



# APPENDIX I

## METROPOLITAN COAL PROJECT ENVIRONMENTAL ASSESSMENT

**METROPOLITAN COAL PROJECT  
NON-ABORIGINAL HERITAGE ASSESSMENT**

**A REPORT FOR HELENSBURGH COAL PTY LTD.**

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<b>CONTENTS</b>	<b>PAGE</b>
1. INTRODUCTION	1
1.1 Background	1
1.2 Authorship	1
1.3 Acknowledgements	1
2. STATEMENT OF HERITAGE IMPACT	2
2.1 History of Metropolitan Colliery and Helensburgh	2
2.2 Heritage Places in the Vicinity of Metropolitan Colliery	6
2.3 Aspects of the Proposal Likely to Enhance Heritage Values	19
2.4 Aspects of the Proposal that could Detrimentally Impact on Heritage Values	19
2.4.1 Alternatives	23
2.5 Measures to be Taken to Minimise Impacts	24
2.6 Statement of Heritage Impacts	25
3. CONCLUSIONS	25
4. BIBLIOGRAPHY	26

#### LIST OF TABLES

TABLE 1	Listed Places in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area
TABLE 2	Additional Sites in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area that Appear to have Heritage Values
TABLE 3	Listed Places within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area
TABLE 4	Additional Sites within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area that Appear to have Heritage Values
TABLE 5	Potential Impacts – Metropolitan Colliery Surface Facilities Area
TABLE 6	Classification of Tilt Impacts to Buildings

TABLE 7                      Classification of Strain Impacts to Buildings

TABLE 8                      Potential Impacts – Project Underground Mining Area

LIST OF FIGURES

FIGURE 1                   Areas of Heritage Significance – Project Underground Mining Area

FIGURE 2                   General Arrangement of the Major Surface Facilities Area

LIST OF PLANS

PLAN 1                        Showing Heritage Places and Original Rail Lines

LIST OF APPENDICES

APPENDIX 1                Preliminary Description of the Development of the Metropolitan Colliery infrastructure

APPENDIX 2                Photographs of Places with Heritage Significance Referred to in the Report

APPENDIX 3                Conservation Management Planning Process Flowsheet

## 1. INTRODUCTION

### 1.1 Background

Helensburgh Coal Pty Ltd (HCPL) is proposing to extend the area of its underground mining operations at its Metropolitan Colliery site at Helensburgh. This proposed work may result in a range of impacts on places of heritage significance both on the surface and underground. As outlined in the document *Statements of Heritage Impact* (New South Wales [NSW] Heritage Office and Department of Urban Affairs and Planning [DUAP], 2002) the NSW Heritage Council requests that every development proposal be accompanied by a Statement of Heritage Impact (SOHI). A SOHI, together with supporting information, addresses (NSW Heritage Office and DUAP, 2002):

- why the item is of heritage significance;
- what impact the proposed works will have on that significance;
- what measures are proposed to mitigate negative impacts; and
- why more sympathetic solutions are not viable.

Such a SOHI is provided below.

This report has been drafted in consideration of the relevant principles and articles contained in the Burra Charter (the Australian International Council on Monuments and Sites [ICOMOS] Charter for places of cultural significance). The provisions of the Wollongong Local Environmental Plan (LEP) and Illawarra Regional Environmental Plan (REP) with respect to the management of items of heritage significance have also been considered, where relevant.

### 1.2 Authorship

The research, field recording and assessment for the SOHI has been undertaken by Dr Michael Pearson of Heritage Management Consultants Pty Ltd. Dr Pearson has over 30 years of experience in heritage management and assessment and is a member of Australia ICOMOS, the *Australian Society for Historical Archaeology*, *Professional Historians Association* (NSW), *Australian Mining History Association* and the Commonwealth's *World Heritage Expert Panel*.

### 1.3 Acknowledgements

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## **2. STATEMENT OF HERITAGE IMPACT**

### **2.1 History of Metropolitan Colliery and Helensburgh**

#### ***Development of Helensburgh***

Helensburgh was first known as 'Camp Creek'. It commenced life as a tent town for railway workers who were constructing the Illawarra Railway line, between 1884 and 1888. At the same time miners camped in the area, commencing exploration for coal deposits in 1883. The tent camps of the railway workers and those of the earliest miners were scattered on Crown land, but as the future of the mine became more certain settlement became more permanent. The name 'Helensburgh' given to the embryonic village is thought to either commemorate Helensburgh in Scotland, birthplace of the Cumberland Coal Mine's (which later became the Metropolitan Coal Mine) manager, Charles Harper, or to have been named after Harper's daughter, Helen. Harper died in a mining accident in Metropolitan Colliery in 1888, and is himself commemorated in the Charles Harper Memorial and Park in the centre of the now much-extended township.

The first school opened in 1885, and a full public school (which required a minimum of 20 pupils to be established, and which still stands) opened in 1887 (NSW Department of School Education Library, 1993). In 1888 after the mine had commenced production it employed 45 men, and the growth of the town was thereafter largely based on the fortunes of the mine. The original town centre was in the vicinity of Lukin Street, which was the closest occupiable area to the original track down the gully to the mine site. In the 1890s fifty four-room cottages were built for mine employees by the Metropolitan Coal Company, four of which survive in Junction Street. The original Post and Telegraph Office and Police Station were located at the bottom of Lukin Street (and still survive), and Lukin Street ran over the ridge to the Postman's Track giving access to the first railway station in Vera Street. In the early 1900s the centre of the town was moved to the present shopping area around the Parkes and Walker Street intersection, building on existing developments such as the 1887 Hanley's Centennial Hotel.

#### ***Historical Outline of Metropolitan Colliery***

The Metropolitan Colliery, where mining commenced in 1887, was a relative late-comer in the history of the Southern Coalfields. The first mine in the field, the Mount Kiera Colliery behind Wollongong opened in 1849, and was followed by mines at Woonoona (1857); Russell Vale and Bulli (1861); Mount Pleasant and Balgownie (1862); Coal Cliff (1878); Bellambi, South Clifton and Mt Kembla (1883); North Illawarra, Corrimal and North Bulli (1884); and South Bulli (1887) (OHM Consultants, 2006: 21). The Metropolitan Colliery, the first on the Southern Coalfield to use shaft access, was to become a major coal mine in NSW, and still operates today.

Prospecting operations by the Cumberland Coal and Iron Mining Company commenced with a bore on Camp Creek, near the future location of the shafts of the Metropolitan Colliery, in 1884. A 12 foot (ft) (3.6 metres [m]) seam of coal, the Bulli seam, was struck at 846 ft (258 m) below the surface. The Metropolitan Coal Company of Sydney was floated in 1887 to utilise the find, a decision coinciding with the construction of the Illawarra Railway, linking Sydney with Wollongong. The Illawarra Railway was completed in 1888.

When Metropolitan Colliery began full production in 1890, the reduction of the ruling grade of the Illawarra Railway to 1 in 80 was investigated, in order to facilitate better movement of trains. This necessitated a deviation and relocation of the railway, including an almost complete relocation of the line between Waterfall and Coal Cliff, removing seven single-line tunnels and the insertion of long sweeping curves to achieve a better gradient. As a result, the line was increased in length between Waterfall and Otford by 3.76 kilometres (km). The No.4 and No.5 tunnels located north and south of Metropolitan Colliery were abandoned by the deviation, as was the original railway station north of the Metropolitan Tunnel, in Helensburgh (Southern, 1978: 5-6). The tunnels were subsequently used as convenient at-grade routes for the water pipeline supplying water from a reservoir to the mine (Helensburgh Community Centre, 1991: 7-8), the old Metropolitan Tunnel itself being sealed at the mine end and filled with water. Within the Metropolitan Colliery site a brick viaduct carried the siding over the now-abandoned main line, and a large brick tunnel/culvert carried Camp Creek beneath the abandoned main line. Both were made redundant by the shift in rail line, and still survive in the Metropolitan Colliery area.

From the start of operations the Metropolitan Colliery instituted modern working methods, being the first in Australia to operate with all miners provided with locked flame safety lamps. The use of safety lamps and of fan ventilation instead of the more common furnace ventilation was due to the high gas content of the mine. By 1889 the 65 men working in shifts in the mine produced 14,571 tonnes of coal. An air-shaft had been sunk to 1,020 ft (310 m) and was to reach the seam at 1,060 ft (323 m), after which a large fan was to be erected capable of circulating 300,000 cubic feet of air per minute. This is the current No. 2 shaft. The NSW Mines Department reported that “The Act [is] in every respect complied with” (Department of Mines, 1889: 196, 30).

The new railway ran conveniently adjacent to the Metropolitan Colliery site, and once full production began in 1890 a spur line was built into the mine area and coal was trucked to Sydney by train, mainly for use by NSW railways and the Royal Navy, the latter ceasing to be a customer once local demand for the high quality coal produced by the Metropolitan increased (Harper, 1915: 183; Staff of the Geological Survey, 1925: 15). In 1893 the Metropolitan produced 194,512 tonnes of coal, the highest producer on the Southern Coalfield, a position it retained at least until the turn of the century, and for many years it remained the third to fifth highest coal producer in the state (Department of Mines, 1893: 91, 35). By 1895 about 300 men worked under ground, with horses providing haulage power. The ventilation fans provided an air supply of 450,000 cubic feet per minute to the mine. Output grew to 228,341 tonnes of coal that year (Department of Mines, 1895: 112, 50).

The Government Geologist E.F. Pittman in 1901 highlighted the Metropolitan Colliery as an example of mining modernity, indicating that as an “...example of an important colliery with the most modern appliances for economical and efficient work, and for ensuring as far as possible the health and safety of miners, the Metropolitan Coal Company’s Mine at Helensburgh may be cited” (Pittman, 1901: 320). In 1901 the mined area extended over a three mile by three-quarters of a mile area (4.8 x 1.2 km), being accessed by two circular shafts for haulage and ventilation (Current Shafts 1 and 2). The main shaft had a winder that could raise a cage 1,100 ft (335 m) from the shaft bottom to the surface in 28 seconds, and the ventilation shaft had a 20 ft diameter (6 m) Schiele fan, delivering 350,000 cubic feet of air per minute into the mine. Three endless-rope haulage systems were in operation, with a speed of 1.75 miles (2.8 km) per hour, with self-acting inclines connecting the haul road to the working place. Horses were also used to transport skips to the haulage way. Coal was extracted by Welsh bord and pillar methods, in some areas with pillars subsequently extracted allowing the roof to subside. Hand-working was used as the coal was of high quality and fell easily from the face, requiring no undercutting.

Outbursts of ‘fire-damp’ (explosive gas) occurred, but the use of safety lamps and very good ventilation reduced the danger (Pittman, 1901: 320-321; Harper, 1915: 183-184). However, accidents still occurred, including a natural gas outburst in 1895 which killed three men, another in 1925 and again in 1954, two miners being killed on both occasions (Hargraves & Martin, 1993: 703; Department of Mines, 1925: 60; [www.illawarracoal.com/metropolitan.htm](http://www.illawarracoal.com/metropolitan.htm)). Following the accident in 1925 a system of seam drainage holes and suction pumps to relieve gas pressure was introduced, a system later adopted by other mines.

Interestingly, the Mines Department reports, which are usually dry exposés of the safety record and production of a mine, sometimes give a glimpse of the life of the miner, albeit through their misdemeanours. For example, fines were issued in 1899 and 1900 to the Metropolitan Colliery for breaches in the regulations, which included: the manager’s failure to weigh all coal; three ‘wheelers’ (men who pushed trolleys) seen riding on limbers; 13 miners or wheelers found carrying matches, cigarettes or pipes; a miner seen ‘passing beyond danger boards’; 2 miners and a wheeler heard using foul language; a wheeler failing to close a trap-door; 5 miners found having unlocked lamps or not reporting damaged lamps; and 10 miners caught absent from duty without permission (Department of Mines, 1899: 135; 1900: 149). Clearly clowning about in the work environment and introducing any source of naked flame to the mine were regarded as serious matters, but men kept doing it.

It is easy to forget that the mine was the livelihood of the local community, and had its own culture and character. This included the influence of immigrant miners. Alan Hargraves recalls that: “The pleasant singing of Undermanager Watkin Jones at Metropolitan Colliery in the 1950s as he walked between workplaces is strong in the memories of two chroniclers of this work” (Hargraves, 1993: 80). Much oral history work has been undertaken by the local community and as part of the National Library’s Oral history program, focussing on miner’s experiences and labour issues (e.g. see Helensburgh Community Centre, 1991).

Mount Kembla Colliery introduced an electric coal-cutting machine and electric power to its mine in 1905, but the ease with which coal could be economically won manually at the Metropolitan mine slowed the introduction of mechanisation. By 1910 the Metropolitan had a powerhouse and used electricity to power 84 lamps on the surface and 111 lamps underground, and to drive one ventilation fan. The use of electricity at the mine gradually increased. The powerhouse at Metropolitan Colliery also serviced the village of Helensburgh by 1915 (Hargraves, 1993: 52), and one of the lattice steel pylons (probably used for that purpose) survives in very poor condition on the slope above the powerhouse. By 1925, 484 electric safety miners' lamps were in use at the Metropolitan Colliery, which would have needed re-charging, and in 1927 a new generator was installed and by 1930 one haulage engine was electric. While 17 mines in the state operated electric coal cutters by 1910, the Metropolitan stuck with hand extraction until 1933, when it introduced a single coal cutter. This, together with three haulage engines, two ventilation fans, two pumps, some 24 other pieces of equipment and an electric signals system were powered by a third power generator (Department of Mines, 1910: 135; 1905: 105, 136; 1925: 60, 68, 78, 82; 1930: 64; 1935: 52).

Up to 160 horses were used at any one time for underground haulage at Metropolitan Colliery, the last being removed in 1955 ([www.illawarracoal.com/metropolitan.htm](http://www.illawarracoal.com/metropolitan.htm)). It appears that, unlike some other mines with at-grade or inclined access, the pit horses stayed underground all year, and were brought to the surface at the Christmas break and agisted (Helensburgh Community Centre, 1991: 6). The underground pony stables survive near the bottom of Shaft 2, appearing to date from the 1940s. Some mechanical loading was introduced in 1940, but substantial mechanisation did not occur until 1951 when cutters, loaders, shuttle cars and belt conveyors were introduced. In 1954 an inclined drift was sunk which allowed coal to be brought to the surface by conveyor and rope haulage, the main shaft being retained for miner access, and the original Koepe winder being converted to electric power. As a result of the changing underground haulage systems, the last of the pit horses were removed from the mine in 1955.

A new coal preparation plant was built in 1959. Major changes to the above-ground facilities occurred after the purchase of the mine by Australian Iron and Steel in 1965, and mechanisation of operations was completed in the following year. A new ventilation shaft (No. 3) was sunk in 1975, and the Koepe winder again upgraded in 1985 (OHM Consultants, 2006: NSW Heritage Data Form).

Mechanised bord and pillar methods were introduced as part of the general mechanisation in 1951, and a drift replaced the downcast shaft (No. 1) in 1954. Mechanised longwall mining was introduced in 1995, resulting in the current output of approximately 1.5 million tonnes of coal a year for export (OHM Consultants, 2006: NSW Heritage Data Form).

Metropolitan Colliery is of heritage significance because it is one of the earliest established and longest running coal mining operations in Australia.

Appendix 1 provides a preliminary description of the development of Metropolitan Colliery infrastructure.

## 2.2 Heritage Places in the Vicinity of Metropolitan Colliery

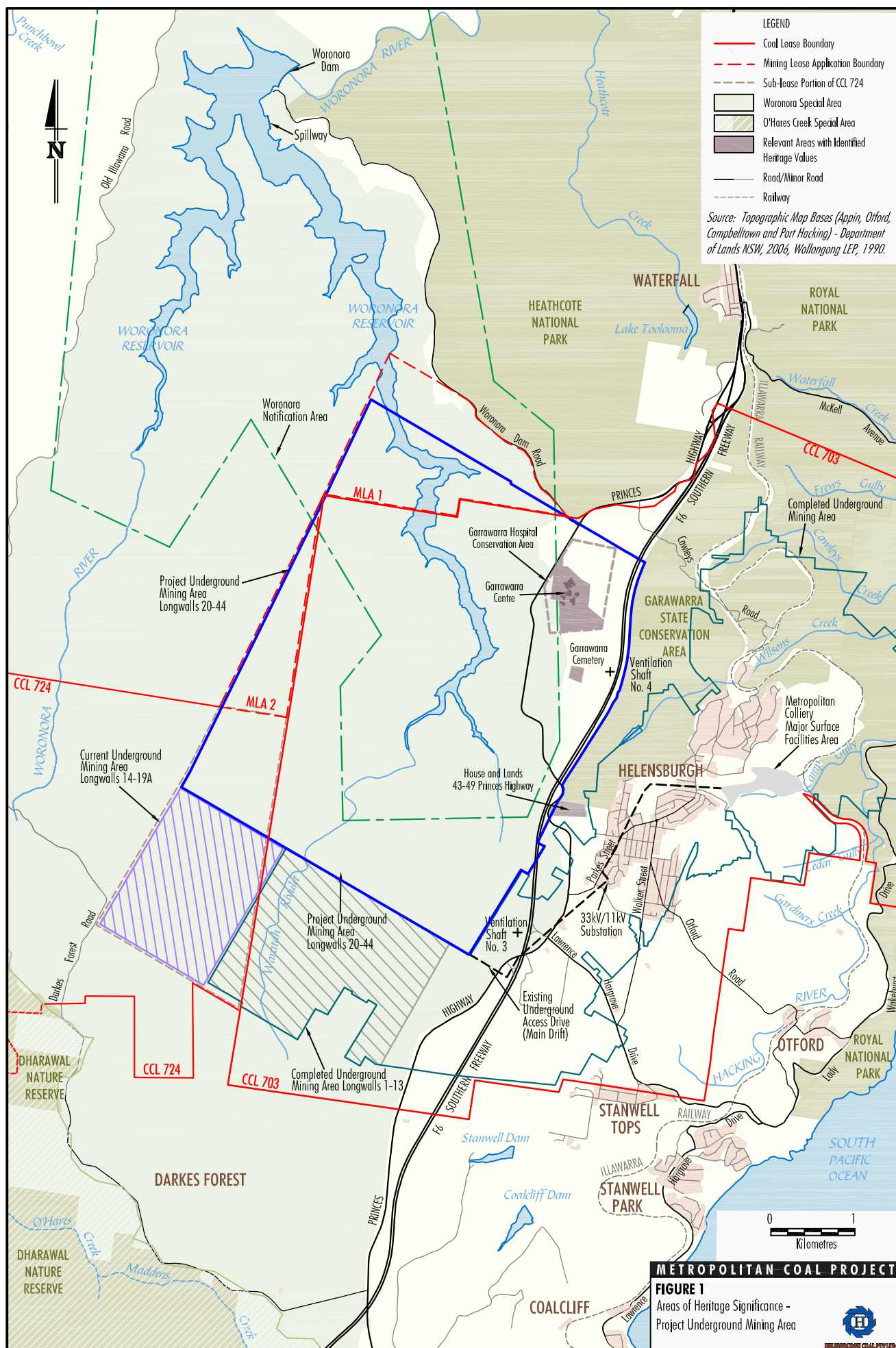
The items of heritage significance addressed in this SOHI have been identified through a combination of recorded listings, site visits, review of aerial photography and consultation with relevant agencies/persons with local knowledge.

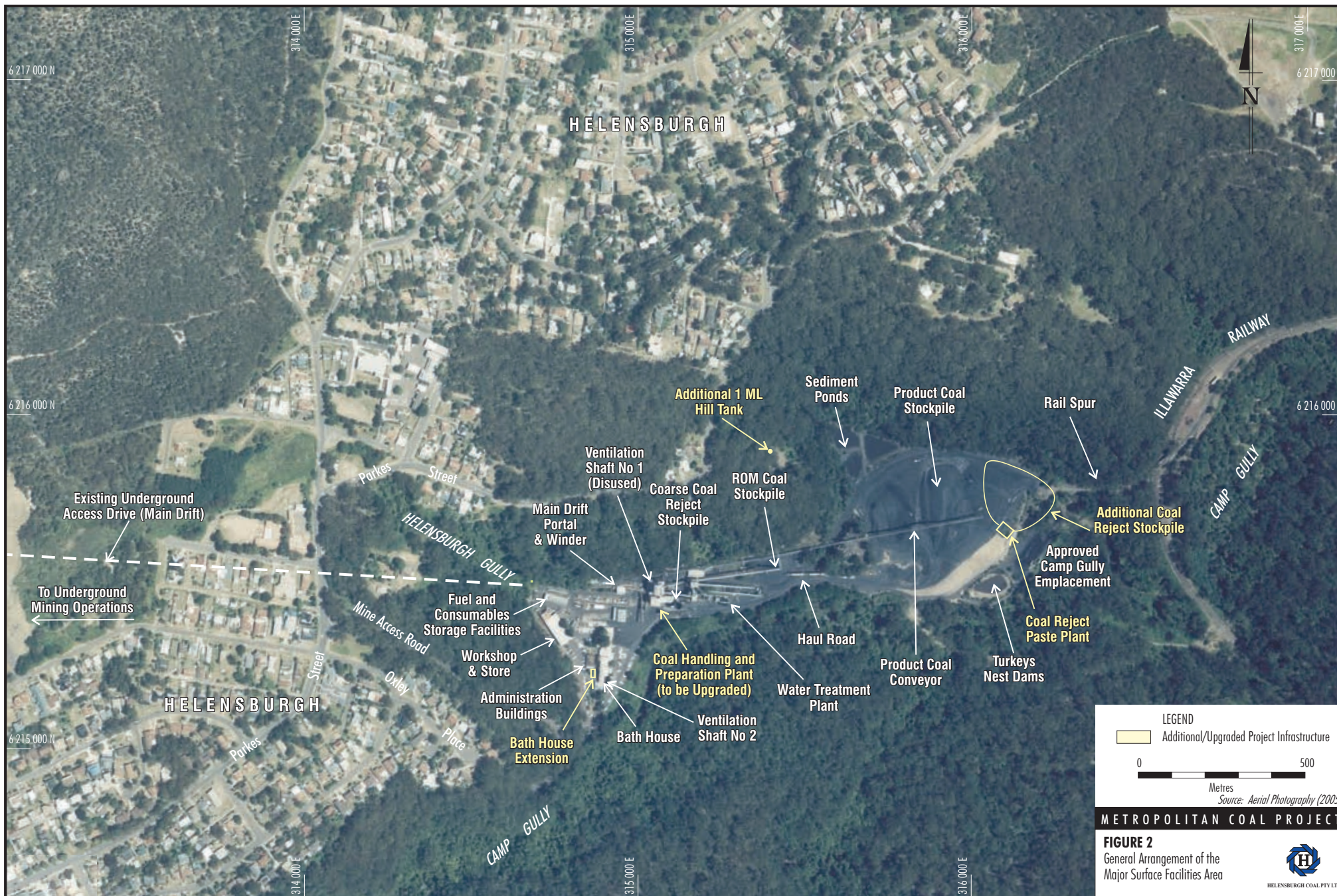
In identifying places with heritage significance in the vicinity of the Metropolitan Coal Project developments, the places listed in the NSW State Heritage Register, the Illawarra REP, the Wollongong LEP, and the *Strategic Management Plan for Historic Coal Mining Sites in the Illawarra*, (OHM Consultants, 2006) were considered. Several additional places identified during the survey as having potential heritage values have also been assessed and considered.

Because the number of places potentially impacted by the extended longwall mining and the upgrade of the surface infrastructure are wide-spread, the places potentially impacted have been broken up into:

1. Places within the Metropolitan Colliery Surface Facilities area and/or Project Underground Mining Area.
2. Places within 1 km of the Metropolitan Colliery Surface Facilities area and/or Project Underground Mining Area.

Figure 1 provides the locality of the Metropolitan Colliery Surface Facilities Area, and three areas of relevant heritage significance identified in close proximity to the Project Underground Mining Area (the Garrawarra Complex, including the nearby Garrawarra Cemetery and a house and lands located 43-49 Princes Highway), and Figure 2 illustrates components to be upgraded or added at the surface facilities area. Tables 1 to 4 list places within these categories. The tables also outline any additional sites that appear to have heritage values.





**Table 1—Listed Places in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area**

Place Name	Address	Heritage Register	Assessment/Construction
House and associated land, 43-49 Princes highway	43-49 Princes Highway <sup>1</sup>	Wollongong LEP (6505)	A simple building with a rusticated stone lower walls and fibro sheet upper walls, in a large rural paddock setting.
<b>METROPOLITAN COLLIERY</b>			
Metropolitan Colliery	Off Parkes Street, Helensburgh	Wollongong LEP (5921) (DB 2700797) Illawarra REP Strat. Man. Plan <sup>2</sup>	The whole Metropolitan lease area, which contains the following items of individual significance.
Metropolitan Colliery—No. 4 tunnel (Illawarra Railway)	Colliery Road, Helensburgh	Illawarra REP (DB 19144) Wollongong LEP (DB 2700067) Strat. Man. Plan	The southern portal of the Metropolitan Tunnel (No. 4) lies within the colliery lease area, the northern end being adjacent to the old Helensburgh railway station in Vera Street (see below). The ovoid brick tunnel is sealed at the southern end and holds water previously used in the colliery.
Metropolitan Colliery—No. 5 tunnel (Illawarra Railway)	Colliery Road, Helensburgh	Illawarra REP (DB 19152) Wollongong LEP (DB 2700075) Strat. Man. Plan	A short tunnel across the valley south of the coal stockpiles. Ovoid single-track tunnel fully brick lined, abandoned 1914. This tunnel is believed to have been used for mushroom growing from 1952. In good condition.
Metropolitan Colliery—Power Pylon	Colliery Road, Helensburgh	Illawarra REP (DB 19147) Wollongong LEP (DB 2700070)	A pylon located up slope of the power station, built of angle-iron lattice sections with three cross-trees of angle-iron. It appears to be part of the early mine infrastructure, possibly related to the supply of power from the mine to the Helensburgh township from 1915. The pylon is severely corroded and in danger of collapse.
Metropolitan Colliery—Shaft No. 1 head frame	Colliery Road, Helensburgh	Illawarra REP (DB 19146) Strat. Man. Plan Wollongong LEP (DB 2700069)	The No. 1 headframe appears in early photographs of the colliery. It is a large steel headframe with circular bracing panels and decorative wrought iron hand rails. The bracing legs have been cut off, and the winding engine site is now occupied by conveyor belt towers. The shaft itself is no longer in use and is gridded for safety, being replaced by the drift tunnel in 1954.

<sup>1</sup> Note that the Wollongong LEP currently lists the heritage item as 10 Princes Highway, however the Wollongong City Council Heritage Department has advised that the correct address for the heritage listed item is 43-49 Princes Highway.

<sup>2</sup> Strat. Man. Plan: *Strategic Management Plan for Historic Coal Mining Sites of the Illawarra* (OHM Consultants, 2006).

**Table 1—Listed Places in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/Construction
Metropolitan Colliery— Shaft No. 2 and Koepe winder	Colliery Road, Helensburgh	Wollongong LEP (5921) (DB 2700797)	The No. 2 headframe is a concrete tower with internal steel framework inside, on top of the original No. 2 shaft, currently used as man-access. The cages are lowered by the Koepe winder of about 1900, modernized in 1985. The current headframe replaces a timber or steel one shown in early photos and is probably part of the 1950s upgrade of the Colliery.
Metropolitan Colliery— Shaft No. 2 Fan Evase	Colliery Road, Helensburgh	Illawarra REP (DB 19134) Strat. Man. Plan Wollongong LEP (DB 2700059)	The fan evase is a concrete tube angled upward from the fan position adjacent to the shaft, with an octagonal outer form. The fan is still in position adjacent to the shaft. The current fan evase appears to be of the same vintage as the No. 2 shaft headframe, probably dating to the 1950s.
Metropolitan Colliery— Tunnel opening, portal and winder house	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	Referred to as the drift portal and winder and built in 1954, the drift is currently 1,164 m long, angled at 1:3. The British Thomson Houston Co. Ltd, Rugby (BHT) winding engine and cab is still in operation, driven by a 310 bhp electric motor. The winder is housed in a brick building that sits over the drift portal.
Metropolitan Colliery— Coal storage and Washery	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	The coal storage and washery building is a building developed and altered over time commencing in 1959, with many components of different ages.
Metropolitan Colliery— Office and Bathhouse	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	The office is a single-storey brick building, and the Bathhouse two storeys with large rooms with hoists for miner's clothing and personal possessions, a shower block, lamp room and ancillary rooms. A major part of the bathhouse was built in the late 19 <sup>th</sup> or very early 20 <sup>th</sup> century, and the office is a mid-20 <sup>th</sup> century structure.
Metropolitan Colliery— No. 3 Ventilation Shaft	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	A concrete brick engine house with two steel trunking fan evases leading from shaft top. Built 1976, located west of the Wollongong Freeway south west of Helensburgh.

**Table 1—Listed Places in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/Construction
Metropolitan Colliery— Pit pony stables underground	Colliery Road, Helensburgh	Strat. Man. Plan	Series of brick-floored, railed stalls along drives from bottom of No. 2 shaft, skip rails alongside. Date from 1940s? Pit horses were last used at Metropolitan in 1955. Artifacts include horse collars and equipage, 44-gallon drum feed cribs, boxes of feed, horse shoes. Condition poor.
Metropolitan Colliery— Powerhouse	Colliery Road, Helensburgh	Strat. Man. Plan	Brick two-storey structure. Power generation equipment all removed. Houses a switch room and a workshop. Overhead 3000 kilogram (kg) gantry crane intact. Three transformers to east (two old), old screening drum located adjacent to building.
<b>GARRAWARRA CENTRE</b>			
Garrawarra Hospital Heritage Conservation Area	Princes Highway	Wollongong LEP (5990, 6486, 61028)	Large group of Federation hospital buildings built 1906-1913 of brick, stucco and timber, with many later buildings in the complex. The significant buildings are from the office of Walter Liberty Vernon, Government Architect. All are altered from their original function, but remain remarkably intact externally and internally, and have new functions within an aged care facility.
Gates and Gatehouse	Garrawarra Hospital	Wollongong LEP	Group of structures comprising two sections of curved iron palisade fencing set into stone bases, a stone Gatehouse and gate piers, and decorative wrought iron vehicle and pedestrian gates. The Gatehouse has a steeply pitched terra cotta shingle roof, exposed rafter ends, timber framed windows and timber eaves linings, and is set on a splayed stone plinth. The date “1911” has been applied to a gate pier (Howard Tanner & Associates, 1993).
Administration Building	Garrawarra Hospital	Wollongong LEP	Picturesquely massed building on steeply sloping site. Face brick at ground and lower ground level, pebble dash render to walls, and steeply pitched tile roof with exposed rafter ends. Architectural elements include rendered/brick chimneys, large attics, window canopies, curved vents in gable ends and wide verandah to entry area. Much intact internal fabric (Howard Tanner & Associates, 1993).

**Table 1—Listed Places in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/Construction
Kitchen and Store Block	Garrawarra Hospital	Wollongong LEP	Large two storey service block with face brick base and boarded upper level, tile roof.
Staff Cafeteria, Nurses Hostel	Garrawarra Hospital	Wollongong LEP	Two storey building with hipped roof and corrugated fibro roofing, mottled face brickwork to ground floor, roughcast render to first floor. Wide verandah at main entry on north side with trafficable terrace over, projecting bays with splayed walls to north and east sides, trafficable roofs over. Bellcast detail at junction of brickwork and roughcast. Roughcast to chimneys (Howard Tanner & Associates, 1993).
Residential Houses,	Garrawarra Hospital	Wollongong LEP	A significant part of a row of houses for hospital uses at varying times. Federation Arts and Crafts style buildings are of greatest significance. The contextual values of the site are group value, landmark value, representative value and integrity. The types of significance of the site are historic, cultural, social, architectural, townscape, natural and aesthetic.
Cemetery	Old Princes Highway, Garrawarra Hospital	Wollongong LEP	The Cemetery is located South of the hospital. Little remains to identify the Cemetery from the surrounding bushland. Mounds in the ground and some broken pieces of marble. The surrounding land has been used as a rubbish tip (Howard Tanner & Associates, 1993).

In addition to the items listed above at the Garrawarra Centre, the following items were listed as exceptional significance by Howard Tanner & Associates (1993):

- Palmer House and adjacent garage/stable;
- Wards 1 to 8 and Dining Room (former Male Wards); and
- Wards 1 to 9 and Library/Canteen (former Female Wards).

**Table 2 —Additional Sites in the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area that Appear to have Heritage Values**

Place Name	Address	Assessment/Construction
Metropolitan Colliery—Railway viaduct	Colliery Road, Helensburgh	An arched brick structure is located at the eastern end of the southern conveyor, east of the bush ‘island’, half-way between railway tunnels 4 and 5. The structure is partially buried in material from the coal storage mounds, but is clearly a substantial structure, 1.8 m height of the arch being visible. Rail lines are said to survive beneath the coal stockpile on top of the structure. It is interpreted as a viaduct allowing the original main line to pass beneath the Metropolitan Colliery branch line, and shown in a c.1915 photograph.
Metropolitan Colliery—Camp Creek culvert	Camp Creek, Helensburgh	A brick-lined culvert or tunnel, c.65 m long and c.6 m high and wide, built beneath a large earth bank that carried the main Illawarra rail line over camp Creek. The line was abandoned in 1915. Located between the two rail tunnels on Camp Creek.
Metropolitan Colliery—Weir on Camp Creek	Camp Creek, Helensburgh	A mass-concrete weir wall extending across Camp Creek immediately upstream of the now-infilled side valley on which much of the post 1950s colliery infrastructure sits. The dam still provides water for mine operations.
Metropolitan Colliery—Reduction pond base	Colliery Road, Helensburgh	Mass concrete footings on hill behind the bath house. Shown on c.1950s plan in Manager’s office as ‘reduction pond’. Possibly associated with water for Shaft No. 2 engines or bathhouse.
Metropolitan Colliery—Manager’s Residence	Parkes Street, Helensburgh	A mid-20 <sup>th</sup> century brick cottage with tiled roof and adjacent tennis court, located at the top of the gully immediately above the mine site and opposite Lukin Street. Identified locally as Manager’s Residence, but no documentation yet located.

**Table 3—Listed Places within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area**

Place Name	Address	Heritage Register	Assessment/Construction
Charles Harper Monument and Park	Parkes Street	Wollongong LEP (6124)	Memorial in fair condition (see also Helensburgh Park and pines) erected 1889 in memory of the first manager of the Metropolitan Colliery, killed at the mine in 1888.
Community Hall	Parkes Street	Wollongong LEP (6113)	Burnt down 2000.
Company Houses	4 – 10 Junction Street	Wollongong LEP (6114)	Four weatherboard cottages built for miners, probably in the early 20 <sup>th</sup> century, occupied and in fair to good condition, though several altered.
Cottage	12 Robertson Street	Wollongong LEP (6101)	Weatherboard cottage, early 20 <sup>th</sup> century, vacant, in poor condition.
Cottage	16 Robertson Street	Wollongong LEP (6102)	Weatherboard cottage, early 20 <sup>th</sup> century, occupied, in good condition, extended. Same design as no. 20.
Cottage	20 Robertson Street	Wollongong LEP (6103)	Weatherboard cottage, early 20 <sup>th</sup> century, occupied, in good condition, extended. Same design as no. 16.
Cottage	12 Foster Street	Wollongong LEP (6108)	Brick cottage, occupied, in good condition.
Cottage	135 Parkes Street	Wollongong LEP (2700473)	Weatherboard cottage. Occupied, fair condition.
Hanley's Hotel	Cnr Parkes and Walker Streets	Wollongong LEP (6115)	Brick two-storey hotel, opened in 1887 as the Centennial Hotel and still in operation. In fair to good condition.
Helensburgh Park and Pines	Parkes Street, Helensburgh	Wollongong LEP (6124)	Good condition, with many healthy pines (see also Charles Harper monument and park, being the same place)
House	35 Vera Street	Wollongong LEP (6106)	Weatherboard cottage, occupied, in good condition.
Masonic Temple	Robertson Street	Wollongong LEP (6104)	Brick with stuccoed façade, early 20 <sup>th</sup> century, fair condition
Post Office	114 Parkes Street	Wollongong LEP (6116)	Weatherboard public building built 1901, in fair to good condition, with infilled verandahs and altered facias and barge boards, but with moderate integrity.
Residence, former Police Station	Lukin Street	Wollongong LEP (6109)	A weatherboard building at the corner of Lukin Street and High Street, reputed locally to be the original Police Station (pre-1895). The building is located opposite the original post and telegraph office, and has Federation detailing on its façade and verandahs.

**Table 3—Listed Places within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/Construction
Residence, former Post Office	Lukin Street	Wollongong LEP (6110)	A weatherboard building at the corner of Lukin Street and Park Street, shown in early photographs to be to be the original post and telegraph office run by Thomas Horan from 1886 to 1901. The building has a highly distinctive facade facing the street, opposite the reputed original Police Station. Located close to the original track from the Metropolitan Colliery.
Postman's Track	Between Lukin Street and Railway	Wollongong LEP (6105)	Rock cut drain/gutter beside now-bitumened roadway, in fair condition. Originally was the main track from the railway station to the original town settlement and post office in Lukin Street, and the Metropolitan mine.
Primary School	Lukin Street	Wollongong LEP (6111)	Brick Government Architect's Office designed public school of 1887 with additions 1889, 1890 and 1912. Condition fair. Still in operation as school.
Railway Cottage	Tunnel Road	Wollongong LEP (6107)	Brick cottage for station master (?), built directly adjacent to the original Helensburgh railway station. Occupied and in good condition, with some alterations apparent.
Railway Tunnel (disused)	Off Vera and Tunnel Roads	Wollongong LEP (6482)	Brick ovoid northern tunnel portal to Tunnel No. 4 (Old Metropolitan Tunnel). Condition of elements varies from good to poor.
Railway Station Platform	End of Tunnel Road	Wollongong LEP	Remnant section of original railway platform (more still buried), and original station sign. Station site from 1888 to 1913. Condition of elements varies from good to poor.
School Residence	End of Fletcher Street	Wollongong LEP (6111)	Weatherboard cottage now used as school offices within the school grounds. Much altered. Condition fair.
Cemetery	Frew Avenue Helensburgh	Wollongong LEP (6123) Strat. Man. Plan	Fair condition, mowed area with headstones, some subsidence and damage.
Cottage	5 Hay Street	Wollongong LEP (6118) Strat. Man. Plan	Rusticated coursed sandstone cottage, described in register as white-painted but now exposed stone with enclosed verandah removed. Occupied, good condition.

**Table 3—Listed Places within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/Construction
Cottage	15 Hay Street	Wollongong LEP (6121) Strat. Man. Plan	Weatherboard and fibro cottage with terracotta tiled roof, occupied, good condition.
Cottage 'Wildy's'	16 Hay Street	Wollongong LEP (6120) Strat. Man. Plan	Weatherboard cottage, iron roof, occupied, fair condition.
Helensburgh Railway Station Group	Illawarra Railway	State Heritage Register Wollongong LEP (6343)	Brick station building (1915) and platform intact, and in good condition. Stairway to road bridge demolished. New concrete pedestrian bridge at northern end of platform. Abandoned Tunnel entrance 200 m north of station.
Police Station and Lock-up	120 Parkes Street	Wollongong LEP (6117)	Brick government building complex, tiled roof, built 1895-1903. Still in use for original function. Condition fair to good.
Railway tunnel (disused)	Off Cawley Road	Wollongong LEP (6345)	There is no Cawley Road in the street directory for Helensburgh. This appears to refer to the old Cawley tunnel north of Helensburgh.
Sri Venkateswara Temple	Temple Road	Wollongong LEP (6122)	Constructed progressively since 1989. Elaborate stone carved facades and roofs. Good condition. Actively in use.
Royal National Park and Garawarra State Conservation Area	Sir Bertram Stevens Dr, Audley, NSW	National Heritage List	Royal National Park and Garawarra State Conservation Area constitute a major centre of temperate plant species richness, having one of the richest concentrations of plant species in temperate Australia. The historical values of this item are specific to the Royal National Park, over 3 km from the proposed longwalls.

**Table 4—Additional Sites within 1 km of the Metropolitan Colliery Surface Facilities Area and/or Project Underground Mining Area that Appear to have Heritage Values**

Place Name	Address	Assessment/Construction
Railway tunnel No. 3 (disused)	Tunnel Road	The southern portal of tunnel No 3 is north of Tunnel Road, opposite the northern end of the No. 4 Metropolitan tunnel and original railway station site, with its northern end adjacent to the current railway line reserve. The tunnel is of single track ovoid form, like the other original tunnels. The northern tunnel portal is part of the Railway Station complex.
Railway tunnel, Lilyvale No 2.	Off Railway Avenue	An original tunnel a few hundred metres south of No. 5 tunnel, and above and adjacent to the 1913 Lilyvale tunnel on the current rail line.

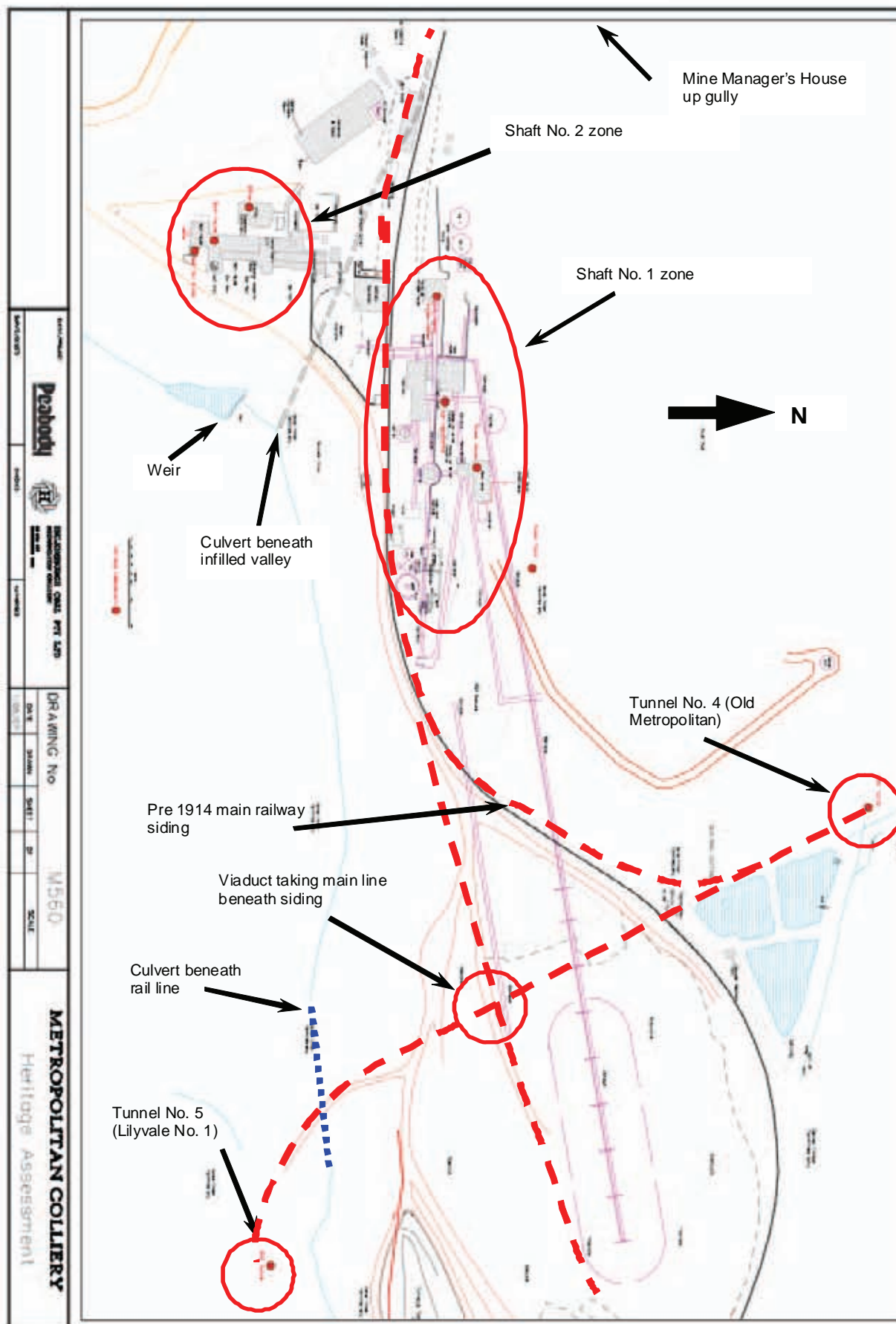
***Other Potential Heritage Values***

The listing of elements of Regional Heritage Significance within the Metropolitan Colliery site is quite general, and little detail is provided. There are a number of smaller elements and artefacts that are worthy of consideration for their heritage values. For example, early components and machinery associated with the Powerhouse (gantry crane, screening trommel), and machinery such as conveyor belt sections, continuous haulage cable winch, skips, etc, from the 1940s-50s in the abandoned underground sections near the bottom of Shaft No. 2.

It is recommended below that a Conservation Management Plan (CMP) be developed for the Metropolitan Colliery, in which the recording and management of this material would be addressed together with the already identified elements.

Plan 1 shows the location of heritage elements of the Metropolitan Colliery site. Appendix 2 contains photographs of each of the heritage items identified.

Plan 1— Showing Heritage Areas and Original Rail Lines



### **2.3 Aspects of the Proposal likely to Enhance Heritage Values**

None of the proposed actions outlined at the time of writing appear to enhance the heritage values of the identified places. A CMP is recommended to be developed for the Metropolitan Colliery, which would provide management strategies for items of heritage and allow for enhancement of their heritage values.

### **2.4 Aspects of the Proposal that could Detrimentially Impact on Heritage Values**

The areas studied that might be impacted by proposed works are the Metropolitan Colliery surface facilities infrastructure, and places above the Project Underground Mining Area. These are discussed below.

Potential items of heritage in Helensburgh township are not expected to be impacted by the proposals as they are more than 1 km from the Project Underground Mining Area located to the west of the township (Figure 1). No impacts to heritage resulting from vibration or dust are expected outside the surface facilities area of the mine as dust and vibration emissions have been considered in the Air Quality and Noise Assessments for the Project and indicate compliance with amenity criteria (Appendices K and J of the Environmental Assessment respectively).

#### ***Metropolitan Colliery Surface Facilities Area***

In the Metropolitan Colliery Surface Facilities Area, key aspects of the proposed works include:

- upgrade of the Coal Handling and Preparation Plant (CHPP) to facilitate increased coal washing and production;
- upgrade of existing material handling (conveyor) systems;
- extension of water management systems;
- construction of a backfill paste plant and associated coal reject stockpile, pump and pipeline installations;
- upgrade of electrical reticulation and control systems;
- construction of a demountable bathhouse adjacent to the existing bathhouse; and
- other associated infrastructure, plant, equipment of activities.

The specifics of each of these proposals would be determined by detailed engineering design. Notwithstanding, Table 5 indicates the general potential for impact on identified elements of heritage significance.

**Table 5—Potential Impacts - Metropolitan Colliery Surface Facilities Area**

Place Name	Address	Heritage Register	Assessment/ Construction	Potential for Impact
Metropolitan Colliery	Off Parkes Street, Helensburgh	Wollongong LEP (5921) (DB 2700797) Illawarra REP Strat. Man. Plan	The Metropolitan lease area, which contains many items of individual significance.	See below.
Metropolitan Colliery— No. 4 tunnel (Illawarra Railway)	Colliery Road, Helensburgh	Illawarra REP (DB 19144) Wollongong LEP (DB 2700067) Strat. Man. Plan	Brick masonry structure containing water.	No identified proposal impacts on this site.
Metropolitan Colliery— No. 5 tunnel (Illawarra Railway)	Colliery Road, Helensburgh	Illawarra REP (DB 19152) Wollongong LEP (DB 2700075) Strat. Man. Plan	Brick masonry structure with access cutting at each end.	May be affected by the approved Camp Gully coal reject emplacement. Not directly impacted by outlined Project proposals.
Metropolitan Colliery— Power Pylon	Colliery Road, Helensburgh	Illawarra REP (DB 19147) Wollongong LEP (DB 2700070)	Corroded and in danger of collapse.	No identified proposal impacts on this site.
Metropolitan Colliery— Shaft No. 1 head frame	Colliery Road, Helensburgh	Illawarra REP (DB 19146) Strat. Man. Plan Wollongong LEP (DB 2700069)	Iron/steel structure.	May be affected by upgrade proposals for the immediately adjacent CHPP and related infrastructure.
Metropolitan Colliery— Shaft No. 2 and Koepe winder	Colliery Road, Helensburgh	Wollongong LEP (5921) (DB 2700797)	Brick masonry and steel structure.	No identified proposal impacts on this site.
Metropolitan Colliery— Shaft No. 2 Fan Evase	Colliery Road, Helensburgh	Illawarra REP (DB 19134) Strat. Man. Plan Wollongong LEP (DB 2700059)	Brick masonry structure.	No identified proposal impacts on this site. The fan has recently been removed from the evase to increase air flow.
Metropolitan Colliery— Tunnel opening, portal and winder house	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	Brick masonry structure and portal.	No identified proposal impacts on this site.
Metropolitan Colliery— Coal storage and Washery	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	Steel-framed structure.	May be affected by the upgrade of the CHPP over time.
Metropolitan Colliery— Office and Bathhouse	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	Brick masonry structure.	Not directly impacted by outlined proposals.
Metropolitan Colliery— No. 3 Ventilation Shaft	Colliery Road, Helensburgh	Wollongong LEP Strat. Man. Plan	Brick masonry and steel structure.	No identified proposal impacts on this site.

**Table 5—Potential Impacts - Metropolitan Colliery Surface Facilities Area (Cont.)**

Place Name	Address	Heritage Register	Assessment/ construction	Potential for Impact
Metropolitan Colliery— Pit pony stables underground	Colliery Road, Helensburgh	Strat. Man. Plan	In disused section of mine and subject to potential collapse.	Access may no longer be available in the future.
Metropolitan Colliery— Powerhouse	Colliery Road, Helensburgh	Strat. Man. Plan	Brick masonry structure.	May be affected by the upgrade of electrical reticulation and control systems.
Metropolitan Colliery— Railway viaduct	Colliery Road, Helensburgh	Not listed	Partially buried brick masonry structure.	May be affected by future changes to stockpile management.
Metropolitan Colliery— Camp Creek culvert	Camp Creek, Helensburgh	Not listed	Brick masonry structure.	May be impacted by the approved Camp Gully coal reject emplacement. Not directly impacted by outlined Project proposals.
Metropolitan Colliery— Weir on Camp Creek	Camp Creek, Helensburgh	Not listed	Concrete structure.	Not directly impacted by outlined proposals.
Metropolitan Colliery— Reduction pond base	Colliery Road, Helensburgh	Not listed	Concrete structure.	Not directly impacted by outlined proposals. May be affected by future upgrade of parking facilities at mine.
Metropolitan Colliery— Manager's Residence	Parkes Street, Helensburgh	Not listed	Brick cottage.	Not directly impacted by outlined proposals.

**Project Underground Mining Area**

The proposed extension of longwall mining potentially impacts on two listed places west of Helensburgh, the Garrawarra Centre (Table 1), and the house and lands at 43-49 Princes Highway<sup>3</sup>.

Mine Subsidence Engineering Consultants (MSEC) (2008) has provided preliminary systematic subsidence predictions for the buildings within the Garrawarra Centre (based on a first pass mining extraction layout which will be reviewed on the basis of predictions made), and categorised the predicted impacts according to the descriptions below in Tables 6 and 7.

**Table 6— Classification of Tilt Impacts to Buildings**

Impact Category	Mining Induced Ground Tilt (mm/m)*	Description
A	< 5	Unlikely that remedial work will be required.
B	5 to 7	Adjustment to roof drainage and wet area floors might be required.
C	7 to 10	Minor structural work might be required to rectify tilt. Adjustments to roof drainage and wet area floors will probably be required and remedial work to surface water drainage and sewerage systems might be necessary.
D	> 10	Considerable structural work might be required to rectify tilt. Jacking to level or rebuilding could be necessary in the worst cases. Remedial work to surface water drainage and sewerage systems might be necessary.

\* mm/m: millimetres per metre

<sup>3</sup> Note that the Wollongong LEP currently lists the heritage item as 10 Princes Highway, however the Wollongong City Council Heritage Department has advised that the correct address for the heritage listed item is 43-49 Princes Highway.

**Table 7— Classification of Strain Impacts to Buildings**

<b>Impact Category</b>	<b>Description of typical impact to walls and required repair</b>	<b>Approximate crack width limit</b>
0	Hairline cracks.	< 0.1 millimetre (mm)
1	Fine cracks which do not need repair.	0.1 mm to 1.0 mm
2	Cracks noticeable but easily filled. Doors and windows stick slightly.	1 mm to 5 mm
3	Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weather-tightness often impaired.	5 mm to 15 mm, or a number of cracks 3 mm to 5 mm in one group
4	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window or door frames distort. Walls lean or bulge noticeably. Some loss of bearing in beams. Service pipes disrupted.	15 mm to 25 mm but also depends on number of cracks
5	As above but worse, and requiring partial or complete rebuilding. Roof and floor beams lose bearing and need shoring up. Windows broken with distortion. If compressive damage, severe buckling and bulging of the roof and walls.	> 25 mm

The predicted tilts for all of the buildings within the Garrawarra Centre are assessed as experiencing negligible to nil impact (Category A).

The predicted strains, at all buildings except for the longer buildings (i.e. 40 m to 100 m long) that have higher heritage significance, have been assessed to experience a strain impact of no greater than Category 0 or 1 (i.e. hairline cracks or fine cracks which do not need repair). For the longer buildings, MSEC has provided conservative performance criteria that they consider would result in strain impacts of no greater than Category 0 or 1.

HCPL will commit to the performance criteria for the longer buildings in the Environmental Assessment, and detailed future mine design in the vicinity of the Garrawarra Centre would be constrained by the criteria.

Accordingly, it can be assumed that all of the buildings within the Garrawarra Centre would experience negligible tilt impacts and strain impacts no greater than hairline cracks or fine cracks which do not require repair. MSEC, 2008 concluded that if the final mine design is constrained so as to achieve the above categories, then any effects to the buildings would be negligible.

There is a cemetery at the Garrawarra Complex which is listed in the Wollongong LEP. The cemetery is considered to be in poor condition, with broken headstones and recolonisation by the surrounding bushland (Howard Tanner & Associates, 1993). MSEC (2008) has provided subsidence predictions for the cemetery which indicate that some minor cracking of the surface soils could occur however it is unlikely these surface cracks would exceed 20 mm in width and could be remediated by natural or manual infilling with soil or local regrading and compacting.

MSEC (2008) has provided subsidence predictions for the part-stone cottage at 43-49 Princes Highway, and has assessed that it would be expected to experience a tilt impact of Category A and a strain impact of Category 0. Given the extremely small predicted values of ground movement, it is unlikely that any preventative measures would be required.

Table 8 summarises these impacts.

**Table 8—Potential Impacts – Project Underground Mining Area**

Place Name	Heritage Register <sup>1</sup>	Assessment/Construction	Potential for impact
Garrawarra Hospital Conservation Area, Gates, gatehouse, admin Bld, Kitchen, store block, staff cafeteria, nurses hostel residence houses, and cemetery	Wollongong LEP (5990, 6486, 61028)	Brick masonry structures.	Negligible tilt impacts, and HCPL have committed to strain impacts no greater than hairline cracks or fine cracks which do not require repair.
House and associated lands, 43-49 Princes highway	Wollongong LEP (6505)	Partially stone structure.	Negligible effect. The house is expected to remain in a safe and serviceable condition, and it is unlikely that any preventative measures would be required.
Royal National Park and Garrawarra State Conservation Area	National Heritage List	Protected Area.	The historical values associated with this listing are specific to the Royal National Park, which will not be impacted by the proposal.

<sup>1</sup> The heritage significance of these features is described in the relevant listings in the heritage registers.

Given the above, there would be negligible impact on heritage values (historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance) of the sites in the vicinity of the Project Underground Mining Area (Table 8) (or their settings) as a result of the Metropolitan Coal Project.

### **Potential Cumulative Impacts**

No potential cumulative impacts have been identified for the Metropolitan Colliery surface facilities, with the exception of the approved Camp Gully coal reject emplacement (Table 5). Potential cumulative impacts have been considered for the Garrawarra Centre, where relevant (refer Section 2.5).

#### **2.4.1 Alternatives**

Potential impacts to the heritage items within the Metropolitan Colliery Surface Facilities Area, as a result of the Metropolitan Coal Project, have been minimised as much as practicable from an economic feasibility perspective (i.e. consistent with continued operation of the Metropolitan Colliery surface facilities and upgrade of these facilities as necessary in support of the Project). For example, the bathhouse extensions would be located in a building adjacent to the existing bathhouse (Figure 2), rather than altering the existing bath house. These potential impacts would be further managed by the preparation of a CMP, as described below.

HCPL has committed to a sympathetic alternative (i.e. commitment to minimise potential impacts on the longer and more sensitive buildings by adopting conservative strain performance criteria that would be applied to mine design) to reduce the expected impacts to items of heritage within the Garrawarra Centre to negligible levels. Further detail on the criteria is provided in the Subsidence Assessment (MSEC, 2008) (Appendix A to the Environmental Assessment).

Proposed management measures for the items of heritage within the Metropolitan Colliery Surface Facilities Area, and within the Garrawarra Centre are provided below in Section 2.5.

The expected impacts to the heritage values of the house and associated lands at 43-49 Princes Highway, and at the Royal National Park, have been assessed as negligible to nil, and as such no consideration of alternatives is considered necessary.

## **2.5 Measures to be Taken to Minimise Impacts**

### ***Metropolitan Colliery Surface Facilities Area***

The preparation of a CMP for the Metropolitan Colliery surface infrastructure would identify specific potential affects to heritage items as part of the detailed design of infrastructure items. The CMP would also present policies, strategies and actions to minimise or mitigate adverse impacts on the historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the Metropolitan Colliery and its site. The CMP process would include:

1. Further detailed inspection of all items of heritage significance or potentially of heritage significance within the Metropolitan Colliery Surface Facilities Area and recording of these items.
2. Further literature and archival review to inform the CMP, where relevant.
3. Consultation with relevant agencies including the NSW Department of Planning regarding the detailed design of any heritage controls.
4. Consideration of heritage-related requirements of relevant planning instruments (e.g. the Wollongong LEP and Illawarra REP).
5. Consideration of contingency measures to address future (i.e. unforeseen) potential effects to heritage.

A flowsheet illustrating the conservation management planning process is provided in Appendix 3.

### ***Garrawarra Centre***

Howard Tanner & Associates (1993) provide conservation processes for the Garrawarra Centre in the *Conservation Plan for Garrawarra Centre for Aged Care*. This document provides the process to be followed for refurbishment works.

At the time of writing the report the main buildings were undergoing extensive refurbishment of exterior and interior surfaces and services. It suggests a number of conservation practices and recommendations, including:

- Where possible, original building fabric should be conserved and maintained.
- The oral history of the site should be recorded from previous employees and patients.
- The substantial records associated with the site should be sorted, catalogued and lodged with an appropriate repository.
- Provision should be made for the continuing security and maintenance of significant items.
- All conservation work should involve minimum interference to the existing fabric.
- Continued (or implementation of) maintenance and supplementation of the significant vegetation on the site.
- Management of the site should include careful siting of any future development so that it will not reduce the cultural significance of the place.

- Adaptation of existing buildings which may involve some modification to the fabric should be permitted if the works do not diminish the appreciation of the significance of the place.
- Conservation of the site can be best achieved by a number of conservation practices including the restoration and adaptive re-use of the buildings of exceptional and high heritage significance, and the unavoidable intervention of significance fabric should be reduced to minimise the loss of cultural significance.

It is considered that the potential impacts to the Garrawarra Centre resulting from the Metropolitan Coal Project (as described above) would be significantly less than the impacts associated with the works described by Howard Tanner & Associates (1993).

### ***Other***

The expected Project impacts to the heritage values of the house and associated lands at 43-49 Princes Highway, and at the Royal National Park have been assessed as negligible to nil, and as such, no specific management measures are considered necessary.

## **2.6 Statement of Heritage Impacts**

The potential impacts of the proposals on the identified items of heritage significance within the surface facilities area and Project Underground Mining Area varies. Preliminary subsidence impacts that may be expected on items of heritage significance within the Project Underground Mining Area include hairline or fine cracking. Some items of heritage significance within the Metropolitan Colliery Surface Facilities Area may be impacted due to surface infrastructure upgrades. Access to heritage items underground may no longer be available.

The preparation of a Metropolitan Colliery Surface Facilities Area CMP is recommended to provide guidance for management of heritage items during the detailed design, construction and operation phases of infrastructure development. The CMP would indicate the impacts that may be expected in the future and what responses will be made to minimise them, and to provide contingency measures for addressing as-yet unforeseen impacts as they arise, including cumulative impacts, if relevant. This would include management of items where the heritage values would be lost (e.g. through careful and detailed recording including photographs).

## **3. CONCLUSIONS**

It is recommended that:

1. A CMP be prepared for the Metropolitan Colliery surface infrastructure.
2. As part of the Metropolitan Colliery Surface Facilities Area CMP process, the heritage elements of the site, including the pit pony stables and associated artefacts, be fully documented.
3. The Metropolitan Colliery Surface Facilities Area CMP be drafted in accordance with the heritage-related requirements of any relevant planning instrument (e.g. the Wollongong LEP and Illawarra REP).

4. The *Conservation Plan for Garrawarra Centre for Aged Care* (Howard Tanner & Associates, 1993) be referred to for the management of potential heritage impacts at the Garrawarra Centre.

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## **APPENDIX 1**

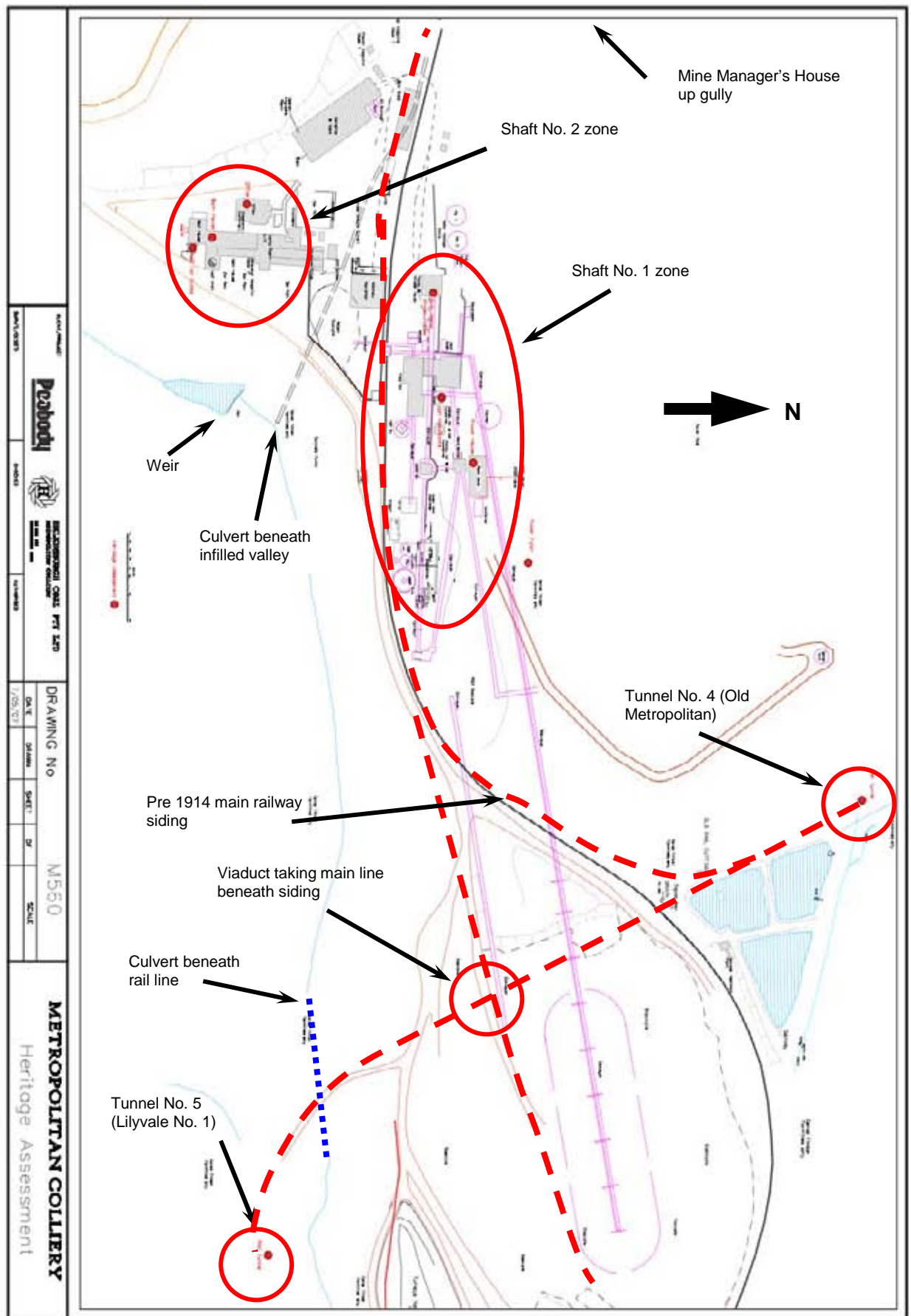
### **PRELIMINARY DESCRIPTION OF THE DEVELOPMENT OF THE METROPOLITAN COLLIERY INFRASTRUCTURE**

The following text and photographic information is a preliminary attempt to illustrate the sequence of development of the above-ground infrastructure of the Metropolitan Colliery. It aims to make some sense of the evidence and should be seen as preliminary work necessary for the recommended development of a Conservation Management Plan.

The historical images are from the Wollongong City Library on-line collection, see <http://illawarraimages.wollongong.nsw.gov.au/illaweb/scripts/default.asp?Lib=/lllalms>

Plan 1 shows the main zones of heritage significance, and the original route of the pre-1914 rail line and sidings.

Plan 1—Showing Heritage Areas and Original Rail Lines



## Shaft No 1 zone

### *Shaft No. 1 headframe complex*

The No. 1 headframe appears in early photographs of the colliery, and is assumed to have dated from the earliest mining phase in the 1880s. It is a large steel headframe with circular bracing panels and decorative wrought iron hand rails. The bracing legs have been cut off, and the winding engine house site is now occupied by bins. The shaft itself is no longer in use and is gridded for safety, being replaced for access by the drift tunnel in 1954.

The series of photographs show the range of buildings adjacent to the shaft, including the loading gantry. All of these buildings, with the possible exception of the current powerhouse in later photos, appear to have been demolished for later developments. A brick building with five gable-ends and ventilated roof west of the shaft (Figs. 2-5) would appear to be workshops. The Headframe is shown in most images, with a brick winder house and chimney to its north. A building to the west of the complex may be the original powerhouse (pre-1910), which may have been replaced by the current powerhouse about 1915 (see below). The original coal loading facility is shown in Figs.1-4. Figure 6 shows a new set of buildings in the coal loading area, and the new powerhouse.



Figure 1. Shaft No. 1 to right, shaft No. 2 to left. Loading gantry centre. C. 1915.

Wollongong City  
Library, P01/P01993



Figure 2. Shaft No. 1 complex from south-west, Original powerhouse to left, Shaft No. 1 centre, coal loader to right. Undated

Wollongong City Library, P07/P07939



Figure 3. Shaft No. 1 complex from south-west, Shaft No. 1 centre, coal loader to right. Undated

Wollongong City Library, P07/P07942

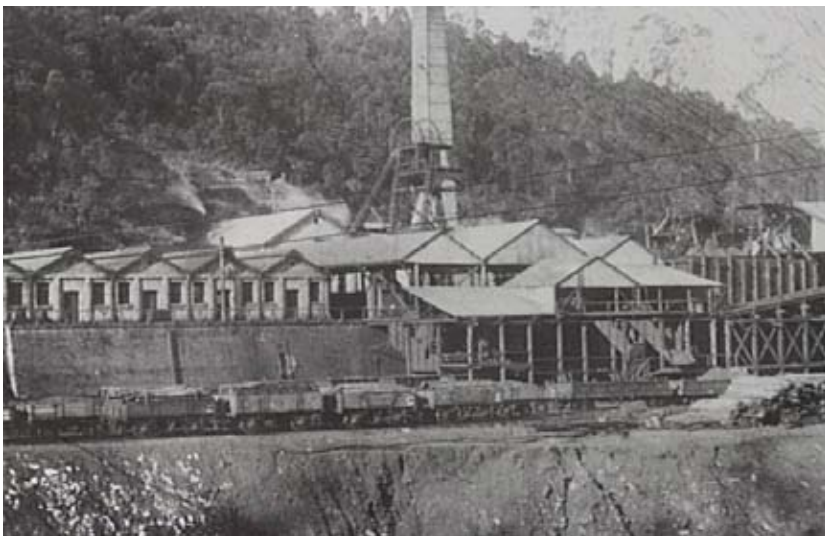


Figure 4. Shaft No. 1 complex from south, Shaft No. 1 centre with winder house and chimney behind, coal loader to right. Undated.

Wollongong City Library, P07/P07937



Figure 5. Shaft No. 1 complex from west, Shaft No. 1 and chimney to right, rail bridge over now-filled in valley to left. Undated.

Wollongong City Library, P13/P13526



Figure 6. Shaft No. 1 complex showing a next-generation of buildings at the coal loader. Shaft No. 1 and chimney to left with new building in front of chimney, current powerhouse centre background with long building to its right. Undated.

Wollongong City Library, P13/P13523



Figure 7. Shaft No. 1 headframe. The stumps of the cut-off brace legs can be seen to the right and the top section. Washery behind. 2007.

Photo Michael Pearson.

### ***Drift Portal and winder***

The Drift, portal and winder were built in 1954, replacing the No. 1 shaft. The drift is currently 1,164 m long, angled at 1:3. The Ward Leonard type winding engine supplied by BTH (British Thomson-Houston Co. Ltd, Rugby) and its cab are still in operation, driven by a 310 bhp electric motor. The winder is housed in a brick building, presumably also built in 1954. British Thomson-Houston (BTH) was a British engineering and heavy industrial company, formed in 1894 and based at Rugby, Warwickshire, England. They were known primarily for their electrical systems and steam turbines.



Figure 8. Shaft No. 1 zone from southwest, 1955. Shows the new drift portal winding engine house (with large windows in side), No. 1 headframe, and powerhouse to its right. The winder house to the left rear of the shaft, the chimney and other buildings have been demolished.

Wollongong City Council, P07/P07940



Figure 9. Drift portal winding engine house. 2007.

Photo Michael Pearson.



Figure 10. Drift portal BTH winding engine. 2007.

Photo Michael Pearson.



Figure 11. Drift portal BTH winding engine cab. 2007.

Photo Michael Pearson.

### ***Powerhouse, and power pylon***

The surviving powerhouse is a brick two-storey structure. Power generation equipment has been removed, the building now housing a switch room and a workshop. An overhead 3000 kg gantry crane is intact, and an old screening trommel is located adjacent to building. Three transformers are located to the east (two of them old). The construction date of this building is not yet clearly established. The original powerhouse may be a building shown to the west of the Shaft No. 1 complex in Figs. 2 & 5. Power generation was upgraded about 1915, and again in about 1927 and 1933, and again in the mid 1950s. The current building is shown in Fig. 6, and Figs. 8 & 12, which appear to be taken about 1955.

A power pylon is located up slope of the power station, built of angle-iron lattice sections with three cross-trees of angle-iron. It appears to be part of the early mine infrastructure, possibly related to the supply of power from the mine to the Helensburgh township from 1915. The pylon is severely corroded and in danger of collapse.



Figure 12. Shaft No. 1 zone from southwest, c.1955. Shows the powerhouse to the right of the headframe. The chimney and all other buildings in this view have been demolished.

Wollongong City Council,  
P07/P07941



Figure 13. Powerhouse with trommel in front.

Photo Michael Pearson 2007



Figure 14. Power Pylon upslope of Powerhouse, possible dating to the 1915 supply of power to Helensburgh village.

Photo Michael Pearson 2007.

### ***Washery and coal storage***

Construction of the washery and coal storage began in 1959, and it has elements from successive developments and alterations. The construction of the washery necessitated the demolition of nearly all of the pre-1959 coal handling structures along the embankment near Shaft No. 1 seen in earlier photographs.



Figure 15. Washery in 1994.

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P07/P07026



Figure 16. Washery in 2007. Central building has been raised a storey, and one conveyor removed.

Photo Michael Pearson  
2007.

## Shaft No. 2 zone

Shaft No. 2 was sunk as the ventilation shaft, reaching 1,020 ft (310 m) and was to reach the seam at 1,060 ft (323 m) by 1889, after which a large fan was to be erected capable of circulating 300,000 cubic feet of air per minute. Early photos (see Figs. 17-21) show a square brick chimney next to a two-story brick engine house/fan house and a shaft headframe on the other side of the engine house. It appears that the engine house was converted into the bathhouse (in 1910 or 1933 when electric fans are reported) and still survives as the southern section of the bathhouse building. A bricked-up arch on the western face of the bathhouse indicates the location of the flue linking the boilers to the chimney, which sat in the space between the bathhouse and the later office.

The historically significant Koepe winder is used in No. 2 shaft. In the Koepe system, which was developed by the German Krupp Company, the winding drum normally found in a winding engine is replaced by a large wheel or sheave. Both cages are connected to the same rope, which passes around some 200 degrees of the sheave in a groove of friction material. The Koepe sheave may be mounted on the ground adjacent to the headgear or in a tower over the shaft (as in the case of shaft No. 2). The drive to the rope is the frictional resistance between the rope and the sheave. It requires the use of a balance rope. It is often used for hoisting heavy loads from deep shafts and has the advantage that the large inertia of the ordinary winding drum is avoided ([www.websters-online-dictionary.org/definition/WINDING+DRUM](http://www.websters-online-dictionary.org/definition/WINDING+DRUM)).

The masonry headframe above Shaft No. 2 is typical of the Koepe system, being called 'Malakoff Towers' in Europe. (<http://www.icomos.org/studies/collieries.htm>) it may date to the 1933 upgrades.

The photographs show the evolution of the No. 2 shaft complex in its early years. The complex was originally separated from the main No. 1 shaft and coal handling area (zone 1) by a deep valley (see Fig. 20), which was subsequently filled in, the present culvert shown on Plan 1 indicating its course. The bathhouse extension and office buildings were eventually constructed in front of the shaft and fan house on reclaimed land.



Figure 17. Shaft No. 2 Ventilation shaft and engine house. Shaft to left. Undated.

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P07/P07938.



Figure 18. Shaft No. 2 Ventilation shaft and engine house. 1907. Shaft headframe has been replaced. The engine house later became the bathhouse.

Wollongong City Library  
P01/P01992.



Figure 19. Shaft No. 2 Ventilation shaft and engine house. Undated. New shed beside chimney.

Wollongong City Library  
P07/P07946.



Figure 20. Shaft No. 2 Ventilation shaft and engine house, looking across the deep valley to the main No. 1 shaft area. Undated (but post 1915). The valley is now filled in.

Wollongong City Library  
P06/P06857.

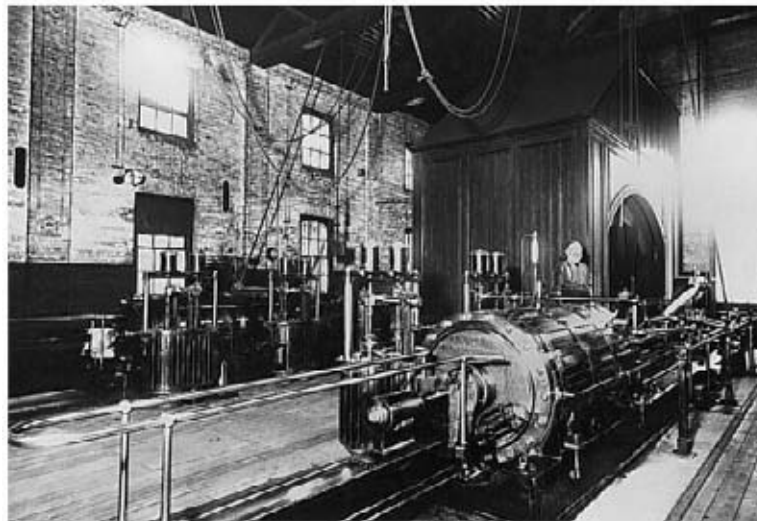


Figure 21. engines and fan housing in original fan house. The building was later converted into the bathhouse. Photo 1906.

Photo: [www.illawarracoal.com](http://www.illawarracoal.com)



Figure 22. Aerial photo of the colliery, dated after 1954. It shows the covered bathhouse, reduction pond at extreme right, drift winder house, and the new rail engine house and workshop at bottom of frame.

Photo: [www.illawarracoal.com](http://www.illawarracoal.com)

### ***Pit horse stables***

Up to 160 full-size horses were used at any one time for underground haulage at Metropolitan Colliery, the last being removed in 1955 ([www.illawarracoal.com/metropolitan.htm](http://www.illawarracoal.com/metropolitan.htm)). It appears that, unlike some other mines with at-grade or inclined access, the pit horses stayed underground all year, and were brought to the surface at the Christmas break and agisted. (Helensburgh Community Centre, 1991: 6) The underground pony stables that survive near the bottom of Shaft 2 appear to date from the 1940s.

The stables in the Metropolitan mine occupy two-thirds the width of drives, with brick floors inclined towards the tram rail line running along the remaining one-third of the drive. The stalls are separated by poles attached to props extending between the floor and roof of the drive, with poles also separating the tramway from the stall. Feed and water containers are made from 44-gallon drums, with half the side cut back and used to attach the drum to a post or rail. Feed was delivered in timber boxes sized to be carried on flat skips on the tramway. Oral tradition holds that each horse would pull three coal skips, but no more.

In Great Britain in 1913 there were some 70,000 horses underground, the highest number ever recorded. When the mines were nationalized in 1947, the National Coal Board acquired some 21,000 pit ponies still operating. The last pit ponies were removed from Scottish mines as late as 1994. In Britain most ponies lived underground (as at Metropolitan) and they only came to the surface for the annual miners' holiday or at other times when the mine was closed down

([www.therhondda.co.uk/ponies/background.html](http://www.therhondda.co.uk/ponies/background.html)

[www.scottishminingmuseum.com/files/FF%20Children%20-%20Ponies.pdf](http://www.scottishminingmuseum.com/files/FF%20Children%20-%20Ponies.pdf)).

The stabling at the Metropolitan Colliery appears to have been quite similar to that in many British mines, where a common form was to have the stalls down one side of a wide corridor, sometimes with the walls and roof of bare rock or coal, though in Britain often the walls would be of brick. Each stall would have a food box and water container. In Britain the roadway behind the stalls might be fitted with rails (as at Metropolitan) to ease the supply of food and to carry away the soiled bedding. The bedding was rarely straw because of the risk of fire. In some cases peat was used but the most common material was sawdust that was comfortable for the pony.



Figure 23. Pit horse stalls. Rails separate stalls, access being from the tramway right, out of frame.

Photo Michael Pearson 2007.



Figure 24 . Pit horse stalls, showing .the brick floor of the stalls. Rails used to demarcate stalls, and tramway which in most drives runs on one side of the stalls. The blackboard shows safety inspection dates and comments.

Photo Michael Pearson 2007.

## Railway infrastructure

The Illawarra Railway was completed in 1888, and ran through a series of tunnels that took it through what is now the Metropolitan Colliery lease area. When Metropolitan Colliery began full production in 1890, the reduction of the ruling grade of the Illawarra Railway to 1 in 80 was investigated, in order to facilitate better movement of trains. This necessitated a deviation and relocation of the railway, which started in 1913 and was completed in 1915. The new alignment swung to the north of Helensburgh and the Metropolitan lease, the tunnels and the original Helensburgh railway station being abandoned (see Fig.28) (Southern 1978: 5-6). The old Metropolitan Tunnel (No. 4) on the northern side of the lease area was sealed at the mine end and filled with water for mine use.

Tunnel No 5 (Lilyvale No. 1) is located on the southern side of the lease area, and is still open and in good condition (see Plan 1 above).

Between the two tunnels the main line ran beneath the colliery siding, the main line being crossed by way of a brick arch bridge (see Fig. 25). This bridge has subsequently been partially buried in the coal stockpile, but can still be seen (Fig. 26). The colliery siding left the main line just after it left the old Metropolitan Tunnel, and cut through what is now the rail and road line north of the 'island'. The junction was supervised from a track-side house (see Fig. 27).



Figure 25. View of the main Illawarra line looking south from above the old Metropolitan Tunnel. The Metropolitan Colliery siding swing to the right at the bottom edge of the photo, and has a coal train on it. The brick arch viaduct is centre, with a temporary dray bridge closer to the camera. The tunnel No. 5 is out of frame to the left. The hut controlling the siding is left of the line at the bottom of the frame (see Fig 23). This area is now settlement ponds for the mine. Photo c.1915.

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P01/P01963



Figure 26. The viaduct that carried the colliery siding over the main line. The parapet has been removed, and the bridge buried in coal stockpile material.

Photo Michael Pearson 2007.

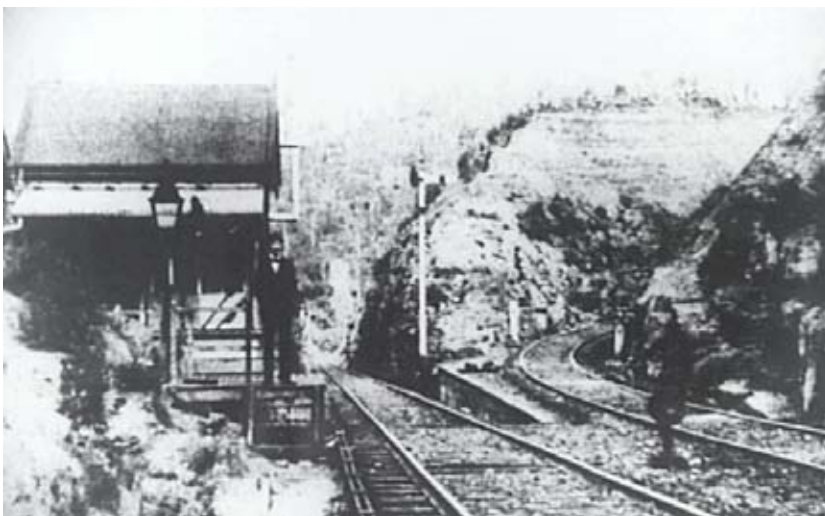


Figure 27. The Metropolitan siding exiting to right (passed the 'island'). The hut to the left controlled the junction, with the main line in centre of photo. Pre-1915.

Wollongong City Library  
P13/P13873





Figure 28. Rail tunnel No. 5 (aka Lilyvale No. 1), in the northern section of the Metropolitan lease area, showing single-track width and ovoid brick form.

Photo Michael Pearson 2007.

## **APPENDIX 2**

### **PHOTOGRAPHS OF PLACES WITH HERITAGE SIGNIFICANCE REFERRED TO IN THE REPORT**

*Photos of Places in the Metropolitan Lease area*

Place name	
Metropolitan Colliery— No. 4 tunnel (Old Metropolitan Tunnel) (Illawarra Railway)	
Metropolitan Colliery— No. 5 tunnel (Old Lilyvale No 1 Tunnel?) (Illawarra Railway)	

Metropolitan Colliery—  
Power Pylon



Metropolitan Colliery—  
Shaft No 1 head frame



Metropolitan Colliery—  
Shaft No. 2 and Koepe  
winder



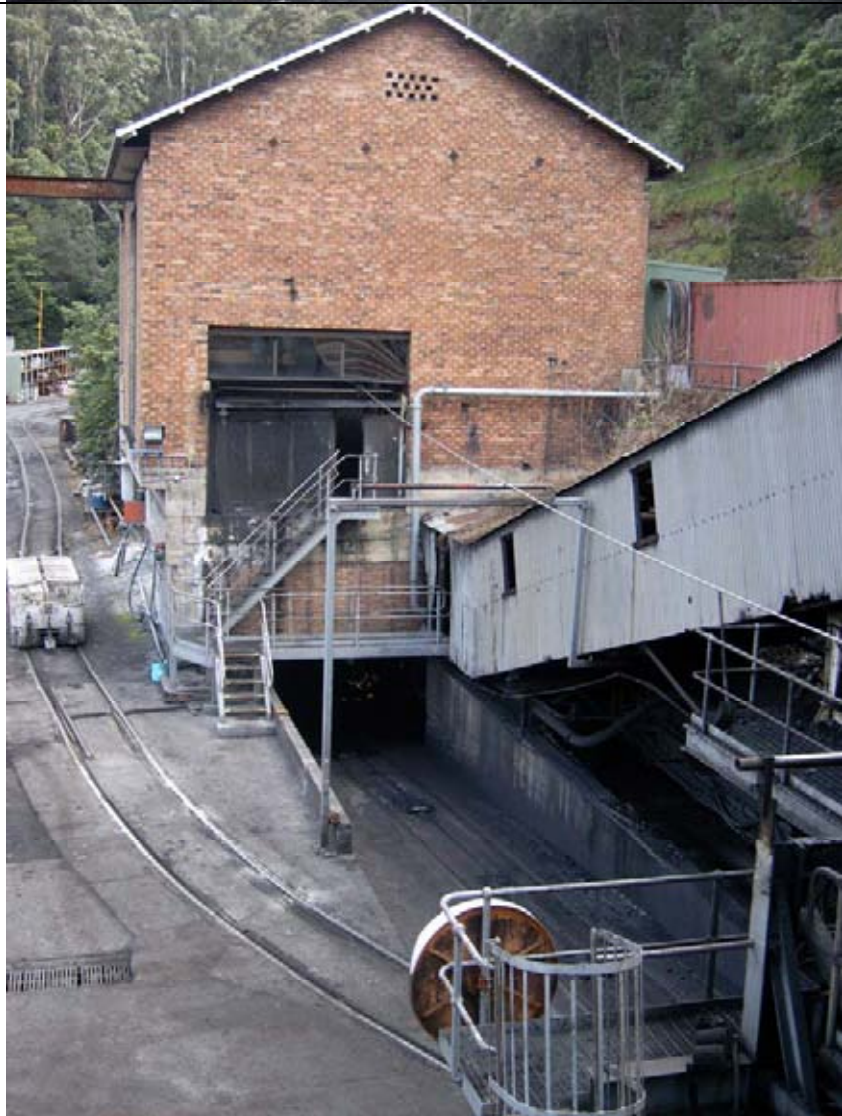
Metropolitan Colliery—  
Shaft No. 2 Fan Evase



Metropolitan Colliery—  
Tunnel opening, portal  
and winder house



Metropolitan Colliery—  
Portal beneath winder  
house. Haulage cable  
crosses mid-screen,  
then runs around a  
pulley out of frame to  
right and returns to  
descend through the  
portal at floor-level.  
The conveyor belt to  
right raises coal from  
the mine.



Metropolitan Colliery—  
Coal Storage and  
Washery



Metropolitan Colliery—  
Office and Bathhouse



Metropolitan Colliery—  
Bathhouse interior, with  
miner's clothing raised  
by pulleys.



Metropolitan Colliery—  
No. 3 Ventilation Shaft





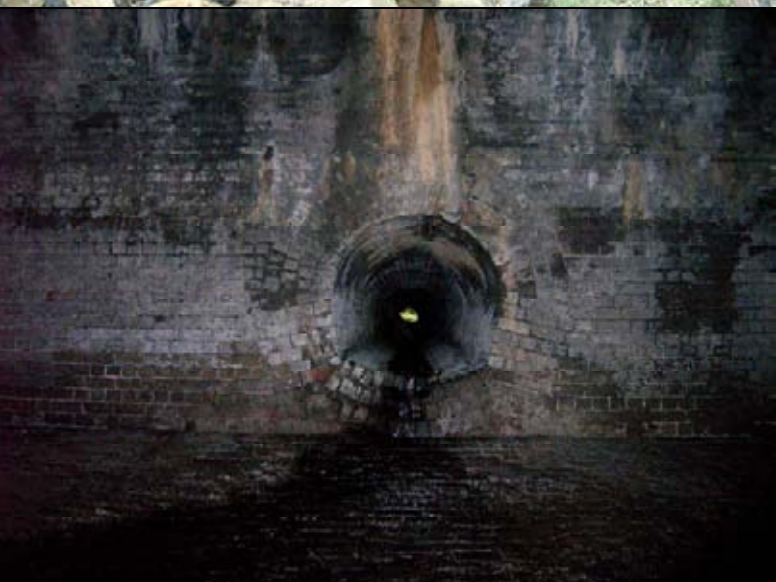
Metropolitan Colliery—  
Pit pony stables  
underground



Metropolitan Colliery—  
Powerhouse



*Additional sites that appear to have heritage values*

Place name	
Metropolitan Colliery— Railway viaduct	
Metropolitan Colliery— Camp Creek culvert	
Side drain into culvert	

Metropolitan Colliery—  
Weir on Camp Creek






Metropolitan Colliery—  
Reduction pond base



Metropolitan Colliery—  
Manager's Residence



*Listed places above proposed longwall extraction area*

Place name	
Garrawarra Complex— Former Nurses Accommodation	 A photograph of a two-story building with a red-tiled roof and light-colored walls. The building features large windows and a prominent chimney. A paved path leads to the entrance, and a wooden bench is visible in the foreground on a grassy area.
Garrawarra Complex— Former Administration Building	 A photograph of a two-story building with a red-tiled roof and light-colored walls. The building has a prominent gabled roof and a covered entrance. Several cars are parked in front of the building.
Garrawarra Complex— Kitchen Block	 A photograph of a two-story building with a red-tiled roof and light-colored walls. The building has a prominent chimney and is surrounded by trees and a grassy area.

House and lands, 43-49  
Princes Highway



## **APPENDIX 3**

### **CONSERVATION MANAGEMENT PLANNING PROCESS**

## CONSERVATION MANAGEMENT PLANNING PROCESS

**The investigation and decision making process according to the Burra Charter  
(the nationally adopted standard developed by Australia ICOMOS)**

