Werris Creek Coal Pty Limited
ABN:69 107 169 103

Proposed Modification to the Werris Creek Coal Mine

Non-Indigenous Heritage Assessment

Prepared by

Archaeological Surveys and Reports Pty Ltd

March, 2009

Specialist Consultant Studies Compendium: Part 7

Non-Indigenous Heritage Assessment

of the

Proposed Modification to the Werris Creek Coal Mine

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1 INTRODUCTION

This Non-Indigenous cultural heritage investigation was performed for R.W. Corkery & Co. Pty Limited (RWC) on behalf of Werris Creek Coal Pty Limited (WCC), the owner and operator of the Werris Creek Coal Mine ("the mine"). WCC is applying to modify Development Consent DA-172-7-2004, issued by the Minister for Planning on 18 February 2005, to enable a variation to the mining area layout of the open cut area and overburden emplacement for the final three years of the current mine life. The proposed modification to the mining area layout would require an extension of the open cut and overburden emplacement to the northeast and northwest of the currently approved limit, with a small northern portion of the approved open cut area to remain undisturbed.

RWC commissioned Archaeological Surveys & Reports Pty Ltd (ASR) to undertake an investigation to identify if any sites or relics of non-Indigenous heritage significance occur within the modified mining area layout of the mine and what impact (if any) the proposed modification would have. This assessment has been completed to support a Statement of Environmental Effects being prepared by RWC to accompany the application for the proposed modification, sought under Section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Scope, Objectives and Report Format

1.1.1 Scope

The scope of works was for Archaeological Surveys & Reports Pty Ltd (ASR) to conduct an investigation of the proposed modification to the mining area layout of the mine to identify any sites or relics of heritage significance. The results were to be presented in a report, which was to include an assessment of the significance of any sites or relics identified, an appraisal of the options and opportunities arising from the discoveries, and clear recommendations for the management of those cultural resources.

1.1.2 Report Objectives

The objectives of this report are to provide an assessment of the heritage significance, in accordance with Heritage Office guidelines, of any sites or relics that may be affected by the proposed modification.

1.1.3 Report Format

The report is presented in the following format:

i Executive summary
ii Contents

1. Introduction
2. Background

3. The environmental context
4. History of Werris Creek Colliery
5. The results of the investigation
6. Assessing heritage significance
7. Statement of heritage significance
8. Recommendations

1.2 The Mine Site and Overview of the Proposed Modification

The Werris Creek Coal Mine is an open cut coal mine located approximately 4 km south of Werris Creek and 11 km north-northwest of Quirindi in central northern New South Wales. All mining and associated operations are restricted to Mining Lease 1563 (ML 1563), a 679 ha area that incorporates the "Narrawolga" property and parts of the "Eurunderee" and "Cintra" properties. **Figure 1** places the mine in its regional context while **Figure 2** places the mine site in its local setting through detail from a topographic map of the area.

The proposed modification, if approved, would involve the following activities, the locations of which are shown on **Figure 3** (presenting the proposed modifications on a topographic plan of the mine site) and **Figure 4** (presenting the proposed modifications on an aerial photograph).

- Modification to the open cut area. The northern extent of the open cut area would be widened such that the eastern perimeter corresponds with the eastern extent of the sub-cropping coal seams.
- Dewatering the underground workings of the former Werris Creek Colliery to enable open cut mining through part of these workings.
- Construction of four surface dams to store the water pumped from the underground workings.
- Extension of the out-of-pit overburden emplacement to the north along the modified eastern perimeter of the open cut area.
- Modification to the overall shape of the overburden emplacement, with the height increased to approximately 445m AHD to accommodate the increased volume of overburden and revised mine plan associated with the modified open cut design.
- Construction of an additional train loading bin and conveyor at the rail load-out facility to facilitate the separation of product coal for specific markets and therefore increase the efficiency of train loading.

The rehabilitation objectives and methods would remain consistent within those currently implemented at the Werris Creek Coal Mine, although the proposed sequence of rehabilitation, and designated land use on the final landform has been modified slightly to provide for additional areas of native woodland establishment and conservation.

1.3 The Study Area

The Study Area for this investigation has been restricted to those areas of the mine site that would be modified from the approved mining operations of DA 172-7-2004, ie. the areas shaded pink on **Figures 3** and **4**.

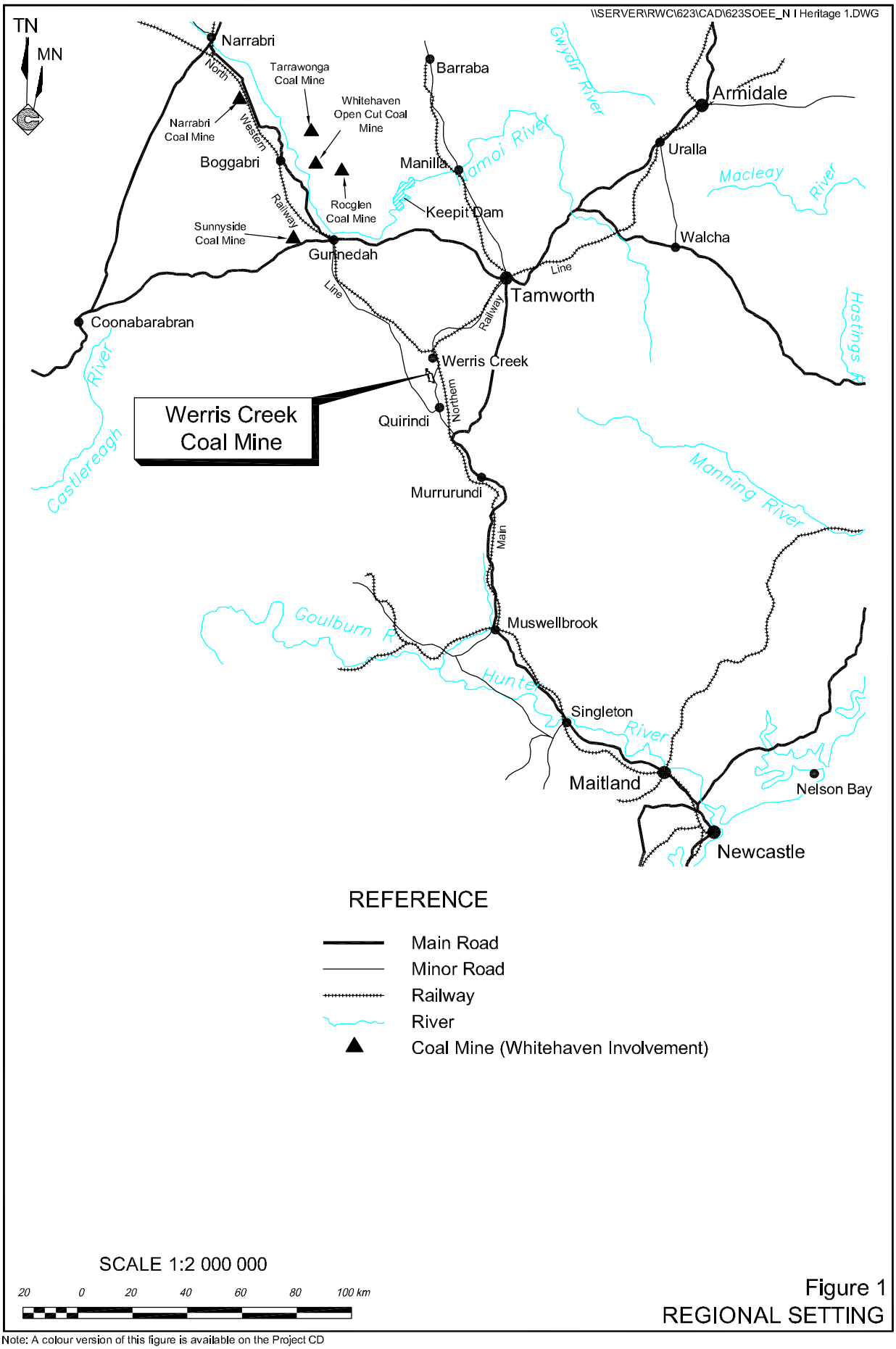

Figure 1
REGIONAL SETTING

Note: A colour version of this figure is available on the Project CD

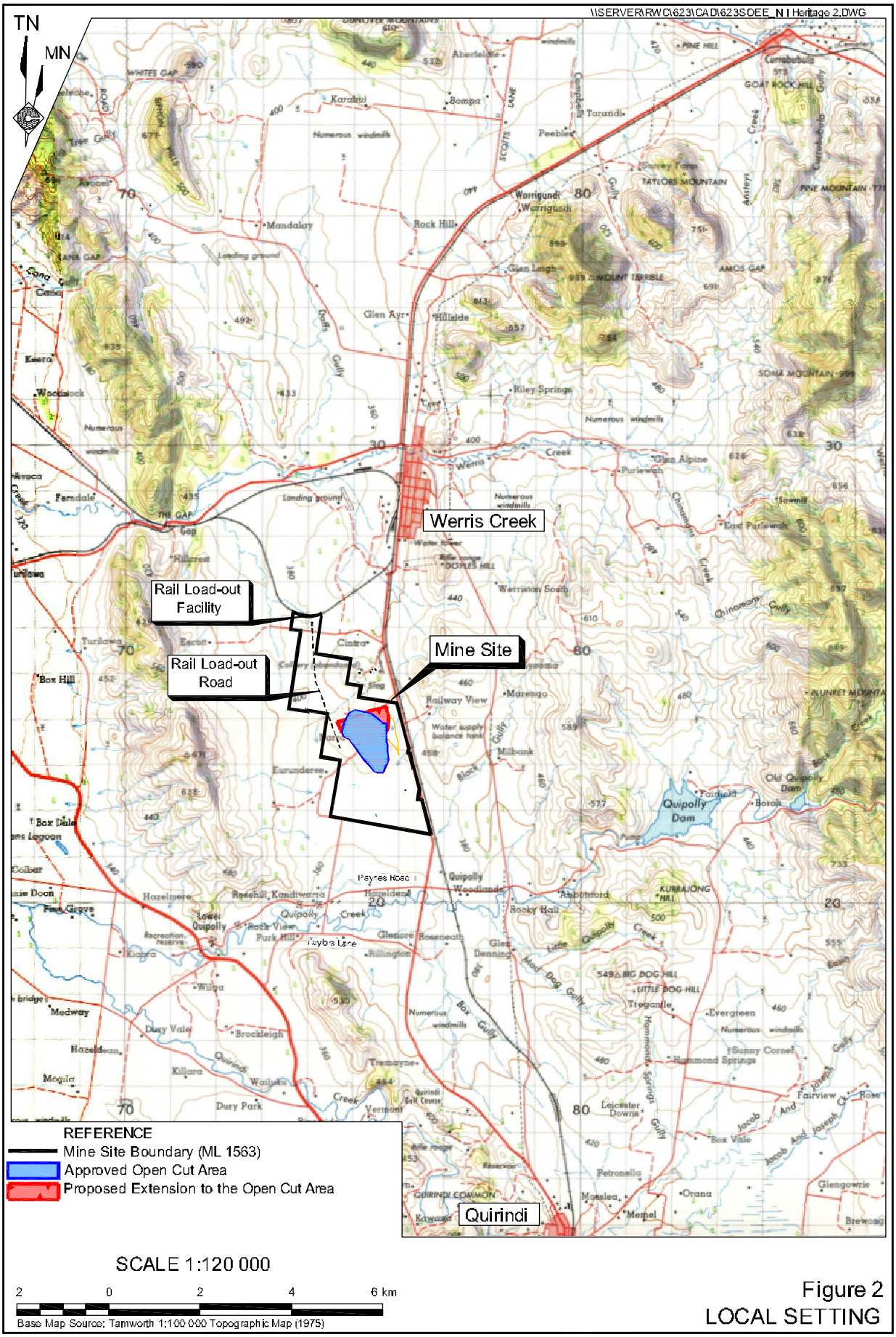

Figure 2
LOCAL SETTING

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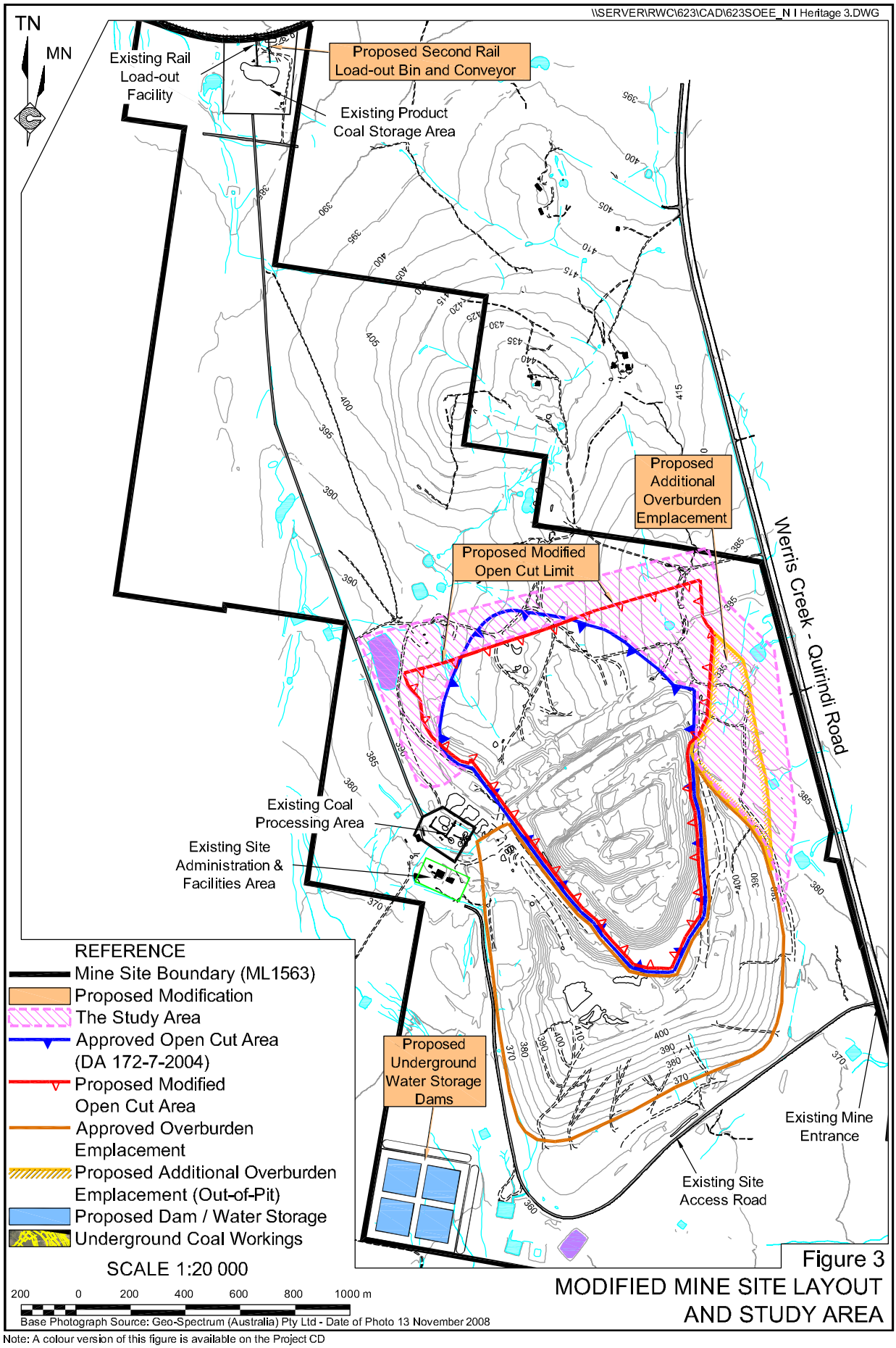

Figure 3
MODIFIED MINE SITE LAYOUT AND STUDY AREA

Note: A colour version of this figure is available on the Project CD

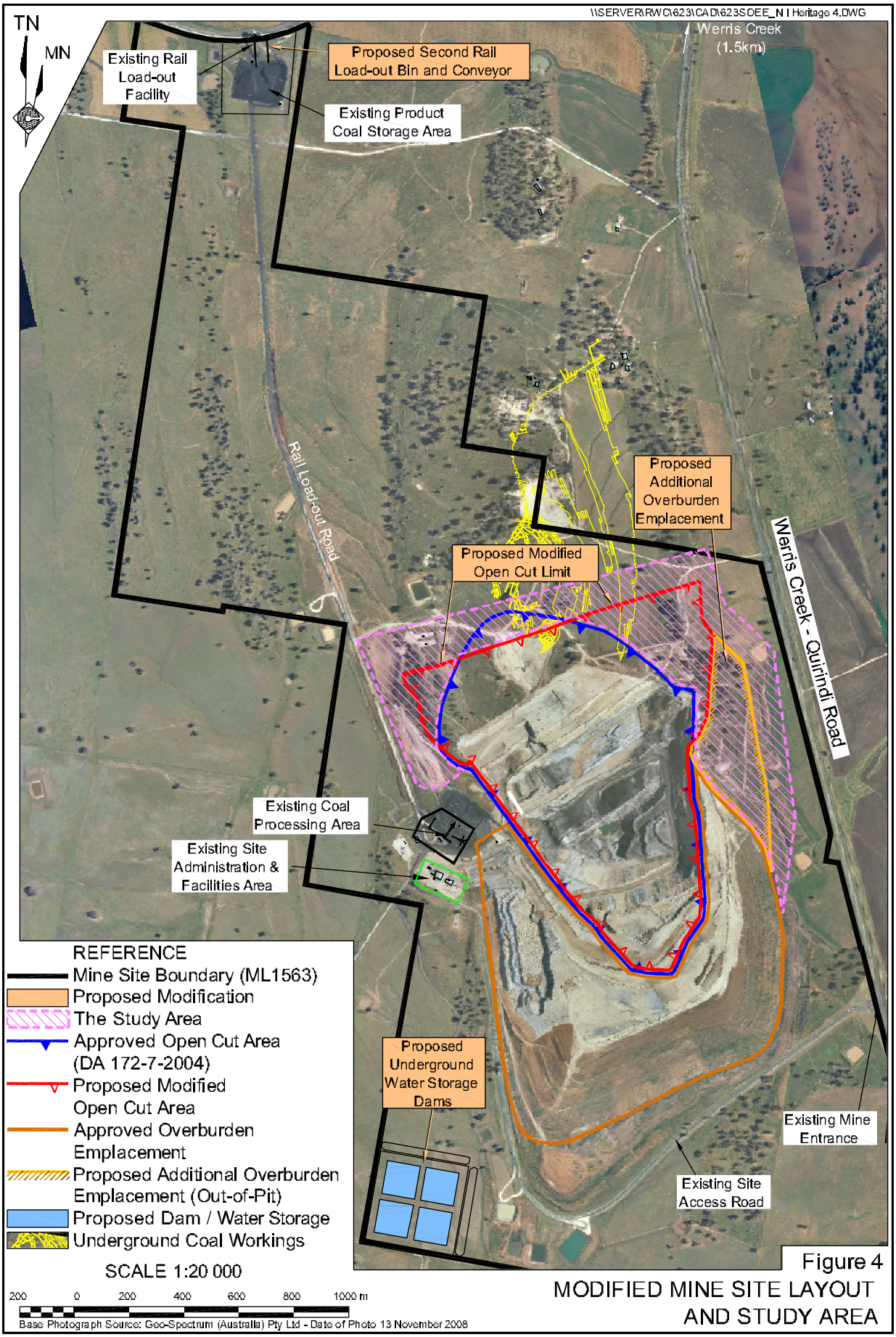

Figure 4
MODIFIED MINE SITE LAYOUT AND STUDY AREA

Note: A colour version of this figure is available on the Project CD

2 BACKGROUND

In August 2004, ASR undertook an archaeological investigation of the site of the then proposed Werris Creek Coal Mine, with the focus being the identification and assessment of sites of Indigenous cultural significance. During that investigation, ASR observed that there were (outside the area of investigation) coal loading chutes and other structural features of the abandoned Werris Creek Colliery (underground) workings to the north.

The proposed modification to the mining area layout (see **Figures 3** and **4**) would extend the area of disturbance to the northeast towards the defunct Werris Creek Colliery workings, and WCC was alerted to the possibility that the proposed modification might impact on relics of the abandoned mine workings. **Figures 3** and **4** identify the abandoned underground workings of the Werris Creek Colliery. Conscious of the legal requirements to undertake an assessment of all sites and relics of 50 years age or more, the company commissioned RWC to contract an archaeologist to perform an investigation of the area, and to provide an assessment of the heritage significance of any site or relics occurring within the area.

2.1 Potential Impact of the Proposed Extensions

There is a potential for any archaeological contexts occurring within the modified disturbance footprint of the mine, including any new roads or supporting infrastructure, to be severely impacted upon.

Should the proposed modification be approved following this survey, it is unlikely that the same area will ever be surveyed again. Therefore from an archaeological perspective, this investigation provides an opportunity to observe and record any structures or relics that might be present, and to propose a strategy for the management of any structures or relics of heritage significance in the future development of the area.

3 THE ENVIRONMENTAL CONTEXT

Any discussion of the likely presence of structures or relics of heritage significance in the survey area should be considered in the context of the environment and the resources that would have been available to the settlers of the area.

3.1 The General Geology and Topography

ML 1563 (which includes the currently operational Werris Creek Coal Mine and the proposed extension area) occurs within the Sydney-Bowen Basin, a major structural basin, which extends from Batemans Bay in the south, to Collinsville, Queensland in the north. The New South Wales portion of the basin is divided into northern and southern sections by a transverse structural high to the north of Narrabri. The southern section of the Sydney-Bowen Basin has been divided into two lower category structural basins, the Sydney Basin and the Gunnedah Basin (Menzies 1974). The study area (see **Figures 3** and **4**) occurs in the Gunnedah Basin.

The coal resource of the mine forms part of the Werris Creek Coal Measures within the Werrie Basin. The Werrie Basin is a narrow geological province of coal-bearing rocks on the eastern rim of the Gunnedah Basin, extending from the Namoi River, near Carroll to the north, to the Liverpool Ranges in the south. The Gunnedah Basin is in the initial stages of development as a source of export coal, and in terms of resources, is second only to the Hunter Region, but current production is quite small by comparison (Department of Mineral Resources 1985).

ML 1563 generally straddles the southern half of a north-west to south-east trending ridgeline, with the rail load-out road (for the transport of coal between the Coal Processing Area and rail Load-out Facility) running from the foot of the western slopes of the ridge, via a low saddle, to the railway line north of Escott Road.

The soils in the study area generally comprise fine to medium grained weathered sandstone, some of which was covered with a very shallow layer of humic soils, derived from woodland detritus and past agricultural activities.

3.2 Vegetation

As can be observed on **Figure 4**, most of the additional areas to be disturbed by the proposed modification have been cleared or been severely impacted upon by pasture improvement and grazing. However, there are several remnants of woodland that suggest that prior to clearing, the area supported a robust and mature dry sclerophyll woodland, probably with areas of open grassland where the soils were too shallow to support shrubs or trees. White Box (*Eucalyptus albens*) is and probably was the predominant species, with Blakely's Red Gum (*E. blakelyi*) also found on open slopes.

3.3 Water Resources

The Werris Creek (open cut) Coal Mine site straddles a low sandstone ridge on which there are only minor drainage depressions, and the nearest perennial watercourses are Werris Creek, 5 km north of the limit of open cut mining, and Quipolly Creek which flows 2.5 km to the south.

3.4 Previous Impacts

As the photographic record shows, the mine site has been subject to a number of impacts. The primary impact has been from tree clearing and pasture improvement, and several well-worn tracks.

It is worth noting that **Figure 4** shows a mine access road to the defunct mine, a council gravel quarry, and the remaining surface features of the defunct mine, eg. mine portal and associated clearing. Also identified on **Figure 4** (as lighter patches to the west of the council gravel quarry), is the area around a coal-loader chute associated with the defunct Werris Creek Colliery. It was observed during the 2004 Indigenous archaeological investigation (Appleton, 2004) that there were no structures or features of heritage interest south of a line drawn from the defunct coal-loading chute and the council gravel quarry, and that the defunct mine road was of graded infill material of no heritage interest.

4 HISTORY OF WERRIS CREEK COLLIERY

Very little information has been recorded of the operations of the Werris Creek Colliery. Pratt (1996) reported that the Preston Coal Company commenced underground mining at the Werris Creek Colliery in 1925. Mining continued until 1963 when a cancellation of railway contracts for coal led to the closure of the colliery (cited by RWC 2004).

In the only local history written about Werris Creek, Ware (1976) wrote that the Preston Iron Coal and Coke Mining Company sank an exploratory shaft in 1925. Ware continued, "*On 5th November 1925 a Tamworth newspaper reported, 'in the mine one mile south of Werris Creek good coal has been passed through but not in sufficient quantities to be of commercial value. Prospecting is continuing by means of a tunnel ...'*". Ware recorded that in 1937, I.H. Thomas became associated with the administration of Werris Creek Colliery which was owned (at that time) by members of the Thomas family. He remained mine manager until it ceased to operate in 1963.

No additional information could be learnt about the Werris Creek Colliery from the numerous DPI and Mining sites on the Internet, except for the information that The Preston Coal Company address was c/o Coopers Lybrand. In 1996 a world-wide merger of Coopers Lybrand with Price Waterhouse resulted in a new company, PriceWaterhouseCoopers. ASR emailed PriceWaterhouseCoopers requesting that it provide ASR with any documented history on the Werris Creek Colliery, however, no response was received.

It is a sad reflection that as many as three generations might have worked in the Werris Creek Colliery in its 38 years of operation, and yet nothing is known of who worked there, of their output, or what became of them, all during a time when there were newspapers, historians, and photographers were active locally. Only one photograph of the entire 38 year history of the Werris Creek Colliery was found (Ware 1976), that was a group of men (with a child) standing around what was probably the exploratory shaft (drill hole) put down in 1925. Ware (1976) states that T. Pokoney was in charge of the exploration and so it is probable that he was one of the men in the photograph.

Access to the property on which the surface facilities of the Werris Creek Colliery was denied in 2004 and as a result, a full survey of the old mine workings was not completed. Although the property is now owned by WCC, no attempt was made to survey the workings in 2008 because none of the surface structures and remains occurred within the study area of the proposed modification.

5 THE RESULTS OF THE INVESTIGATION

No sites or relics of heritage interest were identified on the surface of the study area, either during the 2004 or 2008 investigations. As shown on **Figure 3**, however, the workings of the abandoned underground mine extend into the modified open cut area being proposed.

6 ASSESSING HERITAGE SIGNIFICANCE

6.1 Scope of Heritage Assessment

As described above, there were no structures or relics of heritage interest, or potential heritage significance above ground in the study area. However, as **Figure 3** shows, there are abandoned underground workings of the defunct Werris Creek Colliery that intrude into the study area and which would be impacted upon by the proposed modification to the open cut area. While it could be argued that the workings were part of the mine complex and therefore should be assessed as a whole, in this instance it is reasonable to assume that truncating the workings of the modified open cut area would not significantly impact on the heritage significance of any surface "pit top" remains there might be beyond the study area. It is therefore only the heritage significance of the workings that are considered in the following assessment. This assessment is reinforced by the fact that the mine has been abandoned for over 40 years and extremely unlikely to be in a condition in which it could be developed for public access, either for educational purposes or for tourism.

6.2 NSW Heritage Office Guidelines for Assessing Heritage Significance

In 2001 NSW Heritage Office issued revised guidelines for assessing heritage significance.

In the revised guidelines it is specified that heritage assessments are undertaken to provide useful and appropriate information to the Heritage Branch, Department of Planning, and Local governments departments, owners of the subject properties, and the proposing developers, for the most appropriate and preferred further management and/or conservation of a site, in accordance with regulated guidelines. This assessment evaluates the heritage significance of the defunct underground workings to be disturbed by the proposed modification against the NSW Heritage Office (2001) criteria.

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

The workings do not meet this criterion. From the limited historical record and history of Werris Creek there is no evidence that the Werris Creek Colliery was a significant commercial enterprise in the local economy, nor was it important in the development of the town, which depended on the railway and grain production for its existence.

Criterion (b) – *an item has a 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 (or the cultural or natural history of the local area*).

The workings do not meet this criterion. There is no evidence that the workings had a strong association with the life or works of a person, or group of persons of importance.

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

The workings do not meet this criterion. There is no evidence to show that there was either creative or technical achievement in the way the workings were developed.

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

The workings do not meet this criterion.

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

The workings do not meet this criterion.

Criterion (f) – *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).*

The workings do not 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.

(or a class of the local area's: cultural or natural places; or cultural or natural environments).

The workings do not meet this criterion.

6.3 "The Illustrated Burra Charter"

In "The Illustrated Burra Charter", Article 17: Preservation states,

> '*Preservation is appropriate where the existing fabric or its condition constitutes evidence of cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.*'

As demonstrated in Section 6.2, the underground workings to be disturbed are not of cultural significance and therefore preservation is not warranted.

7 STATEMENT OF HERITAGE SIGNIFICANCE

As a consequence of considering the above criterion the heritage significance of the Werris Creek Colliery underground workings to be disturbed is assessed as follows:

> "The underground workings of the defunct Werris Creek Colliery are assessed to be of no heritage significance".

8 RECOMMENDATIONS

As a consequence of this assessment no structures or relics of heritage significance have been identified within the study area or would be impacted by the proposed modification, and there are no constraints on heritage grounds to the development proceeding as proposed.

GENERAL GLOSSARY: The definitions that follow are for terms used in this and other reports written by the author, and do not necessarily apply to their use in different contexts.

AHD: Australian Height Datum

ARCHAEOLOGICAL DEPOSIT :
Sediments which contain evidence of past Aboriginal use of the place, such as artefacts, hearths, burials etc.

ARTEFACT : Any object that has attributes as a consequence of human activity (Dunnell, 1971). In this report 'artefacts' has been used generally to describe pieces of stone that have been modified to produce flakes, flaked pieces, cores, hammerstones, or axes.

LOCATION : The place at which an artefact is found, or a place identified as having either archaeological or Aboriginal significance.

SITE : A discrete area or concentration of artefactual material, place of past human activity.

SOIL SCIENCE TERMS (taken from Banks, 1995, and others as referenced).

BEDROCK : Outcrop of *in situ* rock material below the soil profile.

BENCH : A strip of relatively level earth or rock breaking the continuity of a slope.

BLOWOUT : A closed depression formed in the land surface by wind eroding sands and depositing them on adjacent land.

CHERT: A very fine-grained amorphous silicate sedimentary rock, commonly a layer of chemical precipitate or micro-organism skeletal remains (Milford 1999).

CLAY: Soil material composed of very fine particles less than 0.002 mm size. When used to describe a soil texture group, such a material contains more than 35% clay (Milford 1999).

CLAYPAN : A depression caused by the aeolian deflation of sediments, or by the presence of a prior lake.

CONGLOMERATE: A poorly-sorted detrital sedimentary rock composed of rounded gravels, stones or cobbles in a matrix of much finer material (Milford 1999).

DUNE : A ridge built up by wind action composed of sands, silts, or sand-sized aggregates of clay.

FLOODPLAIN : A large flat area, adjacent to a watercourse, characterised by frequent active erosion and aggradation by channelled and overbank stream flow.

GIBBER : A level surface covered by a thick deposit of gravel or broken siliceous pebbles, occurring in the more arid parts of the continent, thought to have been formed from the break-up of a siliceous (silcrete) surface crust, and termed gibber plains (Whittow, 1984) – see also silcrete.

GILGAI : Surface microrelief associated with soils containing shrink-swell clays. Gilgai consists of mounds and depressions, or irregularly distributed small mounds and subcircular depressions varying in size and spacing. Vertical interval usually <0.3m; horizontal interval usually 3-10m, and surface almost level. Sometimes called ‘crab-hole’ soils.

GREYWACKE: A tough, well-indurated type of sandstone distinguished by detrital quartz crystals and rock fragments set in a finer-grained matrix (Milford 1999).

GULLY : An open incised channel in the landscape generally greater than 30cm deep and characterised by moderately to very gently inclined floors and steep walls (Milford 1999).

HUMMOCK : A small raised feature above the general ground surface.

LANDFORM ELEMENTS :
Crest : Landform element standing above all points in the adjacent terrain.
Flat : Neither a crest or a depression <3% slope.
Upper slope : Adjacent to and below a crest or flat but not a depression.
Midslope : Not adjacent to a crest, a flat or a depression.
Lower slope : Adjacent to and above a flat or a depression but not a crest.

LITHOSOLS : Shallow soils showing minimal profile development and dominated by the presence of weathering rock and rock fragments.

METAMORPHIC: Rocks whose composition, texture and/or structure have been altered through tectonic pressure and/or heat (Milford 1999).

METASEDIMENTARY: Partially-metamorphosed sedimentary rock (Milford 1999).

MUDSTONE: A fine-grained dark-coloured sedimentary rock, formed from lithified mud; similar to shale but more massive (Milford 1999).

pH A measure of the acidity or alkalinity of a soil. A pH of 7.0 denotes neutrality, higher values indicate alkalinity, and lower values indicate acidity. The pH scale is logarithmic, i.e., a pH of 4.0 is ten times as acid as a pH of 5.0, and one hundred times as acid as a pH of 6.0. (DLWC 1999).

RILL : A small channel cut by concentrated runoff through which water flows during and immediately after rain.
A small ephemeral channel, generally no more than 30 cm deep, created by concentrated runoff (Milford 1999).

RUNOFF : That portion of precipitation not immediately absorbed into or detained upon the soil and which thus becomes surface flow.

SCARP/CLIFF : A steep slope terminating a plateau or any level upland surface.

SCRUB : vegetation structure consisting of shrubs 2-8m tall.

SHEET EROSION : The removal of the upper layers of soil by raindrop splash and/or runoff.

SOIL PROFILE :
"A HORIZON": The top layer of mineral soil. This may consist of two parts:
A_1 HORIZON: Surface soil and generally referred to as the topsoil.
A_2 HORIZON: similar in texture, but paler in colour, poorer in structure, and less fertile.

" B HORIZON": The layer below the A Horizon. This consists of 2 parts:
B_1 HORIZON: A transitional horizon dominated by properties characteristic of the underlying B_2 horizon.
B_2 HORIZON: typically contains concentrations of silicate clay and/or iron, and/or aluminium and/or translocated organic material.

"C HORIZON": The parent rock. Recognised by its lack of pedological development, and by the presence of remnants of geologic organization.

"R HORIZON": Hard rock that is continuous (Charman & Murphy, 1993; 350-1).

SPUR : A ridge which projects downwards from the crest of a mountain as a water-parting (Whittow, 1984).

SUBSOIL : Sub-surface material comprising the B and C Horizons of soil with distinct profiles; often having brighter colours and higher clay contrasts.

SURFACE CONDITION :
Gravelly : Over 60% of the surface consists of gravel (2-69mm).
Hardsetting : Soil is compact and hard.
Loose : Soil that is not cohesive.
Friable : Easily crumbled or cultivated.
Self-mulching : A loose surface mulch of very small peds forms when the soil dries out.

SWALE : A linear level-floored open depression excavated by wind or formed by the build-up of two adjacent ridges.

SWAMP : Watertable at or above the ground surface for most of the year.

TOPSOIL: The surficial layers of the soil profile, typically the A Horizon, which is usually darker, more fertile, better structured and contains more organic matter than underlying soil materials (Milford 1999).

TERRACE : A flat or gently inclined surface bounded by a steeper ascending slope on its inner margin and a steeper descending slope on its outer margin (Whittow, 1984).

TOPSOIL : A part of the soil profile, typically the A_1 horizon, containing material that is usually darker, more fertile and better structured than the underlying layers.

UNDERSTOREY : A layer of vegetation below the main canopy layer.

WEATHERING: The physical and chemical disintegration, alteration and decomposition of rocks and minerals at or near the earth's surface by atmospheric and biologic agents (Milford 1999).

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