

# APPENDIX 3: GODDEN MACKAY LOGAN REPORTS

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## 1.0 Introduction

### 1.1 Preamble

Catherine Hill Bay has been the site of coal mining from 1873 until 2002 when mining ceased. In 2004 Rosecorp Pty Ltd, one of the joint owners of the last working mining lease, commissioned EJE Architecture (EJE) to prepare a new Conservation Management Plan (CMP) for the former Wallarah and Moonee Collieries, Catherine Hill Bay, New South Wales.<sup>1</sup> Following its review of the CMP, the NSW Heritage Office requested that a more specifically industrial heritage assessment, with some assessment of historical archaeology, be included in the CMP. EJE commissioned HLA-Envirosciences Pty Ltd (HLA) in late 2004 to undertake such an assessment of the coal preparation plant, bunkers, jetty and mine manager's house.

Subsequently, Godden Mackay Logan was engaged in February 2005 to expand the HLA work to cover the surface workings at Wallarah and Moonee Collieries, to assist in placing the historical and physical evidence on the whole site into a broader industrial heritage context and to make a brief comment on a report on Aboriginal heritage. This report is intended to supplement the CMP prepared by EJE Architecture, and consequently draws heavily from the material present in the CMP report. Accordingly, this report should be considered in conjunction with both the previous HLA report and the CMP.

### 1.2 Nature of this project

This report addresses in part the following issues identified in the NSW Heritage Office review of the CMP:

*Investigate the Aboriginal and non-Aboriginal archaeological context of the site and include an archaeological zoning plan in the CMP.*

*Undertake a fabric assessment of the elements of both sites. Include the built environment, movable heritage and other elements associated with the industrial processes.*

*Undertake a more comprehensive comparative analysis. A determination of 'State' significance requires an understanding of like sites across the state of NSW.*

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*Review the assessment of significance in light of the available information, the age of the items that make up the site and the contribution of the site to mining in NSW.*

Specifically Godden Mackay Logan were engaged to:

- undertake a physical survey of the Moonee and Wallarah collieries;
- prepare an industrial archaeological assessment of the two sites based on the survey results and incorporating existing history and assessment already presented in the CMP;
- assist with reviewing the Navin-Officer Aboriginal heritage report; and
- assist with providing comparative information on other collieries and similar structures by editing the CMP text to incorporate industrial heritage values, historical themes and comparative analysis.

This report and the site inspection were conducted with the knowledge that mining operations have ceased and some removal and demolition of machinery and structures has already taken place on the site in order to remove contamination and hazardous building materials, and to make the study area safe.

### 1.3 Study Area

The study area is as set out in the CMP and is basically a sub-set of the broader Catherine Hill Bay locality.<sup>2</sup>

Walarah and Moonee Collieries are located at the south eastern corner of the Lake Macquarie region, adjacent to the village of Catherine Hill Bay, New South Wales. Wallarah Colliery is located on the eastern shore of Crangan Bay in Lake Macquarie and comprises the mine portal and mining infrastructure, support buildings and structures on the western side of the site between Pacific Highway and Cragan Bay. This site was formerly known as Cranagan Bay Drift.

Moonee Colliery is located on the eastern side of the Catherine Hill Bay site, close to the coast near the village of Catherine Hill Bay and accessible via the Pacific Highway. It comprises the Moonee mine portal opening, support buildings and infrastructure. The Moonee Colliery is

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immediately to the south west of the Catherine Hill Bay Coal Preparation Plant

For the purposes of the comparative analysis, the whole study area is discussed.

#### 1.4 Author Identification

This report has been prepared by Dr Iain Stuart, Senior Heritage Consultant, and Karina Waddell, Heritage Consultant. Lisa Newell, Senior Associate, has reviewed and provided input into the report. Professor Richard Mackay, AM, Director of Godden Mackay Logan, reviewed the report.

#### 1.5 Methodology

This review has assessed the physical condition of the industrial machinery, structures and equipment at Wallarah and Moonee Collieries and formulated statements of significance for the relevant items based on the most up-to-date NSW Heritage Office criteria for assessing significance.

This report also draws on the *Walarah & Moonee Collieries Conservation Management Plan*, prepared by EJE Architecture, February 2004, and the *Catherine Hill Bay Historical Archaeological and Industrial Heritage Report*, prepared by HLA-Envirosciences Pty Limited, January 2005.

The methodology used in this report is consistent with the principles set out in James Kerr's *The Conservation Plan*, published by the National Trust of Australia, and the guidelines to the *Burra Charter* of Australia ICOMOS. The assessment of heritage significance follows the methodology set out in the *NSW Heritage Manual*, published by the NSW Heritage Office.

#### 1.6 Terminology

In general, this report adopts no special terminology except where pertaining directly to the processes and equipment associated with coal mining. As this terminology is specific to the subject matter and is widely understood by those familiar with the processes, no particular glossary of terms is included in this report.<sup>3</sup> A glossary of terms is provided in Section 2.3 of the *Walarah & Moonee Collieries Conservation Management Plan*, prepared by EJE Architecture, February 2004, to which this report is expected to supplement.

Where there are terms that might be considered unusual, definitions are supplied within the text. Terminology relating to heritage assessment

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processes is consistent with the *NSW Heritage Manual* and the definitions contained in the Burra Charter.

### 1.7 Limitations

The industrial archaeological assessment carried out during the field study was for surface indications and buildings only. Potential underground sites/relics and archaeological survey for Indigenous heritage was not undertaken for the purposes of this study.

Some of the buildings inspected for this report were in poor condition and have been abandoned. In addition, some demolition of structures on the site has already been undertaken for safety and remediation purposes. Some demolition was already underway when the study team undertook the field survey. Consequently, only areas and fabric that were safely accessible were examined. No machinery was dismantled or operated and the operational status of machinery has not been explored in this study. No destructive intervention of fabric was carried out.

Historical research in this report has been drawn from the *Wallarrah & Moonee Collieries Conservation Management Plan*, Catherine Hill Bay, prepared by EJE Architecture for Rosecorp in February 2004. No additional historical research was carried out for this report.

This report does not consider statutory issues, management or conservation issues.

### 1.8 Acknowledgements

Godden Mackay Logan would like to thank:

- Barney Collins and She Headly from EJE;
- Rosemary Melville from Hunter History Consultants; and
- Ian McNichol of Asquith De Witt for assistance during the site inspection at Wallarrah and Moonee Collieries.

### 1.9 Endnotes

<sup>1</sup> *Wallarrah & Moonee Collieries Conservation Management Plan*, Catherine Hill Bay, prepared by EJE Architecture, February 2004.

<sup>2</sup> Ibid p 4.

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<sup>3</sup> Generally terminology follows that in Ritchie, Neville, and Ray Hooker 1997, *An Archaeologist's Guide to Mining Terminology, Australasian Historical Archaeology*, Vol. 15, pp 3-29.

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## 2.0 History

### 2.1 Preamble

This site history is a summary based on that presented in the CMP. Much of the history is quoted directly from the CMP. It is included for the purposes of providing some historical context for this report.

### 2.2 New Wallsend Coal Mining Company (1874-1876)

Coal mining at Catherine Hill Bay began in 1865 when Jacob Montefiore and Thomas Hale took out a mining lease on 265 acres (Lot 20). At the same time, Robert Saddington and Charles Parbury acquired a total of 635 acres in the area (Lots 17, 18 and 19). Early in 1873, further exploratory work was carried out at Catherine Hill Bay by a Mr Pembledon, who then suggested the floating of a company to exploit the coal resources of the area. Little is known of Pembledon, but it was Thomas Hale who promoted the Catherine Hill Bay coal, displaying samples in his Sydney office in mid-1874. The company floated was to be known as New Wallsend Coal Mining Company. Hale became Managing Director and his partner, Jacob Montefiore, became Chairman of the Board of Directors.<sup>1</sup>

In July 1873, the directors reported that under the supervision of manager Anders de Flon, a seam was being worked close to the water's edge at the south end of the bay and a pile jetty was under construction, running 'right into the face of the workings'. Transport of coal to the Sydney market by sea was crucial for the success of the new venture as previous attempts to mine coal in the Lake Macquarie area had failed because of difficulties in moving cargoes through the channel at the Lake's entrance at Swansea.<sup>2</sup>

The first shipment of coal from the New Wallsend Coal Mine was loaded from the jetty into the steamer *Tasmania* on 23 December 1873. The mine worked a 14 foot seam which, in December 1873, extended 150 feet in a southerly direction, with bords to the east and south east. By June 1874 it was producing about 300 tons per week and provided employment for 45 miners and about 20 wheelers and labourers. Two tunnels were driven into the face of the cliff, one containing two 20 horse power engines and Cornish flue boilers, one for draining the mine and one for haulage purposes. By 1875 between 60 and 70 miners were employed, producing from 800 to 1,000 tons of coal weekly, and the town possessed 'indications of advancing civilisation'.<sup>3</sup> Within a few months of establishing the mine, a house had

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been built for the manager and a number of 'good weather-board shingled cottages' had been completed for the workmen, with several more under construction.<sup>4</sup>

By June 1874 there were about twenty small, substantially built houses of uniform design and several tents in the village, with a butchers shop and store.

A severe blow to the company occurred in July 1875 with the loss of its steamer, the *Susannah Cuthbert*, en route to Sydney with a full cargo of coal. Production at the mine began to slacken off and in September the miners faced a reduction in wages. According to the *Miners Advocate*, the directors 'could not possibly have expected the men to accept it, and to our mind it looks like a quiet way of shutting up the colliery for a time.'<sup>5</sup> In February 1876, rumours began to spread that the pit was about to be closed and de Flon announced that less than a dozen men would be employed until the company enlarged the jetty and made enough skips to hold 200 tons of coal so that vessels could be loaded more economically. In March 1876 it was announced that the New Wallsend Coal Mining Company had been established with insufficient capital, and was unable to continue working the mine. Operations were suspended and the company wound up.<sup>6</sup>

### 2.3 The Wallarah Coal Company

The Wallarah Coal Company was formed in London in September 1888 with a capital of £100,000. The Board of Directors included Charles Parbury, Director of the Union Bank of Australia, who had been a director of the company which established a coalmine at Lake Macquarie in 1879. A local Board based in Sydney comprised the Hon Samuel A Joseph, John De Villiers Lamb and Robert Saddington. Joseph had been a shareholder and director of the New Wallsend Coal Company, and Lamb and Saddington had been partners with Parbury in the Lake Macquarie mining venture.

After receiving a favourable report from an independent expert, Thomas Parton, the Wallarah Coal Company purchased 1200 acres at Catherine Hill Bay, which had been offered for sale by Messrs Parbury, Saddington and Lamb. The land comprised Lots 16, 17, 18, 19 and 20 of Wallarah Parish, bounded on the west by Lake Macquarie and on the east by a three mile ocean frontage.

Parton was a mining engineer, a Fellow of the Geological Society and a past president of the South Staffordshire and East Worcester Mining

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Institute. He saw great potential in the Catherine Hill Bay site in terms of coal production and also spoke highly of the 'vast supplies of mining timber available on the estate'. Parton was also attracted to the site by its sheltered bay, which would favour the construction of a jetty, thereby allowing coal to be exported by sea.

Parton's first task was the selection of a site for the colliery. He decided to tunnel in on the No. 1 or upper seam, at a point about two and a half miles north east of the bay on a hill, some 250 feet above sea level. Having made this decision, plans could be made for the construction of a railway line to carry coal to the jetty where it would be loaded onto ships for transport to various destinations. Another early project was the erection of a sawmill to provide timber for railway sleepers, buildings and pit props, using timber on the estate.

Crucial to the success of the Wallarah venture was a jetty, for the initial setting up of the mine and associated facilities and then for the transport of coal. With this in mind, the London investors secured a special lease 'for the purpose of a jetty on piles' in June 1888. As soon as the company was formed in the following September, a tender from Atlas Co was accepted for shoots at the jetty, and authority was cabled from London for the commencement of construction at a site near that of the earlier structure built by the New Wallsend Company.<sup>7</sup>

While the location for the jetty was selected because it was the most protected part of the bay, it was nevertheless an exposed and difficult construction site. As the bottom was nothing but rock, every pile used had to be fitted with an iron bolt at the end, which was drilled into the rock by divers. At the present time, this wharf runs out for a distance of 1,020 feet and some 40 feet yet remains to be accomplished.

In appearance, it is much like any other substantial wharf, except its great height, the planking being 30 feet above high water mark, so as to enable vessels of 3,000 tons to coal at the shoots. It is fitted with two shoots, which can be adjusted to suit the state of the tide or the size of the ship, and it is estimated that 1,000 tons of coal can be shipped in eight hours. On arriving over the receiver of the shoots, the bottoms of the railway wagons are opened and the coal rushes into the hold of the vessel, and as there is a double line of rails the full trucks keep on one set while the empties are taken away on the other.

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To protect the structures during heavy easterly gales, four large iron cylinders are to be sunk at the end, while near the shoots are two fenders connected with separate piles, so that the rolling of a vessel will not damage the main piles.

The depth of water at the shoots is from 25 feet to 35 feet at low water, and as this amount exists for nearly 600 feet, there is ample room for the largest steamer. During the recent heavy south easterly weather, the sea was breaking clean over the end of the wharf, but not the slightest damage was done. Mr. Parton considers that, when completed, it will be equal to the best shipping jetties on the south coast.

Hopper wagons were drawn along the jetty to the shoots by an endless rope of flexible galvanised iron, which passed over a vertical sheave at the shore end, and two horizontal sheaves at the ocean end. The rope was driven by a two-drum winch, powered by steam from a vertical boiler. Wagons were weighed on a Pooley weighbridge near the jetty before being discharged into the ship's hold.

Construction of the railway line was apparently uneventful, but transporting the locomotives and railway stock posed significant problems. Two locomotives had been ordered from Fowler & Co, Leeds, but as the only land access to Catherine Hill Bay was a bridle track from Swansea, Parton found it necessary to bring the locos to Sydney in pieces, then ship them to Catherine Hill Bay for assembly at the mine. As there was a gradual incline toward the wharf, the locos were 'unusually large'.

A similar procedure was adopted for the 100 hopper-shaped wagons, which were shipped from England in pieces and assembled at the site. Made with opening bottoms for loading the coal into vessels at the jetty, they were described as being 'exceptionally large, holding 12 tons of coal without being heavily topped'. When fifty additional wagons were landed at the site in January 1894, they were assembled in machine shops, which were also equipped to carry out a variety of repairs to ironwork.<sup>8</sup>

By January 1890 the railway had been completed and was described as 'one of the best laid lines in the northern district, the rails being of steel, weighing 70lb to the yard, while it is well ballasted and secured'.<sup>9</sup>

Mining occurred away from the location of the study area in a series of shafts, and the main activity in the study area was confined to the railway and the jetty. The coal when brought to the surface was screened

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in an area near the shafts and then loaded for transport to the loader at the jetty. The study area was also the site of the Manager's Residence and the accommodation for the Jetty Master.

The mining operations were further developed by the introduction of electric powered coal cutting machines which cut coal in the pillars while the boards were cut by hand. Four shoots were in service at the jetty and night loading was made possible by the provision of electric lights which were powered by a steam driven Siemen Bros 250 volt 0-20 amp and 400-475 rpm dynamo.

Widespread strike action was taken by most major unions in 1917 after the New South Wales Government organised volunteers to carry out the work of striking railway workers. The Government commandeered all coal mines in the state and recruited volunteers to work them. Strike-breakers were accommodated in camps near the mines and the largest camp, housing over 400 men, was at the Wallarah Colliery. Tensions in the town were high, as the strike-breakers lived and worked under police guard. On 30 August, two piers of the jetty were damaged by an explosion of gelignite, planted under cover of darkness. The Acting Premier, George Fuller, made arrangements for increased security by ordering the jetty area to be lit at night and sending additional police to act as guards.

This industrial disruption continued into the 1920s and 1930s as economic fluctuations impacted the coal industry as a whole. Miners launched industrial struggles to maintain and improve working conditions while the mine owners struggled to keep costs down.

In 1921 the jetty was described as being:

*1154 feet in length including approach spans constructed of hardwood framing on turpentine piles. Equipped with 4 movable coal shoots, 3 ton jib crane, vertical boiler and warping winch, 4 hand winches, 1 direct coupled engine and generator for lighting, store room, 3 inch water piping from tanks, windmill pump and tanks, boat davits and boat hawsers and moorings for (a) large steamers, (b) small steamers. Two railway lines on main jetty, one line on shore end. Valued at £35,000.<sup>10</sup>*

In 1929 the Chairman of the company reported that it had been necessary to close both mines 'owing to high prices that must be charged to consumers because of repeated strikes which had led, through the Arbitration Court, to increased production costs'. This was part of the industry wide

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dispute known as the Great Strike or Great Lockout. It coincided with the onset of the Great Depression, which undermined the strikers, as closing the mines reduced the owners' costs at a time when demand for coal had largely collapsed.

If there was an improvement in industrial relations during the early 1930s, it was virtually cancelled by the introduction of mechanisation into the Wallarah mine. It was one of the first in the district to become mechanised when Joy 8-BU loaders and Samson Arcwall coal cutters were installed in 1936. The introduction of mechanisation into the mining industry was often accompanied by stoppages, generally because of fears about the safety of the new equipment. The resulting unemployment was also a cause for unrest at Wallarah, where it was reported in 1938 that more than 150 miners had been unemployed for 12 months, largely due to the introduction of mechanisation into one of the mines.<sup>11</sup>

Wartime legislation also impacted on the profits of the Wallarah mine, which faced price control of coal as well as increasing labour and materials costs due to war time shortages. Production levels also declined during this period, causing the Directors 'a great deal of anxiety' with 1942 being a particularly dismal year. Despite recording a record low in the number of idle days, the output per shift declined in comparison to the previous year's figures. Output continued to decline over the next few years, partly due to war-time difficulties in obtaining replacement parts for a large number of minor breakdowns.

Improvements in mining conditions were introduced in 1945 to conform to the requirements of the *Coal Mines Regulation Act*. Underground transport was installed to convey miners to their working places. At Wallarah an electric storage battery type locomotive was installed, together with a battery charging station. The Act also required the provision of additional bath and change house accommodation which was erected according to specifications approved by the Government.

In 1946 the Commonwealth Government and New South Wales Government established the Joint Coal Board and the Coal Industry Tribunal to 'regulate, assist and rehabilitate the coal industry within the framework of private ownership'. Functions of the Joint Coal Board included the promotion of the welfare of workers in the coal industry, and the improvement of pit and community amenities.

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A feature of the Wallarah company's operations at that time was its ability to process seven sizes of coal at its screening plant, which was one of the largest in the Commonwealth. Further improvements were made in 1949 with the installation of a new mechanical unit, further increasing the daily output of the mine. A new bath and change house was also constructed at this time.<sup>12</sup> Improvements in the early 1950s included the construction of buildings at 'F' Tunnel and the installation of a new coal box and screening plant, fabricated and installed by Goninans. A new bath and change house at the jetty was also built at this time. Most of these facilities existed at the mine rather than within the study area.

In 1955, the Wallarah Coal Company Ltd shareholders accepted an offer from J & A Brown Abermain Seaham Collieries Ltd (JABAS). Five years later, JABAS merged with RW Miller and Caledonian Collieries to form Coal and Allied Industries. Shortly after acquiring the colliery, the new owners initiated a programme of complete modernisation, carried out in two stages. After improving the underground face units and haulage, and creating a new entrance into the mine, it was planned to install a new coal preparation plant, together with a conveyor system to transport coal from the new drift to the jetty.<sup>13</sup>

#### 2.4 Coal Loading Plant

In the second phase of the development programme, a new coal loading plant with a capacity of 1,500 tons per hour came into operation in 1964. It replaced the earlier system by which coal was carried by lorry to the screening plant at Middle Camp, then transported in 10 ton rail cars to the wharf and dumped into the ships.

Designed by Mr EF Hewett, the General Superintendent of Coal and Allied, the plant was built over two years by Hexham and Engineering, a subsidiary of Coal and Allied. It comprised the ship-loader, storage bin and washing, crushing and screening plant. The operation of the new plant was described in *Australian Coal, Shipping, Steel and the Harbour* in May 1964:

*The ship loader head is mounted on rails on the wharf and can load along the whole length of a ship. It has its own electrical power unit for movement and is controlled by a driver in a cabin in the head. The conveyor belt that brings coal along the wharf to the head is also mounted on rails and can be extended to 1,000 feet. It is retracted into a housing on the wharf when not working to protect it from the weather and the sea air.*

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*Coal is fed onto the conveyor from the 13,500 ton capacity storage bin sunk into the cliff above the wharf. Push-button controls in the ship-loader cabin can feed any one of six sizes of coal from compartments in the big bin on to the conveyor. Coal is brought to the new plant by lorry along a road a mile and three-quarters long, built by the company, from the company's Wallarah Colliery at Crangan Bay.*

*Lorries dump the coal into a concrete pit near the plant on the cliff top and a conveyor belt carries it into the washing plant. The coal is crushed after washing and then carried by conveyor belt to the screening plant, where it is graded into six sizes and delivered by belt to the 13,500 ton storage bin.<sup>14</sup>*

Following a severe cyclone in May 1974, the Catherine Hill Bay jetty was so badly damaged that it was necessary to cease loading operations. Early in 1975 the old jetty of timber decking and piles was replaced by one of concrete decking and steel piles.

## 2.5 Cranagan Bay (Later Wallarah) Colliery

The new drift, begun in 1957 near the eastern shore of Crangan Bay, met up with a set of existing headings underground. This drift, 1250 feet long and on a grade of 1 in 3.5, was driven both from the surface and underground.

Production from the new drive commenced on 30 April 1958, and in February 1959 two panels, about a quarter of a mile apart, were being worked with two units in each panel. Each unit comprised a Joy 11-BU loader and AB Dreadnought Arcwall coal cutter, two Joy 10-SC shuttle cars and Homac electric coal drills.

Coal was discharged from shuttle cars onto elevator conveyors which carried it to a 30 ton bin, from where it loaded on the main trunk conveyor. This conveyor, which was 36 inches wide and one mile long, was the first cable belt conveyor to be installed in Australia. Of Scottish design and construction, the belt was carried on steel wire ropes which provided the transmission of power throughout the conveyor, instead of the more usual system in which power was carried through the belt itself.

On reaching an elevated point on the hill east of the drift, coal was discharged from the cable belt onto a conventional conveyor which lifted it into a 200 ton circular steel storage bin. Trucks then carried the coal a distance of two miles to the coal preparation plant.

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A number of new surface buildings associated with the new drift were also constructed during this phase of development. They included:

- a new bath and change house, incorporating a lamp cabin, ambulance room;
- undermanager's office and surface crib room on the lower levels of the building;
- a transport haulage winch house;
- the cable belt drive head house;
- surface electricity sub-station;
- powder magazines;
- a 200 ton circular coal bin with a 42 inch elevator conveyor and support structure;
- housing for the transfer point of the underground truck conveyor to the 42' elevator; and
- a conveyor.

While the modernised mining methods brought improved production levels and reduced costs, they also led to retrenchments across the mines at Catherine Hill Bay.<sup>15</sup>

## 2.6 Moonee Colliery

As well as modernising the Wallarah Colliery, Coal and Allied opened two new mines: Chain Valley, developed in the 1960s to provide coal for Vales Point Power Station, and Moonee, opened in 1982 to permit recovery of the last coal from the Wallarah seam. The Moonee colliery was initially opened as Pit F in the mid 1940s as a continuation of the sequence of mines in the area. The mine worked the Wallarah seam by bord and pillar method. When reserves of the Wallarah seam were exhausted, the mine was developed to work the underlying Great Northern Seam. However, existing mining methods using continuous miners, shuttle cars and a conveyor system proved unable to economically work this seam. Work ceased in 1992 and the mine was placed on a care and maintenance basis. Coal and Allied sold the collieries to the Wallarah Joint Venture, which was a joint venture between Billiton Coal Australia and Japanese trading house Nissho Iwai.

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In 1996 the Moonee mine was reopened to work the Great Northern Seam by the longwall method. The Great Northern Seam (which outcrops at the base of the jetty) is a highly volatile low sulphur medium ash thermal coal, which is used for power generation.<sup>16</sup> The seam was mined to a height of around 3.1 metres. The mine each longwall panel was developed by continuous miners and a 90m wide longwall miner was then installed that worked each longwall panel. The mine was plagued by numerous unpredicted windblast events from goaf falls.<sup>17</sup> Eventually the combination of limited reserves and extraction costs caused the mine to be closed in 2002.

## 2.7 Endnotes

<sup>1</sup> CMP, op cit, p 19-20.

<sup>2</sup> Ibid, p 19.

<sup>3</sup> *Sydney Mail*, 17 July 1875.

<sup>4</sup> CMP, op cit, p 21.

<sup>5</sup> Cited in CMP, op cit, p 23.

<sup>6</sup> Ibid p 24.

<sup>7</sup> Ibid p 25-28.

<sup>8</sup> Ibid p 29-35.

<sup>9</sup> Ibid p 31-32

<sup>10</sup> Cited in CMP, op cit, p 43.

<sup>11</sup> CMP op cit, p 54.

<sup>12</sup> Wallarah Coal Company Ltd, Register of Fixed Assets 1948-63, ML MSS 3876/3.

<sup>13</sup> CMP, op cit, p 58.

<sup>14</sup> Cited in CMP, op cit, p 60-61.

<sup>15</sup> CMP, op cit, p 58-59.

<sup>16</sup> McDonell, Shaun 2001, Longwall Mining Beneath the Pacific Highway Moonee Colliery – An Overview, unpublished paper to Australian Surveyors Conference.

<sup>17</sup> Hayes Peter 2000, Risk Minimisation in Longwall Operations in Massive Goaf Conditions Using Microseismic and Hydraulic Fracturing Techniques, unpublished paper to the Queensland Mining Council Annual Conference.

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## 3.0 Physical Description

### 3.1 Introduction

The study area comprises a number of items of mining infrastructure – former mining sites, coal stockpiles, open space and support buildings. This report focuses on those structures and equipment that best assist with the industrial heritage assessment of the study area.

Full descriptions of the buildings and infrastructure are provided in the CMP.

### 3.2 Wallarah Colliery

#### 3.2.1 Preamble

The following was noted in Section 4.4.2 of the February 2004 *Wallarrah & Moonee Collieries Conservation Management Plan*:

*Some buildings and structures, primarily workshops and storage buildings, have been partly or totally demolished at Wallarah Colliery. The cable belt conveyor (but not the drive buildings at the top of the incline) has been removed, as has the conveyor and storage bin at the top of the hill. A cleanup of remaining equipment and surplus materials around the site is currently underway.*

*The Colliery operations incorporated a drift approximately 750m in length and two vertical shafts. The down cast, or men and materials shaft, was approximately 170m in depth, servicing the Wallarah (70m deep), Great Northern (128m deep) and Fassifern (166m deep) seams. The upcast shaft extended from the Great Northern seam through the Wallarah seam to the surface. These three structures have been filled and sealed in accordance with DMR {Department of Mineral Resources} requirements and in consultation with the relevant Mines Inspector.*

The following structures were identified and fully described on the Wallarah site at the time of developing the CMP. Detailed description of each item is presented in the CMP and is not repeated in this report. The sections of the CMP discussing each structure are provided in parentheses:

- Wallarah Winder House (4.2.22).
- Wallarah Conveyor Transfer Building (4.2.23).
- Wallarah Colliery Main Office (4.2.24).

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- Wallarah Colliery Operations Room (4.2.25).
  - Wallarah Colliery Bath House (4.2.26).
  - Wallarah Colliery Explosive Magazines (4.2.27).
  - Wallarah Colliery Substation No. 1 (4.2.28).
  - Wallarah Colliery Substation No. 2 (4.2.29).
  - Wallarah Colliery Blacksmith's Forge (4.2.30).
  - Wallarah Colliery Remnant Rails/Concrete (4.2.31).
  - Wallarah Colliery Down Cast Shaft and Drifts (4.2.32).
  - Wallarah Colliery Upcast Shaft (4.2.33).
  - Fitness Camp (4.2.34).
  - Road Link from Wallarah Colliery to Moonee Colliery (4.2.35).
  - Catherine Hill Bay Electrical Substation (4.2.36).
  - Coal Storage and Residue Emplacement Areas (4.2.37).

The site was inspected on 1 March 2005. As the buildings, structures and infrastructure on site were in the process of demolition, access to some parts of the site was limited. The results of the field inspection are detailed below.

#### 3.2.2 Wallarah Winder House

Demolished.

#### 3.2.3 Wallarah Conveyor Transfer Building

Demolished.

#### 3.2.4 Wallarah Colliery Main Office

The building is brick and constructed on a slope so that both the upper and lower level are entered on grade. This building was the former mine bath house. The bath area occupied the upper level and the lamp room and other facilities the lower level. Access to the mine was from the lower level at the northern end.

The bath house level was converted to offices by simply nailing battens to the internal bath house walls and cladding with appropriate material. A

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lower ceiling was added and windows appear to have been cut (or enlarged) on the western wall. The office had been stripped of internal wall cladding by the date of inspection and retained no evidence of its internal functional layout. The removal of cladding however revealed some evidence in the form of tiled areas and remains of pulleys for lifting clothes baskets in the roof space. Thus there was only a little evidence of this space's use as a bath house and later as an office.

Underneath in the lower level was the lamp room and two other rooms whose functions have not been identified. Access from the lamp room to bath house was by an internal stair. At the northern end of the lamp room was an external door leading to the mine entrance.

All of the rooms in the lower level been stripped out, removing internal wall partitions, fittings etc, in preparation for demolition which was due the following day.

#### 3.2.5 Wallarah Colliery Operations Room

This building was being stripped out prior to demolition. There was little evidence of its function left.

#### 3.2.6 Wallarah Colliery Bath House

This building was being demolished at the time of inspection and was unable to be inspected.

#### 3.2.7 Wallarah Colliery Explosive Magazines

These were two brick explosive magazines. The magazine identified in the CMP as WC 6 was demolished.

Magazine WC 7 was relatively intact (the roof was partially intact) and expressed key elements of its function as a magazine such as the entry and the interior arrangement with limits to explosives marked on the floor.

#### 3.2.8 Wallarah Colliery Substation No. 1

This building contains a series of power distribution boards. The substation took power in from Catherine Hill Bay and distributed it through the surface workings and into the mine. The switch boards are intact, although parts are missing. All other items such as transformers etc have been removed.

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### 3.2.9 Wallarah Colliery Substation No. 2

The brick structure of this building is intact but the roof and all equipment have been removed. The only way the function of the building can be understood is from voids in the concrete floor where the switchboards and cables were located.

### 3.2.10 Wallarah Colliery Blacksmith's Forge

From the photos in the CMP this seems to have been a movable item and it has been moved from the site.

### 3.2.11 Wallarah Colliery Remnant Rails/Concrete

Demolished by an excavator removing the concrete and removed.

### 3.2.12 Wallarah Colliery Down Cast Shaft and Drifts

Sealed and covered.

### 3.2.13 Wallarah Colliery Upcast Shaft

Sealed and covered.

### 3.2.14 Fitness Camp

Not assessed as it is not an item of industrial heritage.

### 3.2.15 Conclusion

Overall the remaining physical evidence of the industrial process and associated structures and landscape of the Wallarah Colliery is minimal as most of the buildings have either been demolished or have been stripped out of material and are in the process of demolition. Once demolition is completed there will be minimal evidence of mining in this location. It is intended to rehabilitate the land in this area to remove all evidence of mining.

## 3.3 Moonee Colliery

### 3.3.1 Preamble

The February 2004 *Walarah & Moonee Collieries Conservation Management Plan* described Moonee Colliery as being in the following condition:

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*Mining at Moonee Colliery ceased in 2002 and, as with Wallarah Colliery, the mine has now been sealed and some buildings and structures have been demolished...*

*The Moonee colliery operation incorporated one drift of approximately 750m in length, providing access to the Great Northern seam, and a vertical upcast ventilation shaft. Both of these entries have been sealed to DMR requirements in consultation with the relevant Mines Inspector. Infrastructure associated with the drift, and also the workshop at the pit top, have been removed although the footings and concrete pads remain. Infrastructure associated with contractors such as a small workshop and storage areas have also been demolished. The rubble and building waste from these demolished structures was used to fill the drift and haft. A clean up of surplus equipment and rubbish around the site is also underway.*

The following structures were identified at Moonee Colliery at the time of CMP. The section of the CMP discussing each structure is provided in parentheses.

- Moonee Colliery Bath House and Survey Building (4.2.13).
- Moonee Colliery Lamp Cabin and Operations Room (4.2.14).
- Moonee Colliery Main Switch Room (4.2.15).
- Moonee Colliery 'Stump Building' (4.2.16).
- Moonee Colliery IT Building (4.2.17).
- Moonee Colliery New Administration Building (4.2.18).
- Moonee Colliery Ventilation Shaft and Fan House (4.2.19).
- Remnants of Coal Mining Machinery (4.2.20).
- Remnant Boiler (4.2.21).

### 3.3.2 Moonee Colliery Bath House and Survey Building (4.2.13)

The Bath House and Survey building has recently had its asbestos cement sheet roof removed and currently lacks a roof. The interior is a well preserved example of a bath house, with the segregation into dirty and clean areas and workers' and managers' showers readily apparent. The shower and toilet furniture has been removed, as have all the clothes baskets. The changing room seats are still largely extant with their numbers and names painted on them.

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This building has a good level of integrity and is a good example of a coal mine bath house.

### 3.3.3 Moonee Colliery Lamp Cabin and Operations Room (4.2.14)

This is a group of buildings incorporating the mine operation offices (with rooms for managers, deputies etc), lamp rooms and a more recent structure, the operations room (which controlled access to the underground working). Although much of the buildings have been stripped out, it is still possible to understand from the buildings and their arrangement the basic processes for going underground. This building is also important for its relationship with the bath house and the mine entry (now sealed), which together with the other buildings demonstrates through their grouping how they were related and functioned.

### 3.3.4 Moonee Colliery Main Switch Room (4.2.15)

A large brick structure with a metal mezzanine floor. All the switch gear has been removed. It is not clear what the chimney was for and the eastern building wall seems to show bricked in perforations, indicating that this building may have had a previous function. It is suspected that the building may have originally been a boiler house to supply hot water and heat (for drying clothes) to the bath house. This would explain the chimney.

### 3.3.5 Moonee Colliery 'Stump Building' (4.2.16)

This small building was used by the Miners Union to collect dues and as such had no industrial processes located in it but is important due to its associations with the Miners Union.

### 3.3.5 Moonee IT Building (4.2.17)

This building was used to house computers for the colliery but there is little evidence of this apart from cabling. The building itself seems to be much older and may have had an earlier function.

### 3.3.6 Moonee Colliery New Administration Building (4.2.18)

This building is a 1997 refurbishment of an earlier building. The lower level has been partially stripped out, leaving it in poor condition, lacking stairs and with the upper level partially collapsed. The building's function as mine administrative offices is apparent.

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### 3.3.7 Moonee Colliery Ventilation Shaft and Fan House (4.2.19)

This was a modern axial flow ventilation fan located within a galvanised iron building, associated with a mine ventilation shaft (possibly the original mine entry from the 1940s). The fan is intact and its method of working is able to be readily identified. The connection between the fan and the mine shaft, which is now sealed and capped, is not apparent. The fan and housing is in good condition and well able to demonstrate its function.

### 3.3.8 Remnants of Coal Mining Machinery (4.2.20)

Several pieces of mining machinery are located near the main buildings. They may once have formed a display of historic machinery on the site. Precise detailed identification and description of the machinery was not able to be done as it would have required the removal of the dense vegetative cover which had engulfed the machinery. However, as best can be made out, the machines are:

- a Joy continuous miner;
- a winch mounted on rail – possibly part of a scraper loader;
- two wooden coal skips;
- a Jeffery (?) loader; and
- some sort of coal cutter.

These machines illustrate the process of mining as well as the mechanisation of mining and so have significance as examples of the type of machines used underground and their ability to demonstrate how mechanised mining was undertaken. They are in fair condition but are deteriorating in their current outdoor position.

### 3.3.9 Remnant Boiler (4.2.21)

This item consists of a riveted boiler mounted upside down on concrete plinths and used as a water reservoir. A similar boiler is shown in Plate 30 of the CMP. It is clear that the boiler has been modified for use as a container. Use of a boiler for a reservoir for water or air was a typical way of using old boilers on mining sites.

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### 3.3.10 Conclusion

Overall the surface working of the Moonee Colliery are better preserved and more intact than those at Wallarah. There are able to show how people came to work, went into the mine and returned. The buildings retain a high level of integrity, although their condition is best described as fair. There is no surviving evidence that shows how the coal was brought to the surface and workshop facilities for underground mining equipment. This means that only one aspect of the industrial process occurring at Moonee is preserved.

As a group, the buildings at Moonee, through their individual functions and spatial relationships with each other and their relationship to the site of the mine entry (drift), strongly demonstrate one aspect of the working of the mine.

### 3.2 Overall Assessment of the Physical Evidence

In considering the two sites, Wallarah and Moonee Collieries, it is evident that few industrial heritage remains will be retained at Wallarah, whereas the remains of some of the surface workings will survive at Moonee.

The remains at Moonee are likely to be the best surviving surface remains of coal mining in the Catherine Hill Bay area. There is very little evidence of previous mines developed from the late 1880s which were located at different sites around Catherine Hill Bay.



## 4.0 Comparative analysis

### 4.1 Introduction

Comparative analysis is important in understanding how a place may meet criteria (f) and (g) of the NSW Significance Assessment criteria. These two criteria relate to whether a place is significant because it is rare or significant because it is a good example of a common type of place. The two criteria are:

*Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history; and*

*Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments.*

Addressing these criteria assists in understanding the heritage values of a place within a broader context of the history of New South Wales.

In undertaking such an analysis, it is important to be aware of the dangers of comparing like with unlike, and the dangers of lumping and splitting in analysis.<sup>1</sup> As a way to overcome these issues, a thematic approach has been used to ground the comparative analysis in the context of history and associated physical evidence.

Thematic analysis is undertaken by comparing the history of a site in relation to broad historical themes characterising Australia's history. Such themes have been established by the Australian Heritage Commission and the NSW Heritage Office, and are outlined in synoptic form in *New South Wales Historical Themes*, issued by the NSW Heritage Office (2001).

The most relevant historical theme is mining. It is noted however that technically, under the New South Wales definition, coal mining is excluded as coal is not an ore or an inorganic substance (which is the scope of the physical description). However, coal mining does not fit under any other theme and it is likely that this is an oversight.

Table 4.1 Relevant Australian and New South Wales Themes.

Australian Theme	NSW Theme	Notes	Examples of evidence
3. Developing local, regional and national economies	Mining	Activities associated with the identification,	Mine, quarry, race, mining field or landscape, processing plant,

economies		extraction, processing and distribution of mineral ores, precious stones and other such inorganic substances.	manager's office, mineral specimen, mining equipment, mining license, ore laden shipwreck, collier, mine shaft, sluice gate, mineral deposit, slag heap, assay office, water race.
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Within this broad theme of 'Mining' and the theme of 'Coal Mining in NSW', sub-themes have been developed for this project (outlined below) and examples of evidence relating to these themes given. The sub-themes have been drawn from a number of standard works on the history of coal mining in New South Wales.<sup>2</sup> Discussion of example of physical evidence relating to the sub-themes is based on the author's experience in undertaking archaeological surveys on New South Wales coal fields, supplemented by the experience of Barney Collins and Shea Hedley from EJE and from Hunter History Consultants.<sup>3</sup>

Table 4.2 Sub-themes relating to Coal Mining in New South Wales.

Sub-theme	Notes	Examples of physical evidence
Capital and the scope of operations	Initially mining was government run with small mines and then it was a government monopoly granted to the AA Company, which was broken in 1847 by emerging capitalists such as the Brown Brothers. There was a tendency in the late nineteenth century for there to be a number of large mines well capitalised. Intermixed with there were smaller mines (the rat holes <sup>4</sup> ) which worked lesser seams.  In the 1930s there was the merger of companies to form larger companies owning several mines and associated companies. Notable was JABAS	Scale of buildings and plant and the quality of the materials and equipment used.

	<p>(John &amp; A Brown Abermain Seaham) which owned several mines and Hexham engineering.</p> <p>From the 1970s onwards trans-national companies owned many of the open cut mines in the Hunter. In the 1990s there was a rationalisation in the New South Wales industry resulting in a marked reduction in the number of coal companies.</p>	
Seams worked	<p>The geology of the coal measures (ie where coal was found) had an important impact on the nature of mining as it influenced the costs of extraction and transport.</p> <p>Initially mines were located by the sea, where exposed seams of coal were located and easily mined.</p> <p>Later, with improved geological knowledge of the location and nature of coal seams, mining moved to other areas, notably the Greta Coal measures developed from the 1880s.</p> <p>Some seams of coal produced poor quality coal that was not suitable for commercial use (eg they produced high levels of ash). Other seams were too variable in size or fractured to make mining commercially viable.</p>	<p>Location of mines in the landscape over time.</p> <p>Nature of mining (ie open cut versus underground).</p>
Government	<p>Government has always has an interest in mining as the Crown owns mineral rights in Australia.</p> <p>The government was involved in coal mining from the start, initially working seams by convict labour. Later it created a monopoly by allowing only the AA Co to mine.</p>	<p>Certain items on coal mine sites are a direct result of government regulation (e.g. Magazines). The Joint Coal Board apparently had standard designs for some buildings.</p> <p>State mines were/are:</p>

	<p>After passing of the <i>State Coal Mines Act (1912)</i>, the New South Wales Government could establish state owned mines. There is at least one case of a 'foreign' state (South Australia) trying to purchase a mine in New South Wales.</p> <p>After the gold rushes, the government developed the Mines Department to:</p> <ul style="list-style-type: none"> <li>(i) assist miners through development assistance and geological information; and</li> <li>(ii) regulate mining activities through legislation, specifying safety requirements and control of mining tenements.</li> </ul> <p>After major disasters such as Bulli and Mount Kembla, Royal Commissions were used by the government to provide independent advice on the issues involved. The government later developed mine rescue stations on the major coal fields.</p> <p>The government also had a role through its industrial relations power and later this also involved the Commonwealth Government. The Victorian Government was involved in the 1917 strike in the South Maitland field.</p> <p>In the immediate post-World War II period, the government formed the Joint Coal Board to improve health and safety, industrial relations, promote mechanisation and generally improve the coal industry.</p> <p>There was an increasing role for government in dealing with environmental impacts of</p>	<ul style="list-style-type: none"> <li>- Lithgow State Coal Mine;</li> <li>- Awaba State Coal Mine;</li> <li>- Oakdale Mine in the Burratorang State Coal; and</li> <li>- Liddell, Munmorah and Wye State Coal Mines (some of these have since been sold and renamed).</li> </ul>
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	<p>mining, commencing with subsidence and broader environmental concerns from the 1970s.</p>	
<p>Mine working</p>	<p>How a mine worked was influenced by the amount of capital invested, as well as changing mine technology safety concerns and union pressure.</p> <p>The process of mechanisation was the major issue in mine working during the twentieth century, especially with the introduction of mechanical coal cutters (c1902), rope or electrical skip haulage, and compressed air drills. These were followed by attempts at mechanisation (bitterly fought by Unions) from the late 1930s. These involved cutters and loaders, then in the 1950s the continuous miner, and shuttle cars and finally the long wall miner was adopted in the 1970s (although few of the older mines could be adapted for long wall mining).</p> <p>Power for running the mine was initially using steam and compressed air but increasingly electricity was used on the surface and underground. Petrol and diesel powered machinery had limited use, largely due to the need to extract fumes.</p> <p>Mine ventilation was another issue. Initially ventilation was achieved by using underground furnaces which were later replaced by various types of fans.</p> <p>Mining strategies – different types of mining strategies, such as open cut, bord and pillar, Wongawilli, miniwall and long wall, were adopted depending on the nature of</p>	<p>Evidence of mine access, drifts versus tunnels or shafts. Open cut versus underground.</p> <p>Mine workers facilities such as bath houses and lamp rooms.</p> <p>Surface office and stores facilities.</p> <p>Surface maintenance facilities, blacksmiths, workshops, displays of old and redundant equipment.</p> <p>Power houses and related facilities. Air compressors.</p> <p>Ventilation shafts, fan houses, fans, turbines.</p> <p>Underground mining facilities (possibility different patterns of subsidence on the surface).</p>

	<p>the coal seam. A major problem in the 1930s and the post war period was pillar extraction.</p>	
Coal preparation	<p>Initially little preparation was undertaken, usually stone picking and grading through screens but as a result of customer pressure, coal preparation plants were developed to wash and size coal.</p>	<p>Coal boxes, coal preparation plants, washeries. Waste rock dumps, waste coal spoil, coal washery rejects.</p>
Transport of coal to markets	<p>This was an important factor in mining operations as efficient transport of a bulk commodity would have been a key part of mining profitability. Initially rail was the major method of getting coal to a port and thence to market (either Sydney, interstate or internationally).</p> <p>Later in the 1960s and 1970s, road haulage began to overtake coal and extensive networks of conveyors were used to move coal from mines to power stations.</p>	<p>Private and public rail lines, engines and rolling stock, railway infrastructure, conveyors, staithes, wharfs, jetties, cranes shoots, coal bins, coal loaders and unloaders, ships (60-milers).</p>
Industrial relations	<p>The industrial relations situation in the mines was dire to say the least with a on-going series of strikes in the early twentieth century, culminating in the 'Great Strike/Lockout' of 1929, and then the 1948 Miners strike where Chifley sent in the troops to work the mines on the South Maitland field.</p> <p>There were major strikes in 1905, 1917, 1929-30 and 1949.</p> <p>Union campaigns against mechanisation prevented the mechanisation of mines from 1941-the mid 1950s.</p>	<p>Police camp sites, union buildings, sites where miners met, Rothbury mine, Muswellbrook open cut.</p>
Development of towns and villages	<p>Associated with the development of coal mining was the development of towns and villages associated with</p>	<p>Settlement patterns, town and village layouts, company style housing.</p>

	<p>mining, primarily as residences for miners.</p> <p>While it seems no detailed analysis has been undertaken of the development pattern<sup>5</sup>, it is clear that there was a hierarchy of towns and villages ranging from a town like Newcastle, incorporated villages associated with mining but had other industries. Towns like Cessnock and Kurri Kurri were large and developed because of their location within a mining area. Villages such as West Wallsend, Plattsburg, Mount Kembla grew up around individual mines. Some mines, such as Richmond Main, had no associated village.</p>	
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## 4.2 Analysis

The comparative analysis is undertaken by discussing the historical and identified physical evidence from Catherine Hill Bay in relation to the sub-theme, and then comparing with that with other coal mines in New South Wales (principally the South Maitland, Newcastle and Illawarra fields).

### 4.2.1 Scope of Operations/Capitalisation

The initial mining at Catherine Hill Bay was exploratory in nature from 1865. It was the floating of the New Wallsend Company in 1873 that was the entity that allowed sufficient capital to develop coal mining in the area. The lack of transport from the site meant that inevitably a company would be required in order to finance the construction of a jetty and coal loading facilities. However, the New Wallsend Company went broke in March 1876, largely because it could not afford the costs involved.<sup>6</sup>

The second attempt at mining was again a company using capital raised in the United Kingdom - the Wallarah Coal Company. This of course was not unusual - the AA Co, the Caledonian Coal Company and the Scottish Australian Company were capitalised from the United Kingdom. This is in contrast to companies such as the Wickham and Bullock Island Coal Company and J & A Brown which raised capital in Australia.

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While it is evident that Wallarah Coal Company had sufficient resources to develop the coal resources of the area, the level of investment was modest, as shown in images of the buildings. This was no model colliery, such as those developed at Richmond Main or Lambton B, where the mines were developed with a high level of capital, as shown through modern plant, substantial structures etc.

The Wallarah Coal Company seems to have survived the economic ups and downs of the early twentieth century. Nevertheless, in the grim economic conditions of the 1950s, when the coal industry was in decline, Wallarah was taken over by John and Alexander Brown Abermain Seaham (JABAS) in 1955, which in turn united with Caledonian Collieries and RW Miller to form Coal and Allied Industries in 1960.

It was only after Wallarah was acquired by JABAS that major reinvestment into the facilities was undertaken to develop mining on the lease, with the works involving the development of the Moonee and Cranagan Bay (later Wallarah) coal preparation plant and the jetty. This development work was required firstly to recover coal from existing working and secondly to reduce transport costs in accessing the coal face from the main tunnel. Similar investment was undertaken on mines of similar age, such as Neath and Aberdare, in order to make coal winning more efficient.

The physical evidence of the capitalisation of the mine is substantially lacking as only the most recent buildings and structures survive. These demonstrate through their extent the nature of the more recent investment into the mine.

#### 4.2.2 Seams worked

The main seam worked was the Wallarah seam which is the top seam of the Newcastle Coal measures and is argued to be the equivalent of the Bulli seam in the Illawarra.<sup>7</sup> Like the Coal Cliff Colliery, the initial mine was driven directly into the seam from the cliff face. However, when the Wallarah Coal company took over the mining, they developed a series of pits away from the jetty site utilising the hilly nature of the terrain to drive tunnels into the outcropping seam. No. 1 was an audit into the side of a hill and a second audit into another hill was developed in 1894 as Pit B. A series of other pits up to E were dug although only B and E were developed until the 1960s.<sup>8</sup>

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The Wallarah mine was the only colliery on the northern coal fields working this seam as it was at the top of the Newcastle coal measures. The coal measures dip to the south so in the northern areas the seam has been eroded and removed. The main Newcastle collieries worked the Borehole or the Burwood seams.<sup>9</sup> The Bulli seam worked on the South Coast was generally worked by adit or drift as it was exposed in section on the coast or on the escarpment and so could be directly accessed.

The location of the initial exposure of the Wallarah seam was absolutely fundamental for the development of the area. It was located where the jetty is (ie extending underneath the Coal Preparation Plant). Construction of the jetty by the company was a private affair and the jetty was effectively closed to others. However, it was the best location for a landing or a jetty on the coast in the vicinity so control of the jetty effectively monopolised the coal deposits in the Catherine Hill Bay area.

The shallowness of the Wallarah seam also apparently made pillar extraction difficult as the resulting subsidence may have let surface water in, flooding the mine.<sup>10</sup>

Unlike the Greta seam, the Wallarah seam had little risk of fire through spontaneous combustion so the life of the mine was not plagued by fires such as those experienced in some mines on the South Maitland field. The mines were also not thought to be particularly gassy and were comparatively easy to work.

When reserves of the Wallarah seam were exhausted, the Moonee mine was developed to work the underlying Great Northern Seam which appears to be relatively close. The Great Northern Seam (which outcrops at the base of the jetty) is a high volatile low sulphur medium ash thermal coal, which is used for power generation.<sup>11</sup> The seam was mined to a height of around 3.1 metres by the long wall method.

The geological sequence is demonstrated in the exposed section in the cliff at the jetty which shows the Great North Seam and possibly the Wallarah seam above it. Such demonstration is only really possible in coastal areas where cliffs are exposed.

#### 4.2.3 Government

The evidence of direct government involvement in the Wallarah mine is slim as there were no major disasters; no need to prospect for new coal

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reserves etc. The influence of government was not directly felt in the mine except for the requirements for the mine to comply with statutory controls.

The 1917 coal miners strike saw the introduction by the government of 'volunteers' to work the mines. These 'volunteers' were to work mines to provide coal for New South Wales and for Victoria, and inevitably they were seen as strike breakers. Similar squads of volunteers worked Richmond Main mine but they were a short lived phenomena.

The indirect evidence of government involvement lies in the nature of mine infrastructure and mine working. On the surface the most tangible evidence lies in the construction of bath houses for workers after 1927. Bath houses are common on all mines from this time and apparently a standard design was developed by the Joint Coal Board in the 1950s. There were the remains of five bath houses in the study area (although two were being demolished).

#### 4.2.4 Mine Working

Because of the landscape setting of the Catherine Hill Bay area and the position of the Wallarah seam, the mining leases were worked as a series of small mines moving around the landscape. This process is similar to the working of mining leases at Minmi and the neighbouring mines in the Blue Gum Creek area (the Duckenfield and later Stockrington mines) by J & A Brown, and the mines at Aberdare by Caledonian Collieries Limited. In contrast were mines such a Richmond Main where the mine entry was more or less at the centre of the lease and the coal within the lease accessed from a central place.

The archaeological remains of mine shafts in the coalfields are often surprisingly insubstantial. This is because much of the associated infrastructure has been demolished and removed. The Mines Department has also been assiduous in closing shafts and drifts to prevent unauthorised entry. It seems likely that there are remains of the earlier mine workings around the Catherine Hill Bay area in the form of the archaeological remains of mine shafts and tunnels, that are outside the area covered by the CMP.

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## Mechanisation

Wallarrah was initially worked by Bord and Pillar mining. This involved the miners initially cutting headings into a new underground district and then mining out bords which are passageways 2-6m wide. The bords were interconnected creating a roughly grid shaped network with pillars in between to support the roof. Theoretically the pillars would then be mined to form a goaf which would be abandoned and allowed to collapse.<sup>12</sup> Pillar extraction was a much vexed question largely as pillars generally contained the majority of the potentially winnable coal and removal was inherently dangerous.

Mining was undertaken by undercutting the desired seam (either by pick or mechanical coal cutter) and then exploding a charge in the area above to fragment the coal. The coal would be then loaded into skips, which would be wheeled down the headings to the main haulage way and lead outside of the mine. Like most of the larger mines of the period, the Wallarrah mine (then working Pit E) is reported by Danvers Powers, c1912, as using coal cutters. Otherwise the mine was unmechanised.

Wallarrah was among the pioneers of mechanisation with the introduction of with Sampson cutters and Joy 8BU caterpillar tracked loaders in 1936.<sup>13</sup> These loaded into the familiar mining skips for haulage out of the mine. The BHP run collieries were leading the way in mechanisation at this time, with Elrington and Lambton B being fully mechanised from 1935.<sup>14</sup> There is no mention in the site history of whether Wallarrah were undertaking mechanised pillar extraction which was banned from 1941 by the New South Wales Government.<sup>15</sup> In some mines this reversed the mechanisation process.

By 1947 Eelford and McKowan describe the mining process as mechanised at least in so far as mining bords was concerned.<sup>16</sup> Interestingly, despite mechanised cutting, boring holes for shots and loading, the skips were hauled by pit horses. Underground haulage was at least partly by battery electric locomotives, although, curiously, surface haulage was by steam. Again, this is very typical of larger mines operating in the South Maitland and Newcastle Districts at this time.

Finally, with the development of the Cranagan Bay Drift (now Wallarrah Colliery), from 1957 mining was fully mechanised using cutters and loaders and shuttle cars to replace skips. The shuttle cars discharged coal onto an underground conveyor which took it to an underground storage bin and discharged onto the main haulage conveyor taking the coal to the surface.

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A pioneering monorail conveyor replaced the shuttle cars in the Moonee mine in 1987 but this system proved unable to work the Great Northern Seam when the mine was developed into this underlying seam in the early 1990s.

In 1996 the Moonee mine was reopened to work the Great Northern Seam by the long wall method. The seam was mined to a height of around 3.1 metres. In the mine each long wall panel was developed by continuous miners and a 90m wide long wall miner was then installed that worked each long wall panel. The mine was plagued by numerous unpredicted windblast events from goaf falls.<sup>17</sup> Eventually the combination of limited reserves and extraction costs caused the mine to be closed 2002.

While the long wall mining method is now common for new underground mines, following its introduction from the late 1970s<sup>18</sup>, the system was rarely installed in older mines due to the difficulty of adapting the existing infrastructure to the long wall. An example of a similar installation to that at Moonee is at Ellalong Colliery. This was a modern extension of the original Paxton colliery using long wall mining and is, or was, the last colliery operating in the South Maitland field.

It is clearly difficult to demonstrate this change on the surface apart from patterns of subsidence. However, there is a considerable amount of mining machinery exhibited in the coalfields. The best and most comprehensive collection is that at Richmond Main colliery which has a good representative range of equipment used.<sup>19</sup> The machinery at Moonee is only a small collection but at least contains some items that can interpret this aspect of mining history.

#### Power

The winder attached to 'B' Pit in 1994 was a steam powered winder with a boiler (ex-locomotive) attached nearby.<sup>20</sup> This is typical for mines at this time, however a decade later most of the larger mines were constructing electrical power plants. Initially these seem to be for surface lighting and powering of machinery underground (although some coal cutters were powered by compressed air) rather than lighting the coal face for the workers.

By 1912 Danvers Power was able to report on a powerhouse at Wallarah containing a steam driven Siemens Bros 250 volt dynamo which lit the jetty, allowing night working to occur. This seems to be a typical sized plant for a mine of this size. In the South Maitland field, after

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amalgamations, some mines shared power. For example, J & A Brown developed the powerhouse at Richmond Main so it could supply power to that mine and the adjacent Pelaw Main mine. When JAABS was formed, the Abermain Seaham collieries were added to the grid and their powerhouses closed. The Caledonia Colliery supplied all its mines from its powerhouse at Cockle Creek. In addition to the mines, power was also sold to local government for domestic use.

The history of the powerhouse at Catherine Hill Bay is not clear. Certainly, based on the complaints about housing at Catherine Hill Bay, power was not supplied for domestic use. In the immediate post-war period, electrically powered machinery was in use at the mines but it is not clear where the power came from.

The remains of sub-stations in the study area indicate that power was being drawn from the statewide grid, at least for the last few years of operation.

There are no remains of the power station in the study area.

#### Ventilation

Mine ventilation seems to have originally been by natural circulation there is little discussion of any surface or sub-surface ventilation such as furnaces or fans in the site history. A ventilation shaft is reported as being sunk to serve the working based on 'E' tunnel and it is likely that there is more to be found out about ventilation in this mine.

The axial fans which were installed at Wallarah and at Moonee appear to be quite recent. Shoebridge notes that the Sirrocco fans installed at most large mines from the 1920s were themselves replaced by axial flow units by the 1980s.<sup>21</sup>

#### 4.2.5 Coal Preparation

The initial method of coal preparation at mines was screening and picking of skip loads. It is not clear whether this stemmed from a desire to provide customers with quality coal or make sure all skips were full of coal rather than a layer of coal over waste rock, as miners were paid per skip of coal produced. Generally larger lumps of coal were desired while the smaller lumps and rubbish were stored in a 'small coal box' for later sale.

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In the 1930s mines began to experiment with coal preparation to firstly improve the quality of small coal and then improve the overall quality of coal. Two forms of coal preparation were utilised – a form of cleaning without water (ironically called dry cleaning) and washing. A coal washing plant was established at Hebburn No. 2 and a dry cleaning plant was established to serve the Aberdare and Neath mines. Both date from the mid-1930s. From the 1950s coal washeries were common but were not at every colliery. Rather coal from mines was washed at central locations which served several collieries.

The coal preparation plant at Catherine Hill Bay was not unique in any way, apart from the underground coal bins and the direct jetty loading which were simply a function of the local geography. The large concrete bin is unusual as it is set into the ground rather than, as most coal bins, being constructed above ground.

#### 4.2.6 Transport of coal to markets

Coal mines were noted for the extensive system of tramways and railways that linked mines with transshipment points where coal was loaded for transport to domestic and international users. At Catherine Hill Bay, the railway was the major transport to the jetty until the reconstruction of the loading facilities in early 1960s. The Crangan Bay drift (now Wallarah Colliery) was designed to use road transport from the coal storage bins to the Jetty, and Moonee also worked on the same system of transport. When the preparation plant was established, it was designed for the delivery of coal by road. This reflects the major post-war shift away from rail transportation.

Unlike the collieries in Newcastle and South Maitland fields, Wallarah loaded more or less directly from the mine to the ship. In this way it was similar to the mines from the Southern Collieries such as Coal Cliff, Bulli, or South Bulli which had their own jetties to load from. Over the years these jetties however were abandoned as the coal mines either shipped coal through the internal NSW railways or as the mines closed. This leaves the jetty at Catherine Hill Bay in a unique situation being the sole representative of a common type of industrial site that has now disappeared through a combination of economics and natural processes.

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#### 4.2.7 Industrial Relations

As far as can be understood, Wallarah Colliery remained comparatively free from the major industrial disputes that plagued the coal industry.

The Stump Building at Moonee Colliery is a rare building that relates to the theme of industrial relations through its association with the Miners Union.

#### 4.2.8 Development of Towns and Villages

Like most mines (with the notable exception of Richmond Main), a small village of miners' cottages and dwellings developed to house mine workers. The layout and design of Catherine Hill Bay is similar to many small towns in the Hunter Valley such as Minmi, Plattsburg, Wallsend, West Wallsend, Kearsley, Kitchener etc, where an adjacent mine being a source of employment caused a mixture of permanent and semi-permanent dwellings to be established.

The settlement at Catherine Hill Bay is located in several 'clumps' which relate to the location of the various pits and facilities associated with the mine. Unlike the small mining towns in the Hunter Valley, Catherine Hill Bay was isolated access, being mainly by ship or ferry across Lake Macquarie and then walking. In contrast, the mining towns developed in areas already with a developed network of small farms and larger towns. The township of Catherine Hill Bay is outside the current study area.

#### 4.3 Endnotes

<sup>1</sup> Lumping is undertaking too course an analysis where every place seems the same whereas, splitting uses minute variations to split places into different categories and thus all places become unique.

<sup>2</sup> See Armstrong, J (ed) 1983, *Shaping the Hunter: A Story of Engineers and the Engineering Contribution to the Development of the Present Shape of the Hunter Region, Its River, Cities, Industries and Transport Arteries*, Newcastle Division of the Institution of Engineers, Newcastle.

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Wells, David 2005, *A History of the Greta Coal Measures* (April 1989) [Internet Site], Newcastle Regional Museum 1989 [cited March 2005 ], available from <http://amol.org.au/newcastle/greta/index.html>.

<sup>3</sup> There is no thematic history or typological study of the New South Wales coal industry available for reference.

<sup>4</sup> Rat holes were small scale under-capitalised mines which existed between the larger mining leases, their nature is best expressed by the term rat holes.

<sup>5</sup> Apart from a brief mention in Jeans, D 1972, *An Historical Geography of New South Wales to 1901*, Sydney, Reed Education, 1972.

<sup>6</sup> Longworth, J 2002, *The Coal Cliff Adit and Jetty Tramway, 1797 to 1910*, Light Railways No. 167, pp 5-13.

<sup>7</sup> Jones, LJ, *Coal Resources of the Newcastle-Maitland District Geological survey*, Department of Mines, 1926.

<sup>8</sup> Danvers Powers, F 1912, *Coalfields and Collieries of Australia*, quoted in the CMP, op cit, p 42.

<sup>9</sup> Ibid p 11.

<sup>10</sup> Ibid p 42.

<sup>11</sup> McDonnell, Shaun 2001, *Longwall Mining Beneath the Pacific Highway Moonee Colliery – An Overview*, unpublished paper to Australian Surveyors Conference.

<sup>12</sup> For a definition of these terms, see Ritchie, N and R Hooker 1998, *An Archaeologist's Guide to Mining Terminology*, *Australasian Historical Archaeology*, Vol 15, pp 3-29.

<sup>13</sup> Hargraves, op cit, p 121.

<sup>14</sup> Shoebridge 1983, in Armstrong, J (ed), op cit, p 53, and Stuart, IM 1998, *A Heritage Assessment of Elrington Colliery*, Report to Elrington Industries Pty Ltd, HLA-Envirosciences Pty Ltd.

<sup>15</sup> Hargraves, op cit, p 121.

<sup>16</sup> As quoted in the CMP, op cit, p 56.

<sup>17</sup> Hayes Peter 2000, *Risk Minimisation in Longwall Operations in Massive Goaf Conditions Using Microseismic and Hydraulic Fracturing Techniques*, unpublished paper to the Queensland Mining Council Annual Conference.

<sup>18</sup> Hargraves, op cit, p134.

<sup>19</sup> The collection was catalogued by the author in 1997.

<sup>20</sup> CMP, op cit, p 35, Plate 14.

<sup>21</sup> Shoebridge, op cit, p 47.



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## 5.0 Assessment of Significance

### 5.1 Principles

The concept of 'cultural significance' or 'heritage value' embraces the value of a place or item, which cannot be expressed solely in financial terms. Assessment of cultural significance endeavours to establish why a place or item is considered important and is valued by the community. Cultural significance is embodied in the fabric of the place (including its setting and relationship to other items), the records associated with the place, and the response that the place evokes in the community.

The assessment of cultural significance with respect to archaeological sites is more difficult, in that the extent and nature of the features is sometimes unknown, and it becomes necessary for value judgements to be formulated on the basis of expected or potential attributes. The element of judgement can be enhanced by historical or other research, as has been carried out in the case of the current study.

Archaeological deposits and features provide important evidence of the history and settlement of New South Wales. Archaeological sites may include stratified deposits of material culture which can be analysed to yield information about the history of the place, within a local or broader context, which is unavailable from documentary sources alone. Archaeological investigations can reveal much about technologies, economic and social conditions, taste and style. The features and artefacts extracted and recorded can provide primary evidence about the way of life of previous generations, through examination of structural features, artefacts and deposits. Archaeological sites that contain these elements therefore have scientific value. This value can be further enhanced where there is a substantial body of supporting documentary evidence that enables further inference to be drawn from the archaeological records. It is through this potential for revealing information that the heritage significance of archaeological sites occurs.

### 5.2 Heritage Significance Assessment Criteria

#### 5.2.1 Assessment Criteria

The *NSW Heritage Manual*, published by the NSW Heritage Office and Department of Urban Affairs and Planning, sets out a detailed process for conducting assessments of heritage significance.<sup>1</sup> The Manual provides a

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set of specific criteria for assessing the significance of an item, including guidelines for inclusion and exclusion. The following assessment has been prepared in accordance with these guidelines.

The Heritage Council of NSW has adapted specific criteria for heritage assessment, which have been gazetted pursuant to the *Heritage Act 1977* (NSW). The seven criteria upon which the following significance assessment is based are outlined below:

*Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history;*

*Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;*

*Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;*

*Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;*

*Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;*

*Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history; and*

*Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments.*

Each criterion of the Heritage Manual is considered in regard to Wallarah and Moonee Collieries. The exact definitions of the criteria are also included. As the criteria of the Burra Charter are very similar to the Heritage Manual, they are not considered separately.

#### 5.2.2 Significance Assessment Grading

The significance of each heritage element at Wallarah and Moonee Collieries is briefly outlined and ranked. The ranking introduces a grading that assists to quantify the degree to which items of machinery and equipment contribute to the heritage value of the site overall. Significance rankings are assigned to the elements (ie buildings, structures and machinery) within Wallarah and Moonee Collieries according

to the five-class system defined in the NSW Heritage Office publication, *Assessing Heritage Significance*. The five rankings are defined as follows:

Table 5.1 Significance Rankings

Grading	Score	Significance
Exceptional	1	Rare or outstanding building, item or landscape element directly contributing to an item's local and state significance. High degree of intactness of original building fabric and/or design integrity. Item can be interpreted easily.  Elements of Exceptional heritage significance are of State significance.
High	2	Building, item or landscape element that demonstrates a key aspect of the place's significance. High degree of original fabric and/or design integrity or alterations add to or do not detract substantially from significance or could be easily rectified.  Elements of High heritage significance are of Local significance.
Moderate	3	Building, item or landscape element of some significance that contributes to the overall significance of the site. May include altered or modified components.  Elements of Moderate heritage significance are of Local significance.
Low	4	Building, item or landscape element that makes a minor contribution to the overall significance of the site but is not important in gaining an understanding of the site as a whole. It may also be an alteration or addition to a more significant building that makes it difficult to interpret the significance of that building or element.
Intrusive	5	Building, item or landscape element that is 'damaging' or detracts from the overall heritage significance of the site or does not contribute to the significance of the site overall. It may also be an adverse alteration or addition to a significant building that makes it difficult to interpret the significance of that building or element.

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### 5.3 Overall Site Assessment

The study area as a whole has been assessed in the CMP using the Heritage Office criteria. The assessment is reproduced below:

*The item is important in the course or pattern, of NSW or local cultural/natural history.*

*The site is integrally linked with the history and development of coal mining in NSW. The history of the site parallels and demonstrates the history of coal mining in NSW. The first phase being the purchasing of the mining lease, expansion, change of direction and technological change and gradual decline and finally closure.*

*The site and its significant components are an expression of a particular era of a region - expansion of coal mining and the development of the Catherine Hill Bay Village. It was an active agent in the creation of the isolated mining town of Catherine Hill Bay.*

*There is a distinctive multi-layering and continuity of mining activity evident at the site. The site displays evidence of the early occupation of the site by an early mining company and of mining for over 114 years. Despite the scarcity of intact nineteenth century colliery relics and structures within the Wallarah and Moonee Colliery holdings at Catherine Hill Bay, the colliery precinct and transport structures are the result of the historical development of the area as a viable and economic mining operation.*

*The item is important in relation to a person, or groups of persons of importance to NSW or local cultural/natural history.*

*The site and its infrastructure are associated with the life and work of early mining persons and companies - individuals whose life and work made significant contributions to the establishment and development of the Catherine Hill Bay community.*

*For the associated rich collection of documents including drawings, photographs, maps, schedules, papers - relating to the activities and events at the Collieries, and the lives of staff, which considerably enliven and inform our understanding of the place.*

*The site was a key site in many union activities including many strikes. There is physical evidence of improved working conditions gained by the unions, such as the addition of ablution facilities and lighting.*

*The item is important in demonstrating aesthetic characteristics and/or high degree of creative or technical achievement in NSW or local area.*

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*The site can claim some degree of aesthetic value from the scale of the buildings in the complex, the relative unity of materials and the subtle use of continuing architectural themes of various periods and building types.*

*Many of the remaining buildings and structures could assist in a further understanding of 20<sup>th</sup> century colliery layout, building construction, working lives of the colliery's employees and the evolving processes by which coal production was mechanised. In particular, the gradual mechanisation of transport systems central to the coal mining operations can be readily interpreted at the site.*

*The site has landmark qualities experienced in the views and vistas to and from the site. With respect to landscape issues, the colliery has had an important impact on the local area resulting in changes to the landscape. The landscape of the site itself, although not well endowed with cultural plantings, still conveys attitudes and practices of a former era.*

*The site and its components have been a consistent and recognisable image in Catherine Hill Bay. The relationship the colliery with the town of Catherine Hill Bay is an important issue. Even today, Catherine Hill Bay is characterised by the presence of the jetty and other related mine structures.*

*The item has a strong or special associations with a particular community or cultural group in NSW or local area.*

*For the use of the site and its buildings, and the many people who have worked in it and relied upon it for their livelihood, many in the local community regard the site with respect and affection. Over its life, substantial numbers of the local community worked at the collieries and many of these workers have a strong identification and sense of pride in the place.*

*The site was integral to the development of the surrounding local community of the Catherine Hill Bay Villages and has important physical and social association with the area. The impact on the local community appears to have been largely in the historic development of the housing around the site and in the inter-relationship with the site as a major workplace. The collieries have become an emerging focus of community consciousness as to its source of being.*

*The item has the potential to yield information that will contribute to an understanding of NSW or local cultural / natural history.*

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*The complex has high technical research significance. Alterations, additions and modifications on the site show the phase of coal mining expansion. Much of the infrastructure, components and occupation of the site represent changes in technology spanning more than a 100 years of coal mining in Australia. In general, the quality of the remaining structures is high, demonstrating technical excellence in both design and construction*

*The site has the historic resources to answer research questions posed about many aspects of early twentieth century coal extraction techniques, the development of industrial infrastructure or social structure on early twentieth century coal fields. The heritage theme of mine development is well represented at this site and is of educational and interpretative value as part of the evolution of the processes of coal mining.*

*The item possess uncommon, rare or endangered aspects of NSW or local cultural/natural history.*

*The transport of coal at the Wallarah and Moonee Collieries was unique to the site. Most other collieries had coal taken intrastate, interstate or overseas via the Port of Newcastle. The mining of coal, its transport then loading all within the one colliery holding at Wallarah and Moonee Collieries is a special feature. It did this for the whole period of operation.*

*The item is important in demonstrating the principle characteristics of a class of NSW or local cultural/natural places or cultural/natural environments.*

*The current physical form of the site, the buildings, the spatial arrangement, artefacts, and open space demonstrate the process of coal mining techniques originating in the early twentieth century and continuing successfully with modification for over a century.*

*The heritage theme of mine development is well represented at this site, enabling many aspects of the progression of coal mining technology to be demonstrated and understood. Its life span, over 114 years, embraces a century of technological and social change in the coal industry, mechanisation, economic depression, industrial conflict, safety and family tradition. The site has the historic resource to answer questions posed about many aspects of coal extraction techniques over the twentieth century and the development of industrial infrastructure or social structure on coal fields.<sup>2</sup>*

### 5.3.1 Statement of Significance

The following Statement of Significance was developed in the CMP:

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The subject site including Wallarah and Moonee Collieries and the Catherine Hill Bay Coal Preparation Plant is assessed as having State significance culturally, in the context of the contribution to the coal mining history of NSW. This site is one of the only surviving in the region that demonstrates the operational techniques; scale and layout of pit-top operations and its associated colliery structures; and, the physical integration of place of mining work and associated village.

The significance of the subject site is based not only on individual structures but amplified by the complex of buildings and their context within the landscape. The Wallarah Colliery together with the Moonee Colliery form a historically significant place both on a State and local level as a fine example of a viable and economic coal mining operation that provides evidence of the working and living environments of a workforce on which the regional and state economies were substantially dependent. Buildings, open spaces, circulation infrastructure, rail relics, machinery and services demonstrate the processes of coal mining, as well as the technological and operational changes embraced between 1873 to the present day.

The cultural significance of the site in its present condition relies more on the complex as an expression of a particular era of a region's industrial and social history than on the integrity of the remaining structures. That era is the establishment and development of the Wallarah and Moonee Collieries and the mining community and transportation network that evolved to support that industry.

The collieries were integral to the development of Catherine Hill Bay Village and have an important physical and social association with this area. The place has strong cultural, social or spiritual associations for substantial numbers of the local community, including those who worked at the site or had their local business supported by the workers. The proximity of the colliery to the historic town of Catherine Hill Bay, and the surviving former company owned residential buildings in the village, further demonstrates the close relationship that developed between early collieries and their local communities.

Its life span, over 114 years, embraces a century of technological and social change in the coal industry, mechanisation, economic depression, industrial conflict, safety and family tradition. The site has the historic resource to answer questions posed about many aspects of coal extraction techniques over the twentieth century and the development of industrial infrastructure or social structure on coal fields. The heritage theme of mine development is well represented at this site, enabling many aspects of the progression of coal mining technology to be demonstrated and understood.

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*The place has landmark qualities experienced in the views and vistas to and from the site, particularly from the Bin Building to the ocean. Even today, Catherine Hill Bay is characterised by the presence of the jetty and other related mine structures.*

*The significance of the collieries' locations on a sea port should not be underestimated. The viability of the workings relied on this strategic location for 114 years. The ability to import raw materials and export product has ensured the continued success of the site. In particular the jetty signifies the importance of the location and helps to interpret certain requirements for the establishment of the site and the need to transport raw materials by sea to selected sites.*

*The site has the historic resources to answer research questions posed about many aspects of early twentieth century coal extraction techniques, the development of industrial infrastructure or social structure on early twentieth century coal fields. The heritage theme of mine development is well represented at this site and is of educational and interpretative value as part of the evolution of the processes of coal mining.*<sup>3</sup>

#### 5.4 Assessment of the Wallarah and Moonee Collieries Sites

Overall, the results of this study do not act to alter the substance of the Statement of Significance or the overall Statement of Significance in the CMP.

Notwithstanding the existing Statement of Significance, the significance assessment in this report differs slightly from that of the CMP in that firstly, each of the two sites (Walarah and Moonee) is assessed overall, and then the elements within each site are assessed in relation to the overall assessment emphasising their industrial heritage significance. These assessments use the ranking system outlined above (Section 5.1).

#### 5.5 Assessment of Significance – Wallarah Collieries

Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history;

Walarah Colliery (formerly Crangan Bay Drift) is important as one of the last in a sequence of mines developed in the Catherine Hill Bay area to exploit coal from the Wallarah seam. The mine operated from 1957 and was mechanised from the start. Notably it was the site where the first cable belt conveyor in Australia was used. The mine was one of the last to close on this part of the Northern coalfields.

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Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;

The Wallarah Colliery does not meet this criterion as no strong or special association with the life or works of a person or persons has been demonstrated.

Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;

While the Wallarah Colliery was the site of the first cable belt conveyor in Australia, there is no longer any evidence of this at the Wallarah site and therefore this criterion is not met.

Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;

The Wallarah Colliery may have an association with the cultural group of ex-miners and the mining union, however it is not apparent how strong that association may be. This study did not include a social significance assessment.

Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;

The level of destruction and rehabilitation of this mine means that it cannot meet this criterion as most remains have been removed.

Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history; and

Due to the level of removal of original fabric, the Wallarah Colliery cannot meet this criterion.

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments.

Due to the level of removal of original fabric, the Wallarah Colliery cannot meet this criterion.

5.5.1 Statement of Significance for Wallarah Colliery

Walarah Colliery (formerly Crangan Bay Drift) is important as one of the last in a sequence of mines developed in the Catherine Hill Bay area to exploit coal from the Wallarah seam. The mine operated from 1957 and was mechanised from the start. Notably it was the site where the first cable belt conveyor in Australia was used. The mine was one of the last closed on this part of the Northern coalfields. The removal of all the standing structures on the site and its rehabilitation means that the site's ability to demonstrate fabric or process that embodies the significance of the place is minimal.

The Wallarah Colliery site is therefore assessed as having low - Local Significance.

5.5.2 Assessment of Elements within Wallarah Colliery

Table 5.1 Assessment of Elements within Wallarah Colliery

Item	Significance Ranking	Comments
Walarah Winder House	Not assessed	Demolished
Walarah Conveyor Transfer Building	Not assessed	Demolished
Walarah Colliery Main Office	Low	
Walarah Colliery Operations Room	Low	
Walarah Colliery Bath House	Not assessed	Demolished
Walarah Colliery Explosive Magazines	Low	Partially demolished
Walarah Colliery Substation No. 1	Low	
Walarah Colliery Substation No. 2	Low	
Walarah Colliery	Not assessed	Demolished

Blacksmith's Forge		
Wallerah Colliery Remnant Rails/Concrete	Not assessed	Demolished
Wallerah Colliery Down Cast Shaft and Drifts	Not assessed	Demolished
Wallerah Colliery Upcast Shaft	Not assessed	Demolished
Fitness Camp	Not assessed	Not an industrial site

The results of the significance assessment is that the fabric on the Wallarah Colliery site is in such poor condition that it is all of low significance and contributes little to the overall significance of the site.

#### 5.6 Assessment of Significance – Moonee Colliery

Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history;

The Moonee Colliery was developed as Pit F, part of the sequence of mines developed to work the Wallarah seam at Catherine Hill Bay. The original function was to work the southern end of the lease. To do this it was mechanised from its inception. Once the Wallarah seam was exhausted, the mine worked the lower Great Northern Seam but this proved difficult despite the utilisation of a 'conveyor train' to transport coal.

Under the ownership of the Wallarah Joint Venture, a long wall was installed which worked the Great Northern Seam from 1996 until its closure in 2002. There were major windblast problems from falling roofs in goafs<sup>4</sup> that presented considerable technical challenges to the mine. This was the only use of the long wall at Catherine Hill Bay and a comparatively rare use of this technology in an 'old' mine.

Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;

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The Moonee Colliery does not meet this criterion as no strong or special association with the life or works of a person or persons has been demonstrated.

Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;

Despite the technical innovations that were undertaken to keep the Moonee Colliery operating these are all underground and they cannot be demonstrated in the current study. Some areas of long wall mining would be well outside the current study area

Criterion (d) an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;

The Moonee Colliery may have an association with the cultural group of ex-miners and the mining union, however it is not apparent how strong that association may be. This study did not include a social significance assessment.

Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;

There is some potential to contribute to the understanding of coal mining through the built structures on the site. There is no evidence of an archaeological deposit associated with the Moonee mine.

Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history; and

The Moonee mine will contain remains of the long wall system but as it is underground and outside the study area. Effectively this criteria is not met.

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments.

Moonee Colliery is important as through the physical fabric remaining on the site, the process by which people went to work underground can be demonstrated. This includes: the bath house where workers changed into their work clothes and showered upon their return; the lamp room where

miners were equipped to go underground and the site offices which controlled underground work, as well as the path to the mine entry.

#### 5.6.1 Statement of Significance for Moonee Colliery

The Moonee Colliery was developed as Pit F, part of the sequence of mines developed to work the Wallarah seam at Catherine Hill Bay. The original function was to work the southern end of the lease. To do this it was mechanised from its inception. Once the Wallarah seam was exhausted the mine worked the lower Great Northern Seam but this proved difficult despite the utilisation of a 'conveyor train' to transport coal. No above ground evidence of this system exists however.

Under the ownership of the Wallarah Joint Venture, a long wall was installed which worked the Great Northern Seam from 1996 until its closure in 2002. There were major windblast problems from falling roofs in goafs that presented considerable technical challenges to the mine. This was the only use of the long wall at Catherine Hill Bay and a comparatively rare use of this technology in an 'old' mine. Again evidence of this technology is below ground.

However, the remaining structures on the mine site can demonstrate how people prepared themselves for underground work and how they cleaned up on return.

The Moonee Colliery is therefore assessed as having high Local Significance.

#### 5.6.2 Assessment of Elements within Moonee Colliery

Table 5.2 Assessment of Elements within Moonee Colliery

Item	Significance Ranking	Comments
Moonee Colliery Bath House and Survey Building	High, in itself and as part of group.	For their ability to show how people entered and left the mine
Moonee Colliery Lamp Cabin and Operations Room	High, in itself and as part of group	For their ability to show how people entered and left the mine
Moonee Colliery Main Switch Room	Moderate, in itself and as part of group	For their ability to show how people entered

		and left the mine
Moonee Colliery 'Stump Building'	High	For its association with unionism
Moonee Colliery IT Building	Moderate, as part of group of buildings on the site	As part of the mine buildings on the site
Moonee Colliery New Administration Building	Low	Altered and partially demolished
Moonee Colliery Ventilation Shaft and Fan House	Moderate	For its ability to demonstrate aspects of mine ventilation and the location of the shaft. Fan intact although shaft sealed
Remnants of Coal Mining Machinery	High	For their ability to interpret part of the mining process
Remnant Boiler	High	As a symbol of the mine working and a remnant of the times when the mine was steam powered

The results of the significance assessment is that the fabric on the Moonee Colliery site is generally of High significance in itself and as a group, comprising:

- Moonee Colliery Bath House and Survey Building;
- Moonee Colliery Lamp Cabin and Operations Room;
- Moonee Colliery Main Switch Room; and
- associated paths to the mine entrance, workers' car parks and entry to the bath house.

**Iain, what goes here?** is in such poor condition that it is all of low significance and contributes little to the overall significance of the site.

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## 5.7 Endnotes

<sup>1</sup> NSW Heritage Manual, 1996, NSW Heritage Office and NSW Department of Urban Affairs and Planning, Sydney; and *Assessing Heritage Significance* (a *NSW Heritage Manual* update), 2001, NSW Heritage Office.

<sup>2</sup> CMP, op.cit., p 157-160.

<sup>3</sup> Ibid, p161-162.

<sup>4</sup> A goaf is a mined area of a colliery abandoned and left to collapse usually by removal of pillars, see Ritchie, op cit, p 26.