmania Development and Resources, and will submit an annual report on the engine's condition to Tasmania Development and Resources.

- That the removal of the engine from the site be subject to a plan setting out the method of removal, submitted in writing by the proponents and approved by Tasmania Development and Resources before any action is taken on the site.
- That nothing but the Crossley engine and its attached flywheel, beltwheels and other necessary operating parts be removed from the site (generally the mechanism shown in the plan on page 7 of this report).
- That the engine's concrete foundations and tie-down bolts be left intact when the engine is removed.
- That removal of the Crossley engine be undertaken with the absolute minimum of disturbance to the other mining relics on the site and the natural environment.
- That the process of removal do nothing to facilitate future vehicle access to the site by other persons in future.
- That the Crossley engine foundations and other mining relics on the site be left undisturbed in future.

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November 1995**

**CROSSLEY ENGINE, DEVONPORT MINE, BLACK BLUFF**

## PROJECT AIM

To record the Crossley engine and associated features located at the Devonport Mine, Black Bluff

## PROJECT JUSTIFICATION

The Crossley engine is to be relocated and restored as a working exhibit at a steam Museum. The engine is has high technological significance and is in danger of vandalism or uncontrolled scavenging if it remains at the Devonport Mine. For these reasons, the Mining Heritage Committee has decided that it is best removed to a safe location. Before this removal can proceed, a detailed recording of the engine in its context needs to be undertaken.

## PROJECT DESCRIPTION

The project will require :

- Background research to establish the history of the Devonport Mine and the Crossley engine.
- Field examination of the site and a detailed recording of the machine in its context.
- Documentation of the site on standard THASC forms including preparation of a plan of the site which focuses on the Crossley engine and its associated features.
- Preparation of a report which summarises the results of the project and documents methods, results and provides a photographic record as well as written descriptions of the engine in its context.

The time break down for the above tasks should be approximately

Background research 1 day

Site recording 1 day

Report production 1 day

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Total 3 days

An assistant from Industry, Safety and Mines will be available to assist in the field recording.

An assistant from Industry, Safety and Mines will be available to assist in the field recording

APPENDIX A: Project Brief

#### SPECIAL REQUIREMENTS

- The consultant will provide six copies of the report to the Division of Industry Safety and Mines.
- The report is to contain standard information on authorship, project background, methodology, results, references and a copy of this brief.
- The report is to contain a detailed photographic record of the engine *in situ* as well as documenting all associated features by means of a written description and a site plan with an emphasis on the Crossley engine.
- All photographs are to become the property of the Division of Industry Safety and Mines. Copies may be kept by the consultant
- There is no restriction on the use of research data provided the source of the data and funding is quoted.

The project will be coordinated by Carol Bacon, Industry, Safety and Mines.

#### BUDGET

3 days @ \$60.00 per hour	\$1440.00
Travel/accommodation	\$ 400.00
Report production, photocopying phone, postage,	\$ 160.00
TOTAL	\$2000.00

Payment of the total will be upon submission of the report and associated documentation.

The project is to be completed by 30 November 1995

## APPENDIX B: Index to Site Photographs

### DEVONPORT MINE      Film 1    Colour Prints

27 October 1995    Peter Bell      (Mamiya 645 / Fuji Reala)

Neg No.	Image
1	View south to Cradle Mountain from above Tiger Plain (accidental exposure)
3	View south to Cradle Mountain from ridge above Tiger Plain
4	Track across Tiger Plain
5	Track across Tiger Plain
6	View south to track descent into Devonport Creek
7	Looking back up track descent into Devonport Creek
9	View south over Devonport Mine site, intact building at right
10	General view of Crossley engine from north
11	General view of Crossley engine from northeast
12	Crossley engine from southeast
13	Crossley engine from west-southwest
15	Crossley engine from northwest (before vegetation cleared)
16	Crossley engine from southwest
17	Crossley engine from northeast
18	Half of flywheel beside track, c. 20m northeast of engine

### DEVONPORT MINE      Film 2    Black & White Prints

27 October 1995    Peter Bell      (Mamiya 645 / Kodak TMX)

Neg No.	Image
41	Half of flywheel beside track, c. 20m northeast of engine
42	Cameron steam pump on track, c. 20m northeast of engine
43	Detail of Cameron steam pump

## APPENDIX B: Index to Site Photographs

### Film 2 continued

44	Welded steel hopper beside track, c. 20m northeast of engine
45	General view of plant items near track, c. 20m northeast of engine
46-47	General view of Crossley engine from north
48	Crossley engine from north
49	Crossley engine from northwest
50	Detail of maker's name: "Crossley Brothers Limited Manchester"
51	Crossley engine from southwest
52	General view of Crossley engine from east
53	Crossley engine from southeast
54	Crossley engine from northeast
55	General view of Crossley engine and mill site from northeast

### DEVONPORT MINE      Film 3    Black & White Prints

27 October 1995    Peter Bell      (Mamiya 645 / Kodak TMX)

Neg No.	Image
41	Steam pump pressure chamber (?) in creek bed east of Crossley engine
42	General view of Crossley engine from west
43	Crossley engine from northwest
44	Small machinery parts lying east of Crossley engine
45	Grindstone in creek bed south of Crossley engine
46	Muller from grinding pan in creek bed southwest of Crossley engine
47	Interior of grinding pan, showing shoe or die
48	Detail of maker's name plate on Forwood Down grinding pan

## APPENDIX B: Index to Site Photographs

### Film 3 continued

49	Forwood Down grinding pan from east
50	Lister one-cylinder oil engine on mill site
51	Looking from top of mill site northeast toward Crossley engine
52-53	Two-cylinder steam winding engine near mouth of adit
54	Looking down mill site from near site of ore bins
55	Entrance to mine adit

### DEVONPORT MINE Film 4 Black & White Prints

27 October 1995 Peter Bell (Mamiya 645 / Kodak TMX)

Neg No.	Image
41	View from grinding pan north toward Crossley engine
42	View from Crossley engine southwest toward mill site
43	Crossley engine from northeast
44	View south over Devonport Mine site, intact building at right
45	View south to track descent into Devonport Creek

### DEVONPORT MINE Film 5 Colour Transparencies

27 October 1995 Peter Bell (Minolta 5000 / Fujichrome)

Mount No.	Image
1	View south down track descent into Devonport Creek, Cradle Mountain in distance
2	Half flywheel beside track, c. 20m northeast of engine
3	Cameron steam pump on track, c. 20m northeast of engine
4	Detail of Cameron steam pump
5	Welded steel hopper beside track, c. 20m northeast of engine

## APPENDIX B: Index to Site Photographs

- 6 General view of plant items near track, c. 20m northeast of engine
- 7 General view of Crossley engine from north
- 8 Crossley engine from north
- 9 Crossley engine from northwest
- 10 Detail of maker's name: "Crossley Brothers Limited Manchester"
- 11 Crossley engine from southwest
- 12 General view of Crossley engine from east
- 13 Crossley engine from northeast
- 14 General view of Crossley engine and mill site from northeast
- 15-16 Steam pump pressure chamber (?) in creek bed east of Crossley engine
- 17 Crossley engine from northwest
- 18 Small machinery parts lying east of Crossley engine
- 19 Grindstone in creek bed south of Crossley engine
- 20 Muller from grinding pan in creek bed southwest of Crossley engine
- 21 Interior of grinding pan, showing shoe or die
- 22 Detail of maker's name plate on Forwood Down grinding pan
- 23 Forwood Down grinding pan from east
- 24 Lister one-cylinder oil engine on mill site
- 25 View from mullock dump southeast across Lea River valley to Stormont Range
- 26 Looking down mill site toward Crossley engine from near site of ore bins
- 27 Two-cylinder steam winding engine near mouth of adit
- 28 Looking down mill site from near site of ore bins
- 29 Entrance to mine adit
- 30-31 View from grinding pan north toward Crossley engine
- 32 View from Crossley engine southwest toward mill site
- 33 Looking north up track climb out of Devonport Creek
- 34 View south to track descent into Devonport Creek