

10113

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Hughes Pump House, Verran Tce, Moonta, SA

Photographs:

 View Photo Database Record

List: Register of the National Estate

Class: Historic

Legal Status: Registered (21/03/1978)

Place ID: 6777

Place File No: 3/06/044/0006

Statement of Significance:

Early remnant of the once prosperous copper mining industry in Moonta

(The Commission is in the process of developing and/or upgrading official statements for places listed prior to 1991. The above data was mainly provided by the nominator and has not yet been revised by the Commission.)

Official Values: Not Available

Description:

A square Cornish type of pumphouse built of fossiliferous limestone quarried at Book's Plains. Erected to house the Cornish pumping engine to de-water Hughes shaft. The engine had a single cylinder 60in in diameter with a 10ft stroke made by Harvey and Co, Hayle, Cornwall in 1863. Bab type engine with no flywheel or crankshaft. It worked continuously for sixty years without major replacement.

History: Not Available

Condition and Integrity:

Declared a historic relic 23 September 1971.

Location:

Verran Terrace, Moonta Mines, Moonta.

Bibliography:

PHOTOGRAPH. COMMEMORATING THE CENTENARY OF THE CORPORATION OF MOONTA.

Project Completion Report. National Estate Grants Program 1990/91. Hughes Pumphouse, Moonta - Stabilisation.

Hosking, Sam. 1988-89. National Estate Grants: Hughes Engine House. NEGP Report.

Report Produced: Tue Sep 7 15:36:57 2004

former Hughes Pump House and Stack**CC:144****DESCRIPTION**

Hughes Pump House is a tall building of limestone rubble in a characteristic Cornish design. It is massively built, its bob wall which supported the pump beam nearly two metres thick. The building is unroofed and all its machinery has been removed. Beside it are the open shaft with the cistern and balance beam foundations intact, and the boiler smokestack is still standing – the only one remaining at Moonta Mines. Since the place was entered in the State Heritage Register, the shaft has been stabilised and the ground level around the enginehouse has been lowered by the removal of tailings.

STATEMENT OF HERITAGE VALUE

Hughes Pump House is of very great technological significance as one of only eight surviving Cornish enginehouses in South Australia. These structures were at the very heart of the Cornish mining technology which dominated the South Australian base metal industry in the boom years of the 19th century.

HISTORY

When underground mining commenced at Moonta, the company quickly found its operations hindered by a copious flow of water into the workings. In March 1862 the directors ordered a 60 inch pumping engine with three boilers and the necessary pitwork from Harvey and Coy of Hayle, Cornwall. The engine arrived at Wallaroo in February 1863, and was installed on a new shaft dug to drain the mines, named after Walter Watson Hughes, the principal shareholder. The enginehouse was built by John Beaglehole and completed by March 1865. Hughes pumping engine was officially started by newly-appointed Captain Henry Hancock on 2 September 1865.

Hughes engine remained in commission as the principal pumping engine of the Moonta Mines for 58 years until the mines closed in 1923. Cornish pumping engines were designed to operate at slow speed and low pressure for very long periods, and as far as is known, Hughes engine was never stopped between 1865 and 1923. This was the longest period of service of any Cornish pumping engine in South Australia.

Hughes engine had excess power for its task, and in 1868 it was connected by flat rods to the pump on Taylors shaft, about 300m to the north. Then in 1873 it was also connected to the pump in Duncans shaft. For a time the engine was pumping from three shafts, the deepest of which was down nearly 800m below ground.

Moonta Mines closed in 1923 because of the falling copper price. Hughes engine was stopped on 25 September 1923. The engine and pump were broken up for scrap in 1925.

References

Greg Drew and Jack Connell, *Cornish Beam Engines in South Australian Mines*, Department of Mines and Energy, Adelaide, 1993

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Hughes Pump House
Moonta by Collwell
and Finch, 1973

30/27/03

Collwell & Finch - 1973

HUGHES PUMP HOUSE, Moonta

Copper was discovered at Moonta on Yorke Peninsula in 1861 by a shepherd, Patrick Ryan, in the employ of Walter Watson Hughes, owner of the "Wallaroo" sheep run.

This discovery, together with that of another shepherd James Boor in 1859 on the same property, brought thousands of Cornish and Welsh miners to the area and by the late 1860s the towns of Kadina and Moonta and the port of Wallaroo were firmly established.

Their history was marked by several highlights, such as the linking of Kadina to Adelaide by telegraph in 1862; the building of the first jetty at Wallaroo in 1861; the construction of the Wallaroo-Kadina railway in 1862 and the Wallaroo-Moonta railway in 1866; and the building of the first smelter at Wallaroo in 1861.

Although Yorke Peninsula copper mines were extremely profitable, considerable expense was incurred in keeping underground workings free of water.

This was usually done by Cornish pumping engines similar to the one installed on the Hughes shaft at Moonta, which ran around the clock from 1865 until the mine closed in 1923.

The engine, manufactured by Harvey and Co., Hayle, Cornwall, had no flywheel and no crankshaft and was described as a "single-acting draught engine;" steam entered the top of the cylinder, pushed the piston down, and the weight of the pump rods at the outer end of the "Bab" brought it back again, like a see-saw.

The engine house was built in 1864-65 of local fossilised limestone by John Beaglehole, and small sea shell fossils can still be found in some of the stones.

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References

Greg Drew and Jack Connell, *Cornish Beam Engines in South Australian Mines*, Department of Mines and Energy, Adelaide, 1993

Abandoned mines in SA — addressing the problem



Greg Drew (Senior Geologist, Abandoned Mines Project, Office of Minerals and Energy Resources)

Introduction

Mining has occurred in SA for more than 150 years, resulting in at least 4500 mines and quarries that were abandoned after the resource was exhausted. Most of these sites have not been rehabilitated and, as a result, the responsibility and liability has reverted to the Crown or to private owners. Today, mining legislation ensures a more responsible attitude and mining operations have a requirement to plan for orderly mine closure and rehabilitation.

In SA, a significant number of abandoned mines are within a two-hour drive of Adelaide. Many other mines were once considered remote but the now common use of four-wheel-drive vehicles has made these sites more accessible. There has also been an increased interest in their aesthetic and mining heritage value, and many towns promote historic mine sites as tourism features.

Abandoned mine sites pose considerable dangers to landowners and the general public, particularly if they are isolated and/or difficult to access. Some of the common physical hazards associated with abandoned mines include:

- Mine openings — falling down vertical or near-vertical openings is the most common accident in abandoned mines. Even if filled, shafts can present hazards due to instability of fill.
- Quarry faces — steep quarry faces present dangers from falling from the edge or being hit by loose rock dislodged from unstable faces.
- Underground rock falls — horizontal adits may be unstable and collapse at any time.
- Unsafe structures — unstable walls, buildings, tanks, floors, protruding bolts etc. create considerable risk.
- Waste dumps — walking on the surface of various mine and quarry dumps may cause falls due to the unstable nature of the material.



Main shaft of the Menzies Barossa Mine before safety fencing was installed. (Photo T15406)



Hughes Shaft, Moonta Mines, before remediation work. (Photo 44039)



Hughes Shaft, Moonta Mines, after remediation work. (Photo 44040)

Strathalbyn Mine

Historical background

Copper and silver-lead ore was discovered and mines opened on two properties ~2 km north of Strathalbyn, 50 km southeast of Adelaide, in 1846 and 1848 (Fig. 1). In 1849, the Strathalbyn Mining Co. was formed in London and purchased the two mines. Work commenced under Captain J.B. Pascoe, and machinery and a smelter were erected. A number of shafts were sunk on the incline following the lode, but in 1850 the company sank a new vertical shaft to be used specifically for pumping. The ore, however, proved difficult to smelt and work ceased by late 1850, when the company went into liquidation. The mine reopened in 1854 and new ore dressing machinery was brought from Cornwall. A new shaft was sunk but the ore again presented difficulties and work ceased by 1856. The mine was reopened again in 1906 and the old workings cleared out. Winding equipment was erected and the workings extended, but operations ceased in 1907.

The SA Department of Mines inspected the site in 1913 and identified six underlie shafts, which were all open (Jones, 1913). Two shafts in poor condition were located on what is now thought to be the property where the accident described below occurred. The last inspection of the mine by the Department was in 1953, when it was reported that all workings had been filled. Small clearings indicated three main areas where the lode was worked. Using the historical data, a longitudinal section of the mine was produced at that time, showing six shafts along the lode horizon over a length of ~1 km (Fig. 2; Cochrane, 1954). The land was subdivided into large allotments in the 1970s and further filling of the shafts has been occasionally required due to subsidence.

Mine hazard

The Strathalbyn Mine gained prominent media attention in February 2001 when a landowner fell more than 20 m down a

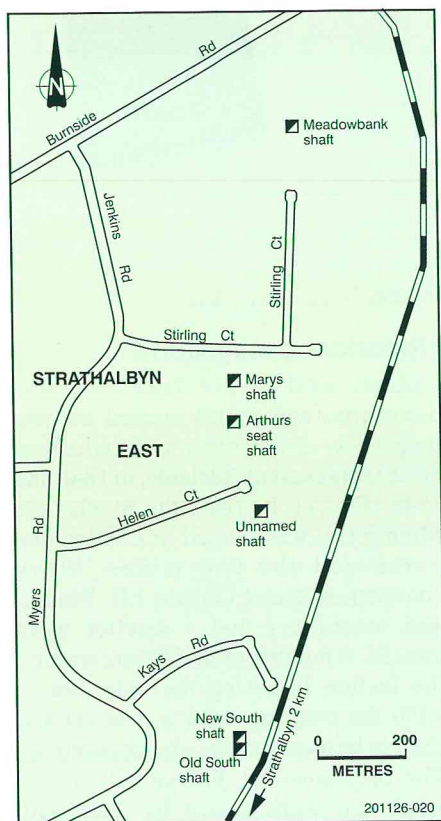


Fig. 1 Mine shaft locations in the vicinity of Strathalbyn.

previously unknown and covered vertical shaft less than 50 m from her house. She waited more than two days on a ledge, knee-deep in water before being rescued. The shaft had been covered with timber and a small amount of soil.

Following the landowner's rescue and, in the interest of public safety, PIRSA carried out a program to identify all shafts associated with the Strathalbyn Mine. Ground penetrating radar (GPR) proved effective in locating two filled shafts within ~50 m of the accident site (Fig. 3). A total of seven shafts were located, all but one of which could be correlated with the historic data. These shafts are:

Old South Shaft

Filled in the early 1980s and showed small amount of subsidence.

New South Shaft

Located 17 m north of Old South Shaft. Filled in the early 1990s and showed no subsidence.

Old and New South Shafts were in good condition when inspected in 1913 and are thought to be the area worked for lead and zinc during the last period of mining activity.

Unnamed shaft

Collapsed during clearing of the site in the late 1970s and backfilled. There was no evidence of any subsidence.

Arthurs Seat and Marys Shafts

Two filled underlie shafts with no surface evidence were located using GPR near the accident site. Other evidence, including the abundance of slag and the nearby vertical shaft, indicate that this area was the site of the initial copper mining activity during 1848–50.

Pump Shaft

This shaft was the site of the accident and was not identified in the previous Department of Mines inspections, suggesting that it was covered prior to 1913. However, a vertical pump shaft is mentioned in contemporary newspaper references. The shaft is vertical, ~2x3 m, and remained hidden by shallow cover until February 2001. The landowner fell 14.4 m to water level then plunged a further 7 m below the water.

Meadowbank Shaft

This shallow shaft was filled in the 1970s and shows no evidence of subsidence. It belongs to the Meadowbank Mine.

During investigation of the Strathalbyn Mine incident, one of the major issues that arose was access to historical information on the mine site. While information on the site was available, it was held in a number of different sources and relied in some cases on the knowledge of several individuals. Information on the specific shaft was not readily available. Clearly there is a need to develop a comprehensive database of all abandoned mines and associated historic records in SA to provide efficient and timely access to this information.

Abandoned Mines Project

PIRSA has commenced the long-term Abandoned Mines Project to catalogue and monitor abandoned mine sites in SA and investigate any risk they pose. In the past, efforts to identify and characterise abandoned mine sites have not been well coordinated, some were duplicative and some collected different data. This has resulted largely from differing objectives. Two systems are currently used to find information on abandoned mines.



Pump Shaft at the Strathalbyn Mine, site of the February 2001 accident. (Photo 48419)

MINDEP_SA Database

MINDEP was developed as a mineral resource inventory to be of benefit to a wide range of people in the geological community, including academics, and exploration and Departmental geologists. Data stored in MINDEP comprises basic information on current and abandoned mines, and mineral occurrences including:

- mine name
- location
- brief history
- commodities
- production
- details of workings
- references.

It also contains significant interpreted information of interest to exploration geologists such as:

- genetic classification
- mineralisation description.

About 1500 mines and mineral occurrences have so far been entered into MINDEP and the locations plotted in a GIS database. However, MINDEP was not intended as a resource tool for the management of abandoned mine sites, and does not contain information such as:

- known hazards
- level of protection
- safety inspection reports
- remedial action required
- photographs of the site
- related historical records.

MINE SUMMARIES Database

This database allows searching of summary cards on 4300 mines and quarries that existed prior to the 1970s, using the following fields:

- mine name
- commodity

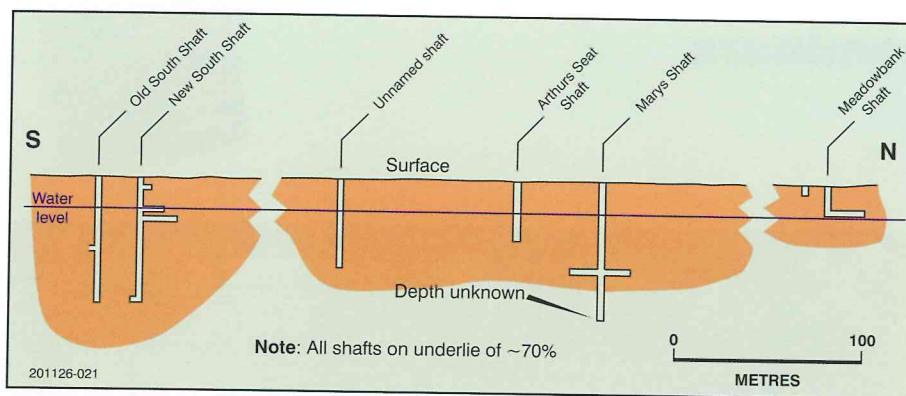


Fig. 2 North-south longitudinal section of the Strathalbyn Mine (reconstructed from Mining Reviews and newspaper reports).

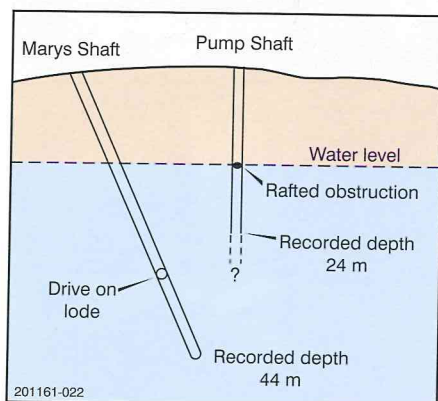


Fig. 3 Probable diagrammatic cross-section through Pump and Marys Shafts.

- mineral field
- Hundred and section
- map sheet.

The cards, which are available for viewing as scanned images via the database, contain summary information on:

- history
- geology
- mine workings
- historic records.

Mine Location Plans show the location of mines on 1:50 000 map areas in the Adelaide region. Mineral Exploration Index Series (MEIS) plans show the location of mines on 1:250 000 map areas. The Mine Summaries Database is used in conjunction with the mine location plans to quickly identify the location and details of historic mines for land owners, local and State government, and the public.

In addition to these mine databases, PIRSA holds a considerable amount of information on abandoned mines in a number of other sources, including the following.

Mining Reviews

Mining Reviews contain reports on the work carried out by the Department of Mines on development of the State's mineral resources between 1904 and 1992. Up to the 1950s, this series was used extensively for the reporting of mining activities and mine inspections. Mining Reviews are available as scanned images. They provided the major source of information on the Strathalbyn Mine.

Report Books (RBs)

RBs contain the results of investigations by Departmental officers into the geology, hydrogeology and mineral resources of SA. All post-1995 RBs are in digital form.

Plans

The Plan Collection contains a range of plans used in Departmental reports and publications, and various historical sets including Radium Hill and Moonta-Wallaroo. The collection exists in microfilm (up to 1980), hardcopy (1980-94) and digital formats (1994-present), and contains a significant number of abandoned mine plans and sections. More than 12 000 plans are available as digital images and can be viewed via the Plans Database.

Photographs

The Photographic Collection comprises the largest assemblage of historic mine photos in SA, as well as abandoned mine site inspection photos used in reports and publications. More than 12 000 photos are available as digital images and can be viewed via the Photo Database.

The database also contains information on a further 40 000 hardcopy images.

Newspaper cuttings

The newspaper cuttings contain articles from local newspapers on mining

activities in SA from 1840 to 1970. The cuttings up to 1900 contain many valuable details on mining including annual reports, mine manager's reports and other technical reports. In many cases newspaper cuttings contain the only recorded information on some early mines. Newspaper cuttings provided the only known information on the early operations of the Strathalbyn Mine, including the existence of the vertical shaft that caused the accident.

Tenement records

Mining tenement registers and related tenement plans contain information on various mining tenements. Current tenement details can be searched via the Mineral Registration Database, and locations are recorded on a GIS database. Records relating to tenements which existed before the *Mining Act 1972* are located at State Records.

As indicated, many of these records are already available as digital images. The Abandoned Mines Project is currently investigating the feasibility of scanning relevant historic records including reports, plans and newspaper cuttings. These images would be available for viewing through the relevant database (SAMREF or Plans).

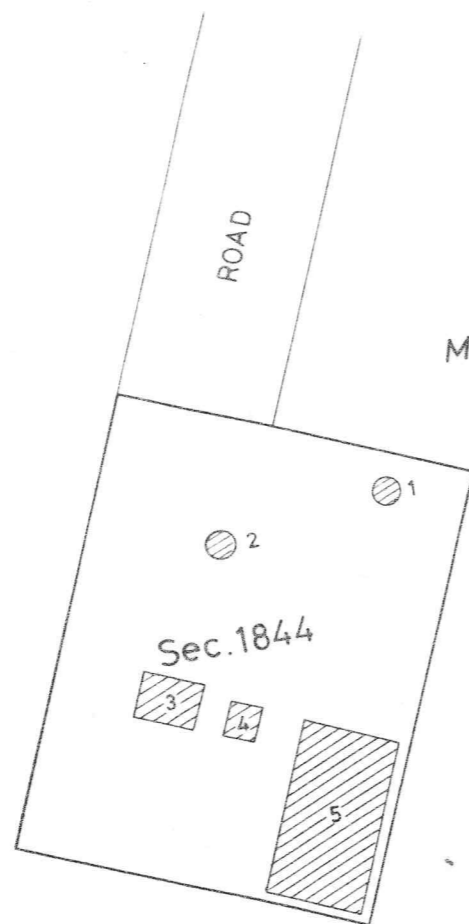
Conclusion

The initial aim of the Abandoned Mines Project is to produce a comprehensive database of all abandoned mines and associated historic records that will include the location and risk assessment of each site. This database will help develop an understanding of the safety and environmental impact caused by abandoned mines in SA. Solving the problem will require development of a funding mechanism for securing and rehabilitating abandoned mine sites in conjunction with prioritising the most important sites for remedial work.

For further information contact Greg Drew (ph. 08 8463 3270).

References and further reading

- Cochrane, G.W., 1954. Strathalbyn Mine. *Mining Review, Adelaide*, 97:95-98.
- Jones, H., 1913. Strathalbyn copper and silver-lead mine. *Mining Review, Adelaide*, 18:33-35.
- SA Gazette and Mining Journal, 22 March 1849.
- SA Gazette and Mining Journal, 10 August 1850.



M.S. 931

1. STANDPIPE
2. CHIMNEY STACK
3. PUMP HOUSE
4. SHAFT
5. OLD ORE FLOOR

SCALE 1:1 000

137° 30' E

LOCALITY

SPENCER GULF

WALLAROO BAY

WALLAROO

KADINA

Moonta Bay

Port Hughes

MOONTA

HUGHES PUMP HOUSE AND CHIMNEY

HUNDRED OF WALLAROO

ABORIGINAL AND HISTORIC RELICS PRESERVATION ACT

HISTORIC RESERVE



PROCLAMATION
GAZ. 23. 9. 1971

AREA
0.280 0 ha.

36

