

ENVIRONMENTAL IMPACT STATEMENT

RED HILL
MINING LEASE

Section 16
Cultural Heritage

Section 16 Cultural Heritage

BHP Billiton Mitsubishi Alliance (BMA), through its joint venture manager, BM Alliance Coal Operations Pty Ltd, proposes to convert the existing Red Hill Mining Lease Application (MLA 70421) to enable the continuation of existing mining operations associated with the Goonyella Riverside and Broadmeadow (GRB) mine complex. Specifically, the mining lease conversion will allow for:

- An extension of three longwall panels (14, 15 and 16) of the existing Broadmeadow underground mine (BRM).
- A future incremental expansion option of the existing Goonyella Riverside Mine (GRM).
- A future Red Hill Mine (RHM) underground expansion option located to the east of the GRM.

The three project elements described above are collectively referred to as ‘the project’.

This section discusses the cultural heritage values associated with the project, and outlines potential impact mitigation measures. Relevant cultural heritage legislation is also discussed.

16.1 Cultural Heritage Legislation

16.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the key piece of Commonwealth heritage legislation protecting places of national or international heritage significance. The EPBC Act is administered by the Department of the Environment. Under the EPBC Act, it is necessary to gain approval for actions likely to impact on listed places of national heritage significance. A Commonwealth Heritage List has been prepared, comprising places of national significance on Commonwealth land or under Commonwealth control. In Queensland, these are primarily natural and historical sites. None are located within the vicinity of the Aboriginal Cultural Heritage (ACH) study area.

Sites and places of outstanding national significance, under private or State government control, have been entered on the National Heritage List. Approvals are required before any actions likely to have a significant impact on the heritage values of these places can occur. Only three such locations have been listed in Queensland. None are located within the vicinity of the ACH study area.

16.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSI Act) is to protect areas and objects of special significance to Aboriginal people from damage or desecration. The ATSI Act is particularly concerned with the protection of locations and areas that are significant according to Aboriginal or Torres Strait Islander tradition. The ATSI Act provides Aboriginal people with the opportunity to request intervention from the federal minister to protect sites they consider to be at risk.

16.1.3 Australian Heritage Council Act 2003

The Australian Heritage Council which was established under the Commonwealth *Australian Heritage Council Act 2003* is responsible for the maintenance of the Register of the National Estate and the Australian Heritage Places Inventory. Listing on the Register of the National Estate provides no additional protection to that provided by State heritage legislation, and places no constraints on owners. No listed sites are located within or in the vicinity of the ACH study area.

16.1.4 Aboriginal Cultural Heritage Act 2003

The *Aboriginal Cultural Heritage Act 2003* (ACH Act) is the principal legislation protecting Aboriginal cultural heritage in Queensland. The ACH Act states that its main purpose is to provide effective recognition, protection and conservation of Aboriginal cultural heritage. Under the ACH Act, Aboriginal cultural heritage is defined as:

- a significant Aboriginal area; or
- a significant Aboriginal object; or
- evidence of archaeological or historical significance, of Aboriginal occupation in Queensland (section 8).

The primary protection measure contained within the ACH Act is the establishment of an Aboriginal cultural heritage duty of care to take all reasonable and practicable measures to ensure land use activities avoid causing harm to Aboriginal cultural heritage. Section 23(3) of the ACH Act, establishes a range of measures a land user can adopt to meet the cultural heritage duty of care. Under the ACH Act, where a land user is acting in accordance with a cultural heritage management plan (CHMP) approved under the legislation that land user is deemed to comply with the cultural heritage duty of care.

Where an environmental impact statement (EIS) is required for a project, the ACH Act requires the development of an approved CHMP before project activities may occur. Activities must be conducted in accordance with the approved CHMP. Note that there is mirror legislation for Torres Strait Islander heritage protection; however this is not relevant for the project location.

16.1.5 Queensland Heritage Act 1992

The *Queensland Heritage Act 1992* (QH Act) is administered by the Department of Environment and Heritage Protection (EHP) which identifies and protects places of state heritage significance.

The purpose of this Act is to provide for the conservation of Queensland's cultural heritage for the benefit of the community and future generations, primarily by:

- establishing the Queensland Heritage Council;
- keeping the Queensland heritage register;
- keeping local heritage registers;
- regulating, in conjunction with other legislation, development affecting the cultural heritage significance of registered places;
- providing for heritage agreements to encourage appropriate management of registered places; and
- providing for appropriate enforcement powers to help protect Queensland's cultural heritage.

16.1.6 The Burra Charter

Like all Australian States and Territories, Queensland's legislation derives its philosophical principles from the International Council on Monuments and Sites (ICOMOS) *Charter for the Conservation of Places of Cultural Significance (The Burra Charter) 1977*. The following definitions are Central to the Charter:

- 'Conservation' means all the processes of looking after a place so as to retain its cultural significance' (Article 1.4).
- Cultural significance is defined as meaning 'aesthetic, historic, scientific or social value for past, present or future generations' (Article 1.2).

The Burra Charter recognises that cultural significance can be based on one or more values: aesthetic, historic, scientific and social, but it notes that other categories of cultural significance may be developed as understanding of a particular place increases (Article 2.6). Article 5 states that 'Conservation of a place should take into consideration all aspects of its cultural significance without unwarranted emphasis on any one aspect at the expense of others'.

16.2 Aboriginal Cultural Heritage

16.2.1 Introduction

This section of the EIS presents a description of the Aboriginal cultural heritage considerations relevant to the Red Hill Mining Lease (the project).

This includes an assessment of the relevant cultural heritage management legislation that applies to the project, followed by a description of results obtained from Aboriginal cultural heritage studies undertaken within the project locality. Potential impacts of the project on ACH will also be discussed and mitigation measures proposed.

The results from the studies identified in this report and additional studies proposed are used to help formulate CHMPs with the relevant registered Aboriginal parties. These CHMPs will work to regulate activities near known sites and in archaeologically sensitive settings, and to make provisions for appropriate management of cultural heritage items detected during ground disturbance as required under the terms of reference (TOR) for the project.

For the purposes of this report, the study area covers a slightly larger area than the EIS study area, as shown on **Figure 16-1**. This area will be referred to as the ACH study area.

16.2.2 Description of Environmental Values

There are three Aboriginal groups with cultural heritage interests over various parts of the ACH study area, as follows (**Figure 16-1**):

- Barada Barna people;
- Wiri Core Country people (Wiri Core); and
- Wiri people 2 (Wiri 2).

Barada Barna people have an active native title claim over the majority of the ACH study area, as shown in **Figure 16-1**. The Barada Barna people's registered native title claim (Barada Barna NNTT

No QC08/11) now coincides with the area of the old BBKY 4 native title claim area referred to in some of the background reports.

Wiri People Core Country native title claim extends into the northernmost part of the ACH study area. There is also a non-active native title claim by Wiri 2 which intersects with the northern and western edges of the ACH study area (**Figure 16-1**).

In 2011, Woorra Consulting Pty Ltd (Woorra Consulting), the Registered Aboriginal Cultural Heritage Body for the area representing the Barada Barna people, undertook a desktop review of previous cultural heritage surveys carried out on the ACH study area. Field studies were also undertaken by the Wiri Core, Wiri 2 and Barada Barna people, assisted by archaeologists from ARCHAEO Cultural Heritage Services (ARCHAEO), Acacia Heritage Research and Woorra Consulting. These site clearance surveys do indicate a range of Aboriginal heritage values present. They were, however, sample surveys, and may have only recorded a portion of the sites and cultural heritage features actually present.

Findings from the desktop review and field studies are presented below.

16.2.2.1 Desktop Review

In 2011, Woorra Consulting Pty Ltd (Woorra Consulting) undertook a desktop review of previous cultural heritage surveys carried out on the ACH study area. The following earlier studies are summarised in this review.

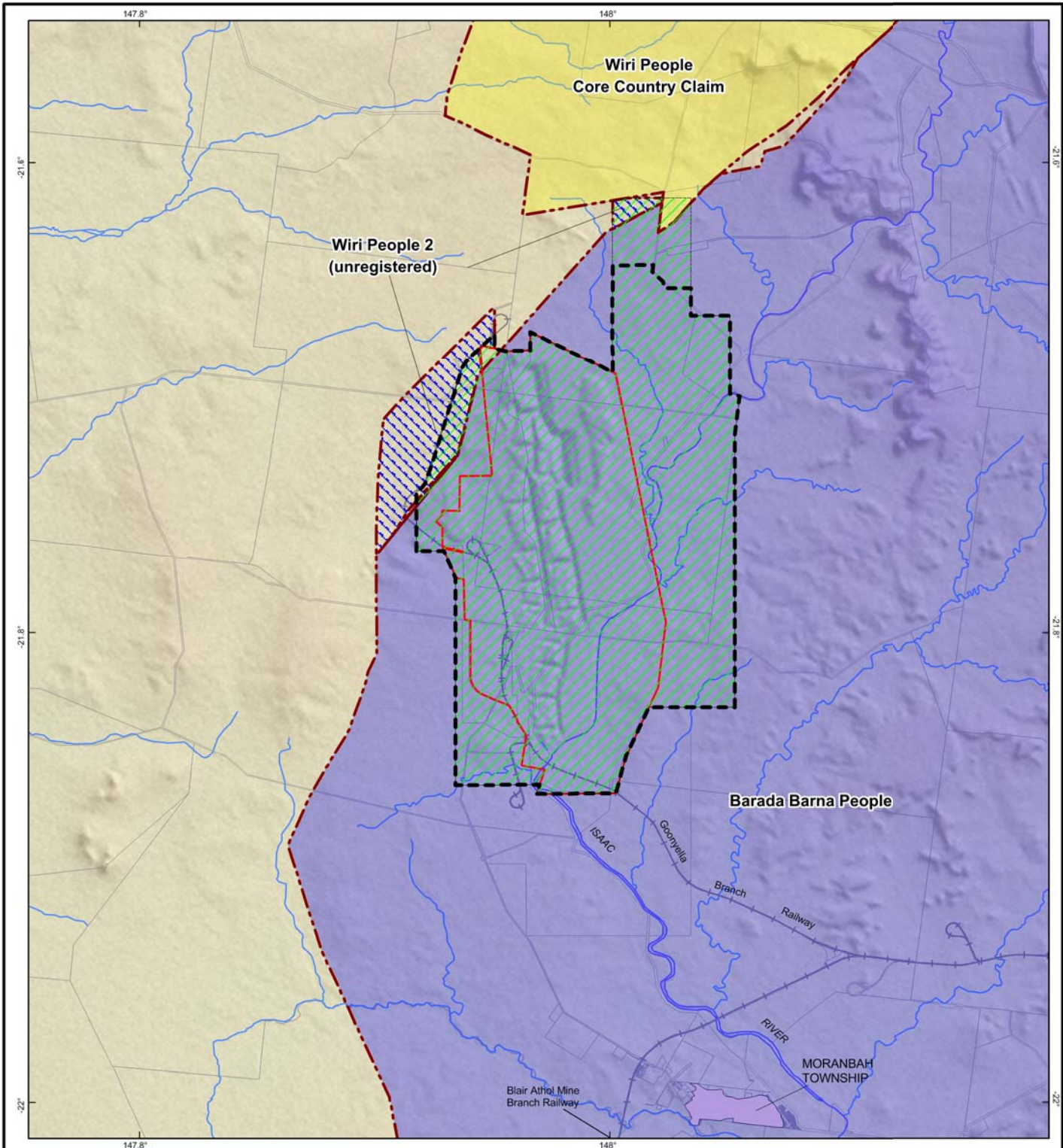
Brayshaw 1976a and 1976b

The first recorded cultural heritage assessment for the area was carried out by Helen Brayshaw in 1976. Two separate surveys were undertaken, one for the 'Goonyella' lease (north and south) (1976a) and one for 'Riverside' (along with several other proposed mine sites in the area) (1976b). Brayshaw focused her surveys on the main coal seam areas. No traditional owners were present or consulted.

During the Goonyella lease survey, Brayshaw uncovered one silcrete stone artefact scatter and one scarred tree in the northern lease, and frequent artefact scatters in the southern lease along the Isaac River, particularly on the eastern bank. She also mentions the existence of two rock art sites nearby, as well as a 'Leichhardt tree' on Burton Downs (it is unclear whether this refers to a natural or cultural feature).

In the Riverside lease, four sites with stone artefacts were identified in the northern half of the lease, with the most extensive located at the base of a hill near the 'four corners gate system'. Extensive artefact scatters were also found in the south along the banks of Eureka Creek and its tributaries, particularly on exposed eroded areas associated with (false) sandalwood trees. Four scarred trees (scars over one metre in length) were also identified. Brayshaw notes that the stone artefacts were concentrated on the tributaries of the Isaac, rather than the banks of the river itself. Artefact types include utilised flakes, fragments, cores and scrapers and were made from silcrete, chert and petrified wood.

Brayshaw (1976b) also refers to a reported massacre and burial site of Aboriginal people on the bank of the Isaac River, just north of the old Broadmeadow homestead. The region was witness to much violence between white and black, and Brayshaw suggests that a massacre may have been carried out by the Native Police or the squatters/settlers in the area. The source of this information is not stated and a massacre site has not been identified or located.



0 3.75 7.5km
 Scale 1:250,000
 Datum: GDA94

- EIS Study Boundary
- ACH Study Area
- BMA Tenure/Tenement
- Wiri People Core
- Barada Barna People
- Wiri People 2 (unregistered)
- Non-claim Area

Source: Belyando Shire Plan (2006) & Field Investigations (2008)

Source: © Mapinfo Australia Pty Ltd and PSMA Australia Ltd., © Copyright Commonwealth of Australia (Geoscience Australia) 2006, © Copyright The State of Queensland (Department of Natural Resources and Water) 2008, © The State of Queensland (Department of Mines and Energy) 2006-2008, © The State of Queensland (Department of Environment and Resource Management) 2010, Bing Maps © Microsoft Corporation and its data suppliers, Images from Client Oct 2011

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RED HILL MINING LEASE
 ENVIRONMENTAL IMPACT STATEMENT

ABORIGINAL GROUPS
 WITHIN THE
 EIS STUDY AREA

Hatte 1996

Hatte (1996), under the direction of Birrigubba Federation of Traditional Owners (representing the Biria, Wiri and Barna peoples), undertook a survey of a 120 kilometre pipeline route, which extended from Eungella Dam in the Mackay hinterlands to the town of Moranbah, as well as several sand borrow sites. The southern third of this pipeline travels from the Suttor Developmental Road, through Denham Park, Riverside and Broadmeadow stations. It crosses Eureka, Fisher and Platypus Creeks very close to the current Goonyella Riverside and Broadmeadow (GRB) mine complex and continues south to Moranbah.

The survey identified two sites near the current GRB mine complex: one on Eureka Creek and one on Platypus Creek. It was noted that the stone artefact types changed from predominantly basalt with silcrete in the north to predominantly silcrete with chert in the south along the pipeline alignment. The southern sites had a greater variety of material types, with Eureka and Platypus Creek sites containing examples of a variety of stone types as well as petrified wood and crystal and milky quartz. The Platypus Creek site suggested trade of stone material in the form of small exhausted cores (cores which were knapped until they became too small to obtain useful flakes).

Artefact types identified at these two sites included sandstone grindstones, primary and secondary flakes, cores, hammerstones, anvil stones, edge ground axes and 'chips'. Eureka Creek also featured grinding grooves on the sandstone base of the creek bed.

Hatte 2000

In 2000, Elizabeth Hatte and the Gutha Bimbi Birri Gubba Nanhi Bura Aboriginal Corporation, representing the traditional owners, carried out a survey for the proposed expansion of the existing GRM (Hatte 2000). The survey identified 19 stone artefact scatters and three scarred poplar box trees, one of which was of a form consistent with human burials. The artefact scatters were found in exposed, eroded areas in the vicinity of creek banks and represent all stages of artefact reduction (i.e. cores and primary, secondary and tertiary flakes). Some formal tool types, such as grindstones, hammerstones, blades and points were also identified.

Hatte (2000) confirmed Brayshaw's observation that artefact scatters occurred predominantly in association with false sandalwood trees. However, she also observed that there were many other species of vegetation in these areas which had traditional uses. These areas are regarded as having some significance due to the range and representativeness of artefact types found there, however, the sites had also suffered medium to high levels of disturbance. Hatte (2000) suggests there may be intact sub-surface cultural material which could provide significant information on pre-contact Aboriginal Australia.

Hatte 2006a

In 2004, a cultural heritage survey was undertaken for an expansion of the GRM (Hatte 2006a). The field survey was undertaken by archaeologist Elizabeth Hatte and traditional owner representatives of the Barada Barna people and Wiri peoples. The survey area was situated to the east and south of the existing GRB mine complex and totalling approximately 5,000 hectares. It had a north-south length of around 22 kilometres and a width of around four kilometres. The survey area covered both sides of the Isaac River and several tributaries which run into it.

Extensive stone artefact scatters were found predominantly on the banks of tributaries of the Isaac River, especially on Cleanskin Creek and a system of eroded gullies on the eastern side of the river.

In addition, knapping floors, 19 hearths/fireplaces, and silcrete extraction sites were found in association with these artefact scatters. Thirty-one scarred trees (including one possum tree) were identified within the survey area, and it was reported that a possible native police camp was said to have been located on the western bank of the Isaac River, although this has not been confirmed through extensive field survey.

The report also identified several natural resources which would have been important to past Aboriginal communities, such as water sources (the river and creeks, gilgai, waterholes and lagoons), plants with traditional uses (including remnant brigalow forests), and raw material sources for the manufacture of stone artefacts (silcrete and sandstone). These were all used by Aboriginal people in the past as evidenced by the cultural heritage material at these places. The presence of hearths suggest that the creek banks and terraces were used as camp sites where stone sources were extracted and stone and wood artefacts were made and used.

Traditional owner representatives indicated that “the cultural heritage sites recorded in this study are significant as a definite and tangible link to their traditional heritage and should be properly managed.

Hatte 2006b

Hatte also undertook further investigation, by way of excavation of two sites identified in the 2006a survey area. The two sites were located on the eastern bank of the Isaac River, near a large tributary. Cultural items uncovered in one site included stone artefacts, bone, burnt stone, charcoal and ash. A charcoal sample was sent for radiocarbon dating and returned a date of 390+/-40 years before the present (BP). The other site consisted of four hearths or fireplaces. These were made up of burnt stone, clay and charcoal, and were revealed to have been constructed in a way that is consistent with ethnographic and contemporary accounts.

It was also determined that the wood used in the hearths was likely to have been false sandalwood (*Eremophila mitchellii*) and/or poplar box (*Eucalyptus populnea*). A specimen of charcoal from square four of the excavation was also sent for dating, giving a date of 520+/-40 years BP.

These excavations were the first to be carried out in association with cultural heritage studies in the region.

Gorecki 2006

This survey was undertaken by Paul Gorecki from Acacia Heritage Research Pty Ltd in 2006 on behalf of Woorra Consulting Pty Ltd and covered the eastern part of the ACH survey area. During this survey, Barada Barna people surveyed the same area as was surveyed by Wiri 2 and Wiri 5 in 2006. Barada Barna people identified a total of 626 locations or items of cultural interest within the surveyed area. These include:

- 389 isolated artefact finds;
- 51 high density artefact scatters;
- 23 moderate density artefact scatters;
- 137 low density artefact scatters;
- eight scarred trees;
- 15 hearths/fireplaces;
- two locations where red, orange and yellow ochre found; and

- a small patch of cleared ground containing microchips.

The Barada Barna people survey delineated seven distinct areas with evidence of prior Aboriginal habitation. These areas were mainly found along the watercourses: Isaac River; Goonyella Creek; 12 Mile Gully; Fisher Creek; Platypus Creek; and Eureka Creek. The seventh area was located on a slope 5.5 kilometres to the north of Eureka Creek.

16.2.2.2 Field Surveys

Barada Barna People Field Survey

A comprehensive field survey was initiated involving the Barada Barna people and coordinated by Woorra Consulting.

Woorra Consulting provided BMA with a draft survey report which details findings for surveys undertaken up to February 2012. The report will be finalised once the survey is completed for all of the 99 areas. Future survey and management activities will be undertaken in accordance with the approved Cultural Heritage Management Plan entered into with the Barada Barna people for the Red Hill Project on 31 August 2012 and registered under the Aboriginal Cultural Heritage Act 2003.

The draft report identifies a large number of artefact scatters. Stone artefact scatters are the most abundant with the highest density concentrations occurring along the banks of creeks and the Isaac River. The draft report concludes that similar densities of materials are likely to be found in areas yet to be surveyed; the density of artefacts is likely to reduce away from the banks of the Isaac River and creeks, and that different site types are still possible in other zones away from these tributaries.

To date, Woorra Consulting has issued BMA with clearance letters for about 30 per cent of the areas surveyed as part of the seismic investigation of the ACH study area. These clearance letters identify all artefacts found within each area, and advise BMA to avoid these where possible. The Woorra Consulting survey identified broad areas considered as 'no go zones' until further detailed investigation has been undertaken. The draft survey report has identified that these areas have the potential to contain high numbers of artefacts and/or large sites.

Wiri Core Field Survey

The field component of this cultural heritage assessment was conducted on 27 and 28 June 2011, though due to weather constraints, the actual ground survey was conducted over one day. The survey team consisted of five Wiri representatives accompanied by their technical adviser, Douglas Hobbs (ARCHAEO).

Where practicable the survey team undertook a systematic pedestrian transect survey of the area, initially along a strip 1.1 kilometres in length and 200 metres wide along the western boundary. In order to assess the lower-lying areas, the southern boundary was walked, then a transect walked diagonally across the area to the western boundary. Due to rain on the second day of the survey and the density of ground cover, the remainder of the survey areas were assessed by inference from areas previously surveyed.

No evidence of Aboriginal cultural heritage was found throughout the surveyed area. This was due, in part, to the disturbance of ground integrity due to impacts of clearing and grazing and the fact that there are no creeks or significant drainage lines in the survey area. ARCHAEO surveys in nearby areas (BMA 2011 and 2005) show that there is a general paucity of cultural heritage across the black soil areas in this region. The majority of previous surveys also show that most finds are generally

confined to the higher (and older) laterised, red soil ridges and/or near creek lines. This indicates that these were the most likely regular areas of occupation and lines for movement through these areas.

Wiri 2 Field Surveys

Two Aboriginal cultural heritage surveys have been undertaken for the Wiri 2 native title claim area, as described below.

ARCHAEO Cultural Heritage Services Pty Ltd 2006

This survey was undertaken by ARCHAEO in 2006 as a combined survey for both Wiri 2 and the Wiri People 5 (Wiri 5). As this was a combined survey, it is not clear which artefacts were discovered within the Wiri 2 boundary and which in the Wiri 5 boundary. Further, the location of each artefact was not specified, so it is uncertain which of the finds occurred within the EIS study area.

During this survey, Wiri 2 and 5 people detected 129 locations with cultural material. Many of these were multi-component sites containing up to 30 individual hearths and artefact scatters extending for hundreds of metres. Seven areas were defined as significant Aboriginal areas (SAA). Sites were mostly associated with the Isaac River and tributaries but none of these appear to be located within the EIS study area or ACH survey area.

Aboriginal Archaeologist Australia 2012

Aboriginal Archaeologist Australia (AAA) was engaged by the Wiri 2 people to undertake a cultural heritage investigation within the ACH survey area in February 2012.

The only sections of the Wiri 2 survey area that are located within the EIS study area are in the north west of the EIS study area and the north of EIS study area, as shown on **Figure 16-1**, where no development is currently planned. Details are provided below for information only.

In the more southerly part of the Wiri 2 area, thirty-six cultural sites were identified, including sixteen isolated finds, fifteen artefact scatters, four hearths and one dead scarred tree. A large open campsite was also identified. Artefacts found in this section included grindstones/sandstones, hammer stones, scrapers, flakes and cores. The flakes and cores were of petrified wood, silcrete, basalt, chert and quartzite. An axe/hammer stone was also discovered and made of material yet to be identified. All hearths were found exposed and eroding. As artefacts were more typically found in high ground visibility areas, it is likely that more artefacts may exist in those lower ground visibility areas. There is also potential for cultural material to be present in sub-surface deposits across all surveyed sites.

No cultural remains were located in the more northerly part of the Wiri 2 area. AAA advised that this may be partly due to reduced ground visibility. Further AAA suggested that the close proximity of the Red Hill Bluff rock shelter approximately one kilometre away would typically indicate cultural use of the area.

16.2.3 Potential Impacts and Mitigation Measures

16.2.3.1 Overview

Potential site impacts may arise from direct disturbance as well as indirect impacts from subsidence.

Direct disturbance will arise from construction of the mine industrial area (MIA), coal handling and preparation plant (CHPP), accommodation village and access road, and a bridge across the Isaac

River. Most of these activities will be localised and their potential impacts on the cultural landscape can be anticipated.

Direct disturbance will also arise from installation of incidental mine gas (IMG) management infrastructure as described in **Section 3.8**. The locations of this disturbance are not yet known and there is some potential to avoid areas of particular cultural heritage significance, although there are a number of other constraints on the location of this infrastructure.

Subsidence of the underground mine will not directly disturb cultural heritage sites and artefacts, but localised changes in topography and hydrology may result in the displacement of some sites. Displacement will generally be localised. For example, artefacts may shift to the base of subsidence troughs.

Although appropriate measures to manage impacts on cultural heritage will be discussed with the relevant Aboriginal parties some assessment of impacts and suggested mitigation measures are provided in this EIS to indicate potential impacts and future management measures.

In addition to the physical traces of past Aboriginal habitation found across the landscape, the Aboriginal parties identified areas containing plants and vegetation that are significant because they serve as a reminder of the richness of the landscape and the availability of resources that sustained their ancestors.

16.2.3.2 Barada Barna Area Impacts

Surveys of the Barada Barna claim area intersected by the ACH study area indicate that a range of artefacts and sites exist, with particular concentration of material associated with the Isaac River and tributaries.

In accordance with the requirements of the ACH Act, BMA and Barada Barna people have entered into an approved CHMP which sets out how impacts on Barada Barna people's cultural heritage can be minimised or otherwise managed.

Impacts on cultural heritage sites and places will be managed in accordance with the terms of this CHMP.

16.2.3.3 Wiri Core Area Impacts

No evidence of Aboriginal cultural heritage was found within the Wiri Core Country people's survey area. This area is outside the direct footprint of the project and there is a low probability that future development associated with the project will impact significantly on Wiri Core Aboriginal cultural heritage in the area.

All project activities within this area will be undertaken in accordance with a CHMP negotiated with the Wiri Core Country people and approved under the ACH Act. Impacts on cultural heritage sites and places will be managed in accordance with the terms of this CHMP.

16.2.3.4 Wiri 2 Area Impacts

No infrastructure is currently proposed within the the area of the previously registered Wiri 2 native title claim. As the EIS study area lies within part of the claim area, details are provided for information only. Should any development be planned, all activities within this area would be undertaken in accordance with a CHMP negotiated with the Wiri 2 people and approved under the ACH Act.

The ARCHAEO 2006 survey was a combined Wiri 2 and Wiri 5 survey and consequently it is not clear which artefacts were discovered within Wiri 2 country and which in Wiri 5 country. The AAA 2012 survey report conducted transects but did not identify any cultural heritage artefacts.

AAA suggest that although no artefacts were identified, this could be a result of lack of ground visibility. Further, there is also potential for cultural material to be present in sub-surface deposits across all surveyed sites. The approved CHMP will set out procedures to manage any future impacts on cultural heritage within this area.

16.2.3.5 Impact Management

As referenced above, BMA will enter into cultural heritage management plans with each registered Aboriginal party and these CHMPs will be approved and registered under the Aboriginal Cultural Heritage Act 2003. The approved CHMP will set out procedures to manage any future impacts on cultural heritage within this area

Based on initial discussions and recommendations from available reports, management strategies may incorporate the principles set out below as appropriate to the type of activities proposed in a particular area and the significance of Aboriginal cultural heritage potentially affected:

- site avoidance wherever practicable;
- for particularly important sites, a program of active management may be developed to preserve sites;
- test pitting and open area excavation where appropriate to fully interpret or understand a site;
- recording of information, including photographic records and mapping;
- salvage;
- relocation of selected materials;
- cultural heritage awareness training including:
 - BMA cultural heritage awareness component in general site induction to raise awareness of the Aboriginal history and usage of the area, importance of protecting ACH and procedures applicable to workers to fulfil obligations under CHMPs.
 - Specific training for workers involved in ground disturbing activities, including requirements and obligations in the event that suspected cultural heritage material is uncovered during ground disturbing activities.

BMA's internal permit to disturb process ensures that cultural heritage issues are considered before any ground disturbing activity occurs.

16.3 Non-Indigenous Cultural Heritage

This EIS section addresses non-Indigenous cultural heritage matters related to the project. A more detailed discussion can be found in **Appendix O**. The non-Indigenous cultural heritage assessment for the project was undertaken in stages within the following tenures:

1. Stage One and Two Surveys

- mining lease (ML) 1763, the main Goonyella mining lease granted in 1971;
- ML1764, the main Riverside mining lease granted in 1978;
- ML1900;
- exploration permit coal (EPC) 928;
- EPC953;
- EPC554 (part of MLA70421);
- mineral development lease (MDL) 307 (part of mining lease application (MLA) 70421); and
- MDL358 (part of MLA70421).

2. Stage Three Survey

- MLA70194;
- MLA70287;
- ML1900;
- EPC985; and
- EPC928.

The assessment of the project has been carried out in accordance with the:

- EPBC Act;
- QH Act; and
- *Belyando Shire Planning Scheme 2006*.

16.3.1 Description of Environmental Values

16.3.1.1 Historical Background

The following section is based on library and archival research on relevant documents and secondary sources, and is intended to provide an historical overview of the broad area under consideration.

European Exploration and Pastoralism

German explorer Ludwig Leichhardt was the first European to enter the northern Bowen Basin (Killin 1984). Leichhardt spent January and February 1845 camped in and exploring the region that he later named Peak Downs and noted that it contained a number of well grassed luxuriant plains and scrubby sandstone ridges (Leichhardt 1964). Leichhardt also noted the presence of coal after his party attempted to sink a waterhole; however this was not of prime concern, as he sought areas for pastoral use (Murray 1996).

While passing through the area of modern Moranbah in February 1845, Leichhardt encountered a river that he named 'Isaac' in honour of his friend and supporter F. Isaacs from the Darling Downs (Leichhardt 1964).

Encouraged by the reports of Leichhardt and other explorers, various figures took up pastoral leases in the area in the decade that followed. In 1854 Leichhardt's friend Jeremiah Rolfe squatted on a run he called 'Belyando Waters' until it later became a part of a legal pastoral division (Killin 1984). Rolfe's unauthorised squatting was by no means unique as 'during the 1850s land acquisitions in inland central Queensland had been a free-for-all' (Murray 1996).

After the Leichhardt District was officially opened for pastoral settlement in 1856, a number of other runs were taken up. The Archer brothers, also acquaintances of Leichhardt's, took up 'Capella', 'Boree', 'Upper Crinum', 'Lower Crinum', and 'Laguna' (O'Donnell c1989). Oscar de Satge gained 'Wolfgang' in 1861 and John Muirhead established a 'massive sheep run at 'Banchory' in May 1860 (O'Donnell c1989). These holdings established a pattern of private pastoral leases that typified the region for the first 100 years of its settlement.

Early development was tempered by a tendency of some settlers to claim land purely for speculation with no intent to improve or make productive use of the land (Murray 1996). This practice was eventually prohibited by Queensland colonial government legislation forcing settlers to 'occupy and work their properties' (Murray 1996).

The encroachment of these settlers caused disruption to the existing patterns of life among the Aboriginal inhabitants of the area, and significant 'racial disharmony' followed (Killin 1984). Contemporary records noted a number of massacres of pastoralists by Aboriginal groups in the region (O'Donnell c1989). Reports of European brutality toward Aboriginal people included a number of incidents associated with the notorious Lieutenant Fredrick Wheeler of the Native Mounted Police in the mid-1870s (Lack and Stafford 1965). The unease caused by this racial tension meant that as late as 1895 station managers were choosing to live in 'fort like dwellings ... with slits for fighting blacks' (O'Donnell c1989).

Much of the area around what became the town of Moranbah was dedicated to pastoral activity during the 1860s and 1870s. Most land was available in leases granted for one to two years, but unfortunately records of these early leases remain sparse. Mr Andrew Scott is credited with taking up 'Moranbah' as a pastoral lease prior to 1880 (Belyando Shire Council 2006). After the 1880s, Scott's Moranbah was combined with other local leases to form 'Grosvenor Downs' station (Murray 1996). However 'Moranbah Holding' appears in the official records again in 1920, as grazing homestead for Mr H.R. Hart, and again in 1929 when Mr C.H. Clements acquired the station and renamed it simply 'Moranbah' (Belyando Shire Council 2006).

Although there was some early optimism about farming in the Moranbah district, sustainable agriculture proved difficult to establish. The Queensland State Farm at Gindie, south of Emerald, that ran from 1897-1932 failed to encourage widespread agriculture in the district (Killin 1984).

Early Mining

Gold and copper were the first minerals to be extracted from the Bowen Basin in large quantities. Although the existence of coal had been known since Leichhardt's first explorations, the absence of reliable transport infrastructure retarded development of this resource. Since the first discovery of gold in 1861 (Killin 1984) mining has substantially dictated the fortunes of the region alongside the

pastoral industry, and many small towns and settlements appeared to capitalise on the mineral deposits.

Following the discovery of gold, the area experienced its first gold rush centred on the town of Clermont in August 1863 (Killin 1984). Commensurate with the perception of quickly earned fortunes the town became renowned as 'an enterprising little township' remarkable only for its 'debauchery and bad language' (Bolton 1963). The gold deposits were soon exhausted and by 1887 Queensland Mining Warden Edmund Morey concluded that the area was no more than a 'poor man's field' where 'washing-up' and 'fossicking' were the only remaining activities (Morey 1888).

Copper soon replaced gold as the 'life-blood' of the Bowen Basin (O'Donnell c1989). The first discovery of copper was made by Jack Mollard in 1861 (O'Donnell c1989). Reflecting the future trend in mining operations in the region, Sydney entrepreneur John Manton formed the Peak Downs Copper Mining Company with £100,000 capital in 1862 (Killin 1984). Although this was the largest copper mining concern in the area, copper was still largely mined by individuals.

In concert with the discovery of copper and gold there was a 'boom and bust' cycle in many of the Bowen Basin settlements. Small towns situated at or close to gold and copper fields relied heavily on minerals for their wellbeing. Often when the deposits were exhausted the town ended too. Copperfield, Birimgan, Blackridge, Douglas Creek, McDonald's Flat and Theresa Creek were all mining towns that once were large enough to have schools and other basic services, but which eventually were deserted (O'Donnell c1989).

Coal Mining to 1968

From the time of Leichhardt's explorations there were 'tantalizing reports of coal' in the region (Whitmore 1991). However, there was little incentive to extract these reserves as there was limited local demand and no reliable means of transporting coal to the coastal markets. With the extension of the railways into central Queensland before the end of the nineteenth century the 'impetus for extending coal mining' in the area grew (Whitmore 1985).

Following the exhaustion of the gold fields, the town of Blair Athol began to produce coal in a limited capacity for the central railways (Killin 1984). The lack of a local market and absence of a rail link made the mine uncompetitive (Whitmore 1985). With the extension of the Northern (later Central) railway line to Clermont in 1884, a small market for local coal evolved. Although this development was not enough to generate large scale production, the Chief Inspector of Mines, C.F.V. Jackson, estimated that there were '44,000,000 tonnes' of coal in the Clermont coal fields (Jackson 1909).

To this point underground mining had been the dominant technique in the Bowen Basin, but this method proved dangerous, costly, and inefficient. In order to competitively extract coal, John William Hetherington committed his Blair Athol Coal and Timber Company to experiment with open-cut mining methods in 1921 (Whitmore 1991). Beset by a variety of technological, weather, and transportation problems and coupled with a low world demand for coal this experiment in open-cut mining was ended suddenly in 1923 (Whitmore 1991).

It was not until Blair Athol Opencut Collieries Limited that the open-cut method was successfully applied to the coal seams of the northern Bowen Basin. Assisted by technological developments Blair Athol Opencut Collieries began open-cut mining in 1937 (Killin 1984). This decision was rewarded with increased demand caused by improved world markets and World War II. Following 1945 Blair Athol Coal and Timber also reverted to open-cut mining at their mines with some success (Killin 1984).

However, the economic viability of coal from the region was beset by the same problems; distance from large markets and lack of reliable transportation. These traditional problems were exacerbated when Queensland Rail changed to diesel locomotives in 1952 (Killin 1984). These developments forced Blair Athol Opencut Collieries and the Blair Athol Coal and Timber Company to merge and form Blair Athol Coal Pty Ltd in 1965 (Killin 1984). Despite technological advances, coal from Blair Athol was not competitive on the international market leading to large amounts of stockpiling (Martin and Hargraves 1993).

1968 to 1990s

With the purchase of Blair Athol Coal by a joint venture of Conzinc Riotinto of Australia (CRA) and Clutha in 1968, the era of multi-national companies in the Bowen Basin began (Killin 1984). In a move that was to have direct implications for the Belyando Shire the US multinational Utah Development Corporation (UDC) opened their first open-cut coal mine in Blackwater in 1968, 290 kilometres south-east of current day Moranbah (Martin and Hargraves 1993). These large multinationals bought the necessary capital to modernise mining, ready access to large domestic and international markets, and enough political influence to ensure the necessary infrastructure developments.

By 1990 Queensland had taken the mantle of Australia's largest coal producing state (Martin and Hargraves 1993) and by 1997 two thirds of Queensland's \$10 billion production of coal came from the Bowen Basin (Anon 1997).

Development of Moranbah

Located 191 kilometres west of Mackay the township of Moranbah has developed as the main town in the vicinity of the EIS study area. The origin of the word Moranbah remains somewhat unclear. The earliest recorded use of the term was to describe Andrew Scott's run prior to the 1880s. By the 1920s the designation had changed to 'Morambah', but when the town name was gazetted in 1969 the original 'Moranbah' had returned (Murray 1996).

Moranbah was built by Utah Development Company (UDC), on part of the former pastoral run known as Grosvenor Downs. Grosvenor, Grosvenor North, and Grosvenor East all appeared on the Queensland Surveyor's General Office Run Map for the Leichhardt District (Surveyor General's Office 1882). By 29 April 1885 the registered lessee of Grosvenor Downs was Alexander Boner McDonald ('Grosvenor Downs' Run File: Held by the Queensland State Archives service (File Number: LAN/AF 388)'). McDonald's holding began with the original Grosvenor runs, but he was able to consolidate a number of other runs into an enlarged Grosvenor Downs ('Grosvenor Downs' Run File: Held by the Queensland State Archives service (File Number: LAN/AF 388)'). By the time McDonald's death in 1907 Grosvenor Downs included Winchester, Teviot Bank, Broadmeadow, Roseylie, Broadlee, Hermitage Forest, and Harrow.

Records show that McDonald ran mainly cattle on his property. This was the preferred use for the property throughout the rest of the twentieth century even though it underwent a number of lessee changes. By 27 November 1953 Arthur David, Adrienne Kathleen, and John Mitchell Muirhead had taken up the pastoral lease on the property ('Grosvenor Downs' Run File: held by the Queensland State Archives service [File Number: LAN/AF 388]).

Although there were reports of high grade coal in vast quantities in central Queensland (Chas. R. Hetherington & Co. Ltd. 1964), it was not until 1968, with the discovery of a large seam of coal at Goonyella near the Isaac River, that the town of Moranbah was built (Williams 1979). UDC took up the mining rights to the land with the forecast of approximately 400 employees. Subsequently, 1100

acres (the 'Moranbah' lease) was purchased and became crown land (Belyando Shire Council 2006). On 4 October 1969 the Queensland Government Gazette announced 'notification of intention to assign a place name, Moranbah, in the Parish of Moranbah, County of Grosvenor, in the shire of Belyando' (Murray 1996). This action was complete on 22 January 1970 when the land for both Moranbah and Goonyella was transferred from the Nebo Shire Council to the Belyando Shire Council (Nebo Shire Council 2005).

The town of Moranbah was purpose built as a 'supportive town' for the Goonyella mine (Bertoldi 1978). Ullman and Nolan Consulting Engineers of Mackay were contracted to design a town 30 kilometres south of the proposed mine site (Kingston 1986). The estimated cost of the town, between \$2,142,000 and \$2,242,000, was borne by UDC, with the Belyando Shire Council supplying some infrastructure (Kingston 1986).

Although the town was planned with a 'community focus' (Bertoldi 1978), Moranbah was beset by a number of early difficulties. For the early residents Moranbah was not a welcoming location to live. The town resembled a 'construction site' and many of the employees and their families had to live in one of the two short term caravan parks established as temporary housing (Murray 1996). This housing shortage was a cause of some industrial disputes between UDC and the peak mining unions (Williams 1979).

In addition to the lack of suitable accommodation the isolation of the town meant that most residents were transitory. Many public servants, police officers, and teachers remained in Moranbah for the minimum required period and the Salvation Army reported that a number of miners wives 'ran away' from their husbands due to the hardships of living in an isolated location (Murray 1996).

The Belyando Shire Council and the UDC sought to reverse the trend that saw only 18 per cent home ownership in Moranbah (Bertoldi 1978). A 'home purchasing scheme' was begun in October 1977, allowing residents to buy their current rental home at a 20 per cent discount off the market price (Bertoldi 1978). This scheme was not an initial success, for as one local put it 'most people never really thought that mining would last' so there was no point in purchasing a house (Murray 1996). Nonetheless, infrastructure and service improvements were made to the town and a number of essential and recreational services were added. By the mid 1970s the town boasted a shopping centre, a little athletics club, dentists, air charter service, Australian Rules football club, 14 bed Moranbah Hospital, race track, and golf course (Murray 1996). With the growth in mining operations the town continued to develop and by the late 1990s Moranbah was 'a slow and easy going place' with 'a shopping centre, hospital, library, banks, video rental stores, a travel agency, churches, and even a modest zoo' (Murray 1996). By 1996 a small pensioner housing development, a high school, and increased home ownership showed that some residents in the town had come to see Moranbah as home (Murray 1996).

Coal Mining at Goonyella Riverside

Goonyella Riverside Mine (GRM) is located on portions of a number of original pastoral runs. The runs of Goonyella, Annadale, Broadmeadow, Wotonga, Lenton, Fisher, and Eureka all appear on pastoral run maps from 1882 onwards (Queensland State Archives 1885; Surveyor General's Office 1882). Although specific records of Goonyella are sparse it is mentioned sporadically throughout the historical record.

Aware of the need for 'efficient, reliable and economic transportation' to sustain mining operations in the region Queensland Rail built a \$36.3 million 124 mile rail line linking Goonyella with the Hay Point

coal loading facility. Construction began on 13 August 1969 and the first trains ran on 24 June 1971 (Queensland Railways Journalistic and Photographic Sections 1971). This link has been vital to the areas' continued mining expansion.

Located 30 kilometres north of Moranbah, the original operation consisted of two separate mines, the Goonyella Mine and the Riverside Mine. Goonyella was developed during the period 1969-1971 by UDC.

UDC began open-cut mining operations at Goonyella in January 1971 (Williams 1979) and by 1975 Goonyella employed 362 manual workers, 34 office and clerical staff and 32 managers and engineers (Williams 1981). Although by 1975 UDC was forced to close a number of its other central Queensland mines due to industrial action and an international recession (Richards 2005), at the Goonyella mine a fifth dragline was installed to increase production (DME 1976).

In her social study of Goonyella and Moranbah between June 1974 and July 1975 Claire Williams concluded that there was an 'atmosphere of mutual hostility' between the Unions and UDC management in the period up to 1975 (Williams 1979). This resulted in 34 work stoppages due to industrial disputes at the mine in 1974 alone (Williams 1979). Despite these industrial disputes, by 1983 the mine was producing 4.249 million tonnes of saleable coal (DME 1984).

In 1981 BHP Mitsui Coal Pty Ltd began development of Riverside on a site adjacent to the Goonyella mine (DME 1981). Thiess Dampier Mitsui Coal Pty Ltd (TDM) then developed the Riverside mine and the first coal was extracted there in 1983. In April 1989 Goonyella and Riverside mines were amalgamated and re-registered as the GRM. Riverside came on line with five other mines throughout Queensland in the 1983/84 financial year. With an initial workforce of 400 people it produced 2.021 million tonnes of saleable coal by the close of its first financial year of operation (DME 1984). In a move that had important implications for Moranbah, BHP took over UDC on April 2 1984; BHP later merged the operations of the Goonyella and Riverside in 1989 (Murray 1996). By then the two mines combined to produce over six million tonnes of saleable coal per year and employed over 600 people (DME 1989).

In an important shift away from traditional practices the Sumitomo Corporation began long wall (underground) mining at their North Goonyella lease in 1993 with an annual output of three million tonnes ('Contract Awarded for Goonyella Project' 1999). This site was eventually purchased by RAG Australia Coal in 2000. In 1999 Shell Coal had constructed 8.5 kilometres of underground tunnels for long wall mining at their Moranbah North site ('Contract Awarded for Goonyella Project' 1999). These operations paved the way for underground exploration in an area that had been typified by open-cut (above ground) mining.

In 2001, a strategic alliance agreement created the BHP Billiton Mitsubishi Alliance (BMA). This is an unincorporated joint venture between BHP Billiton (50 per cent) and Mitsubishi Development Pty Ltd (50 per cent).

In 2005 BRM, an underground mining operation, commenced at Goonyella Riverside.

The EIS Study Area

Survey maps of the EIS study area from 1923 identify boundary fences, roads, holding yards and associated springs, bores, tanks and associated troughing areas (see **Appendix O**, Figure 2.1). The landscape was described as well grassed with scrub and large areas of dense vegetation of Blackbutt, Lapunya, Brigalow, Gidya, Ironbark, Moreton Bay Ash and Bloodwood (GV 19, DK 25, QSA 1923). An earlier map (c. 1884 -1888) documents the location of blazed trees across the EIS study area in

association with creeks. Unfortunately, these have not been identified on the 1923 maps and the assumption is that these trees had been removed by the time of this later survey.

16.3.2 Field Survey

This section of the EIS provides an overview of the methodology, constraints and overall results of all three stages of the field survey (refer to **Section 1 of Appendix O**). Fieldwork undertaken by Converge staff is based on generally accepted forms of assessment that occur in a series of clearly defined steps including sampling, surveying, site evaluation, recording, impact assessment, and management recommendations.

16.3.2.1 Survey Methodology

The survey methodology adopted for all three stages of the non-Indigenous cultural heritage study incorporated vehicle and pedestrian surveys across the EIS study area. Landmark areas were targeted across the EIS study area, for example property boundaries, easements, and known locations of homesteads, dams and holding yards. It is estimated that approximately 55 per cent of the EIS study area was surveyed. The part not surveyed consisted of the existing open-cut mine and areas already disturbed. Given the landscape of the area, this is common and acceptable methodology from a 'best practice' heritage perspective.

All survey data was recorded in field notebooks and locations of any items or places of non-Indigenous cultural heritage significance were captured via a hand held global positioning system (GPS) receiver, accurate to plus or minus four metres. This information was then utilised to create maps outlining the location of sites and features noted during the survey. Areas of interest were photographed and all photographs were logged in a field notebook. Upon completion of the NICH Technical Report (**Appendix O**), all photographs were stored on a compact disk.

16.3.2.2 Sampling Strategy

For this particular survey, a purposive sampling strategy was employed (i.e. specific areas were targeted based on predictive (probabilistic) modelling. Historical research and consultation with the land owners enabled a comprehensive survey of areas known to be of historical interest and significance.

Noted historical cultural heritage sites were recorded with reference to site title, location, environmental context, levels of previous impact, condition and relevant comments including project details.

Due to the nature of sites identified, archaeological excavation was not deemed necessary.

16.3.2.3 Constraints to the Survey

Ground Integrity

An assessment of ground integrity (GI) provides an indicator of whether or not the land surface within a landscape under study has been modified or not and, if so, the degree of disturbance encountered. Landscape modification may influence the context (and therefore integrity) of areas of non-Indigenous cultural heritage interest. Levels of GI were determined using a percentage range between 0 - 100 per cent where 0 per cent indicates all GI is gone, and 100 per cent represents excellent preservation of the original context.

Therefore:

- zero – 0 per cent;
- poor – 1 - 25 per cent;
- moderate – 26 - 50 per cent;
- fair – 51 - 75 per cent;
- good – 76 - 85 per cent; and
- excellent – 86 - 100 per cent.

Much of the EIS study area demonstrated poor GI, exhibiting clear evidence of long term clearing associated with the pastoral history of the area coupled with erosion caused by grazing and the effects of rain at the time of the survey. This was particularly noticeable in the general lack of mature vegetation and the predominance of dense grass and regrowth scrub. Notable areas of higher integrity included small remnant corridors of woodland (predominantly Box, Brigalow, Moreton Bay Ash, Ironbark and various other Eucalypt species) along the banks of the Isaac River and the few creek banks encountered.

Ground Surface Visibility

Assessments of ground surface visibility (GSV) provide an indication of how much of the ground surface can actually be seen. GSV is most commonly inhibited by vegetation but other inhibitors may include concrete, gravel and bitumen. Levels of GSV were determined using a percentage scale in that 0 per cent represents zero visibility and 100 per cent represents maximum visibility (bare ground).

Therefore:

- zero – 0 per cent;
- poor – 1 to 25 per cent;
- moderate – 26 to 50 per cent;
- fair – 51 to 75 per cent;
- good – 76 to 85 per cent; and
- excellent – 86 to 100 per cent.

The better the visibility, the more potential there is for locating historical/archaeological material.

Stages One and Two

Much of the EIS study area demonstrated excellent GSV primarily as a result of long term clearing in the area and erosion around dry creeks and channels. Areas where GSV was notably lower included areas of dense grass and scrub regrowth.

Stage Three

Areas of the EIS study area also demonstrated poor to moderate GSV primarily consisting of dense grass, weed varieties and scrub. Areas where GSV was notably higher included areas around holding stations, tracks, easements and erosion around dry creeks and channels.

Access

Access to some of the EIS study area was limited due to dense undergrowth of grasses and a few eroded gullies. The entire survey was generally conducted along visible tracks and fence lines; however, as stated above, a purposive sampling strategy was employed, which negated the need for 100 per cent coverage of the EIS study area. A potential site called 'old station yard' was not assessed during the survey as the area was inaccessible at the time.

16.3.2.4 Leaseholder Consultation

The following consultation was conducted as part of the research for this assessment:

Stage Two

Discussions were held on 6 September 2007 with the Riverside Homestead leaseholders. The family have owned and lived on the property for five generations and are the only family within the EIS study area that has remained continuously on their property for more than 100 years. The Riverside Homestead leaseholders provided information and location details for the original site of the Riverside Homestead, Broadmeadow Homestead, and for a possible former native police camp within the EIS study area.

A discussion was held with the leaseholder of Burton Downs on 7 September 2007. The leaseholder relayed information regarding the location of graves up in the hills of the Burton Ranges (outside the EIS study area), and a camping ground by the creek near his current homestead. The Burton Downs leaseholder's original homestead was located within the GRM current operations and, therefore, no longer exists.

Stage Three

A further discussion was held with the leaseholders of the Riverside Homestead on 22 May, 2009. They provided information on the relocated site of a stockman's hut, historic bullock tracks, the former 'old station yard' site, former fence lines, and spear gates within the EIS study area. The relocated stockman's hut was originally part of the 'old station yard', which was not investigated due to dense grass (refer to **Section 16.3.3.3**). The area where the hut was relocated to around the 1950s (and before relocation to its current site in the 1990s) was also not investigated due to dense grass and eroded gullies.

Surface evidence of the possible historic bullock track no longer exists, although a current track located near a stock holding yard and dam could be based on this route. Additional consultation was undertaken on 22 May 2009 with the caretaker for the Riverside property during the field survey. The caretaker identified the location of the 'old station yard' as being east of the railway line (inaccessible – refer to **Section 16.3.3.3**).

16.3.3 Historical Sites and Places Located Within the EIS Study Area

16.3.3.1 Summary

All material recorded is listed in **Table 16-1** and mapped in **Figure 16-2**. Historical sites of cultural heritage significance are identified by the prefix RHHAS (Red Hill Heritage or Archaeological Site). Locations of objects and/or places of historical interest are identified by the prefix RHHI (Red Hill Historical Interest).

Heritage or archaeological sites are described as those sites that contain suitable value to warrant further assessment. Heritage and archaeological sites within the project area were identified as a result of contextual research conducted prior to the field survey and consultation with relevant stakeholders.

The RHHAS located during the field surveys are identified and categorised below. RHHAS 1 and 2 appear to fall into a ‘precinct’ that relates to the one standing structure, a dwelling that no longer exists. Other points within the area immediately surrounding this precinct add weight to the existence of a dwelling at some time in the not-too-distant past. These are discussed in **Section 4 of Appendix O**.

Discussions with the caretaker of the Riverside property also identified the potential for an old station yard to exist in a location that was not accessible at the time of the survey (east of the railway line).

Table 16-1 Location Data for Items and/or Places of Historical Archaeological Significance and/or Interest

Site ID	Name	Location	Description
RHHAS-01	Dump	Located on the western bank of the Isaac River, 2 km north-north-east of the Riverside Homestead. Within MLA70421, outside the underground footprint. Adjacent to GRHAS-03 and GRHAS-04.	The dump contains items associated with life around the home; bottles, household furniture, kitchen items; and also materials from farm life around the house; fence posts, car bodies, fencing wire etc. The dump is found in association with an old water tank (RHHAS-02) with associated stone structure to allay run-off from the overflow pipe, and a dead tree (still standing) with extensive scarring as a result of the attentions of a steel axe.
RHHAS-02	Corrugated iron water tank with bottles	Located on the western bank of the Isaac River, 2 km north-north-east of the Riverside Homestead. Adjacent to RHHAS-01 and RHHAS-03.	An old corrugated iron water tank. Associated with this tank were a number of old condiment bottles and jars, four of which had an Australian glass manufacturer’s mark on the base dating them to the 1930s. This date range alone does not elucidate much on the timescale through which the dwelling was active and probably represents a time toward the middle of the ‘life’ of the homestead rather than its beginnings and/or when it was abandoned.
RHHAS-03	Surveyor’s mark	Located toward the northern margin of the EIS study area covered in MDL358 on the western bank of the Isaac River. Adjacent to RHHAS-01 and RHHAS-03.	A <i>Blackbutt – Eucalyptus cambageana</i> (Dawson Gum tree) with a surveyor’s mark blazed upon it. The tree faces away from the river. The mark itself had three components interpreted as follows: <ul style="list-style-type: none"> • Top – the broad arrow ‘logo’ identifies the mark as that of a government surveyor; • Middle – this inscription identifies the initials of the surveyor; and • Bottom – the figure at the base identifies the surveyor station number at that location.
RHHAS-04	Dump in drainage channel	Located within the walls and bed of a drainage channel intersecting the Isaac River, 2 km south-west of Riverside Homestead. Within MLA70421 and the underground footprint.	The southern wall and bed of the drainage channel contained evidence of general household refuse: layers of iron sheets, fibro, glass bottles, a cast iron pot, broken ceramics and piping. The dump extends approximately 50 m west, within the channel.

Site ID	Name	Location	Description
RHHAS-05	Survey tree	Located 100 m from the eastern bank of the Isaac River. Within the current BRM area, external to the RHM footprint.	A living Morton Bay ash with two scars: one directly below the other. The upper scar has a triangular pattern typical of survey scars of the early 20 th century. A blazed mark could not be identified. There is, however, evidence of severe deterioration of the internal structure of the trunk. The second scar is positioned at the base of the tree and has clear diagonal axe marks at the top of the scar.
RHHAS-06	Broadmeadow Homestead complex.	The homestead is located in the south west of the mine's proposed expansion area between Platypus Creek and Fisher Creek. Located in the south-west of the EIS study area, outside the proposed areas of disturbance.	The complex consists of a bungalow homestead most likely constructed in the 1920s, a second smaller more recent Hardiplank house, stockman quarters, eight bay shed, fences, gate, stables with associated carrels, a high standing water tank and an outhouse/shed. Ten Bottle trees line the driveway from the entrance of the complex. Three mango trees are positioned at the front of the second smaller house, a large Poinciana tree is positioned on the western side of the bungalow and three Hibiscus trees are located on the northern side of the bungalow.
RHHAS-07	Broadmeadow cottage	The cottage is located 500 m south of the Broadmeadow Homestead. Located in the south-west of the EIS study area, outside the proposed areas of disturbance.	Timber bungalow cottage raised on five foot stumps most likely constructed in the interwar period, associated car port, fence, gate and water tank.
RHHAS-08	Old Riverside Homestead	Approximately 250 m west of Goonyella Creek and 2 km west of the current Riverside Homestead complex (within the Goonyella Riverside Property). Located within MLA70421 and within the RHM footprint.	Nine stumps remain of the original homestead. These foundations are in association with stone foundations for two structures, a wooden cattle trough, pieces of an old cast iron Etna stove, and flat riveted sheets of iron.
RHHAS-09	Current Riverside Homestead complex	Riverside Station – Located on the west bank of the Isaac River to the east of Red Hill Road. The homestead is north-east of the EIS study area (within the Goonyella Riverside Property). Located within MLA70421 and within the RHM footprint.	The original homestead (relocated from its original location at RHHAS-08) with added extensions to the west (possibly the integration with another cottage). The homestead is associated with a smaller house to the north, a tennis court, two buildings likely to be stockman quarters, three large sheds and associated lean to, a timber post and rail fence, a few smaller tin sheds, water tanks and a grain silo.

Site ID	Name	Location	Description
RHHI-01	Historic property boundary fence 1	Located within current BRM footprint.	Located approximately 200 m from the eastern bank of the Isaac River are the remains of a three barb timber fence. The line of fence posts extends for 200 - 300 m in a north-easterly direction. The fence is believed to have been constructed by a Riverside Homestead leaseholder's father in the late 1940s (personal communication with Riverside Homestead leaseholder). The timber posts are slowly deteriorating, however are in remarkably good condition considering the prevalence of white ants in the area.
RHHI-02	Historic property boundary fence 2	Within southern area of proposed underground footprint.	Remnants of two historic property boundary fences (two barb and three barb) extend alongside a current fence line in an east-west direction between the power easement and the Isaac River towards the survey tree located at RHHAS-05. The fence post remnants are in poor condition with one line of posts having completely collapsed. Weathered barbed wire remnants are evident. This fence line is consistent with the original position of the southern boundary of Goonyella Station as noted in the 1922 survey plans of the area.
RHHI-03	Telegraph tree	Immediately north of the underground footprint.	Closely associable with the dwelling that occurred within the RHHAS-01 and RHHAS-02 precinct, is the remains of the telegraph wire and insulator, still hanging from a tree approximately 300 m to the north-west of the old tank.
RHHI-04	Possible former native police camp	Within underground footprint.	<p>A Riverside leaseholder remembers his father showing him the possible location of an old police camp when he was a boy. The possible location of the camp, as identified by this leaseholder, is on the west bank of the Isaac River, downstream from the current Riverside Homestead (RHHAS-09). The leaseholder has not been back to the camp site in 20 years, however, he remembers remnant timber posts believed to be stock holding yard posts.</p> <p>The Queensland Native Mounted Police was established in 1861 in the Nebo district with the main police camp in the region located at Tongwarry, 10 km north of Nebo. This detachment was responsible for patrolling all the country inland as far as the Isaac River and south along the coast from Mackay to Collaroy (Moore 1993). There are reports of a camp at North Creek (Mayes 1991). Mayes (1991) notes that reference is made in Pughs Almanac of a police camp 40 km west of Oxford Downs on the mail run from Nebo to Clermont. This camp was just to the north of today's Annandale Homestead.</p> <p>The available historical records and site survey provide no direct evidence of the location of a police camp in the EIS study area. The possibility of a native police camp being located here has therefore been considered within the context of the project and any remnants may require careful management.</p> <p>Significant attempts were made as part of the field survey to locate any remains of the possible camp from these discussions and the physical and environmental context. However, the area described exhibited no such visible remnants and extremely low GSV as a result of dense grass cover. Improvement of GSV along with a planned systematic survey of the area is required to determine the true nature and significance of this site.</p> <p>A recommendation for further research and survey for this potential site is provided in Section 16.3.4.4.</p>

Site ID	Name	Location	Description
RHHI-05	Former stock holding yard and associated bore.	In the south-east corner of the EIS study area.	The disused stock holding yard and bore are located towards the south eastern boundary of the EIS study area. The bore (spring) is located in a concreted water feeder that has been partially covered by wooden planks. Several remnant stock holding yard elements including the spear gate remain. The 1923 survey map of the area indicates a spring and holding yards within this vicinity, which suggests that there is possibility that this former stock holding yard represents the same item on the documented 1923 site.
RHHI-06	Dead tree (steel axe).	Located on the western bank of Goonyella Creek, approximately 4.5 km north-west of the Riverside Homestead.	The dead tree (still standing) has extensive scarring as a result of the attentions of a steel axe.

The abovementioned places are mapped on **Figure 16-2**. Refer to **Appendix O** for detailed site inventories all places of interest

The field surveys identified nine sites and places of historic cultural heritage significance (RHHAS) which contain suitable value to warrant further significance assessment (as detailed below). In addition six places of RHHI were identified within the EIS study area.

There are three RHHAS and two RHHI sites located in the direct underground footprint. The RHHI places do not provide a suitable level of cultural heritage significance to validate further assessment and for this reason will not be subject to a significance assessment.

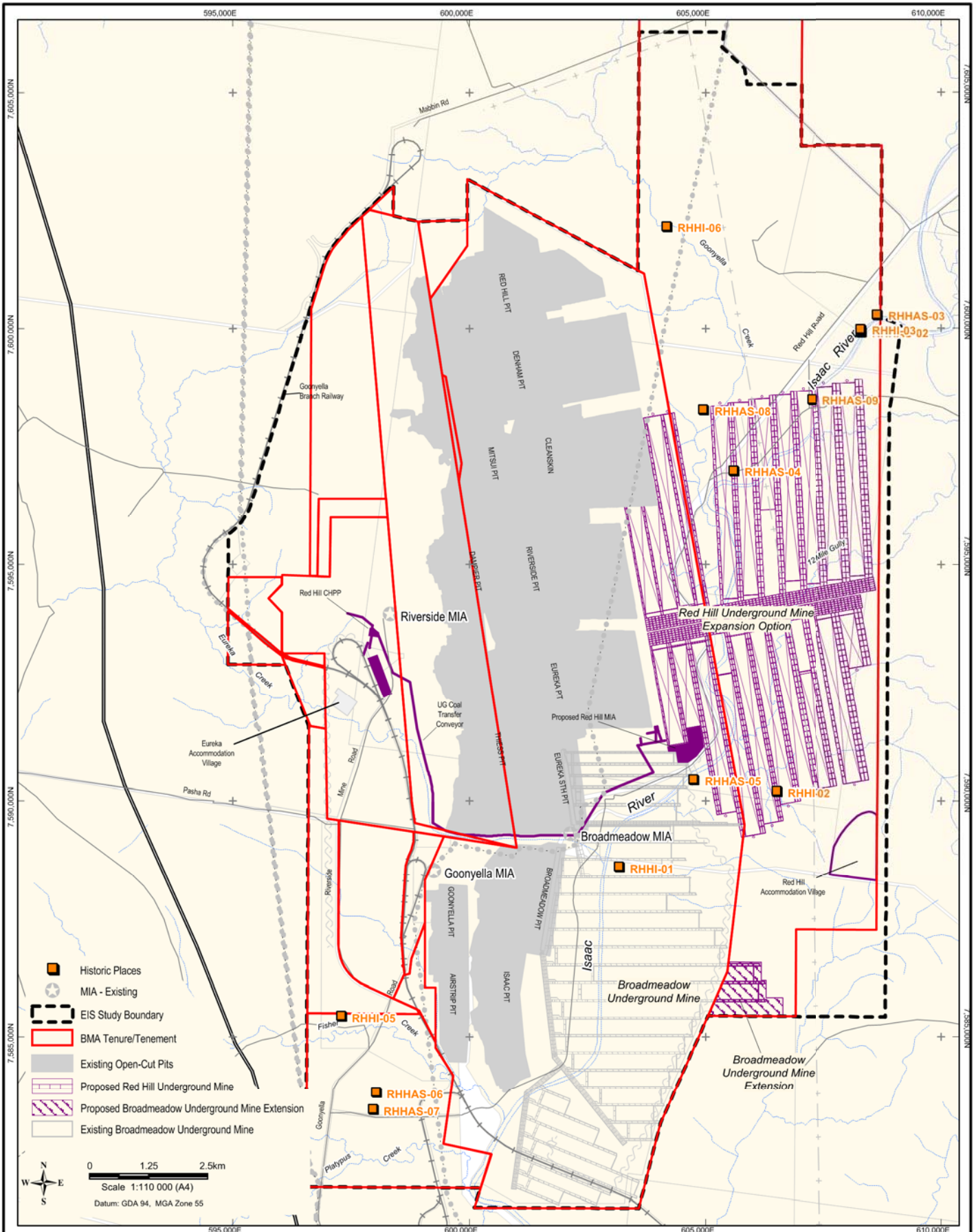
All survey attempts were unable to locate any evidence of a native police camp. There is some potential for further historic places/items to exist within the EIS study area. These could be remnant sites relating to pastoral and settlement activities, such as historic survey trees and remnant boundary fence lines. No evidence was located of the 'old station yard' and the stockman's hut, possibly due to dense grass cover and lack of access.

16.3.3.2 Significance Assessment

An assessment of the cultural heritage significance for the EIS study area was conducted in order to ascertain the management required for the relevant sites and places within the EIS study area, as discussed in **Section 16.3.4**.

There were nine RHHAS identified during the field survey and will be attributed an individual significance rating in this section.

A further six places of historic interest were located during the survey; however, these were assessed not to retain enough value to warrant further assessment or specific mitigation strategies. Nevertheless, these places of historic interest provide an insight into the pastoral history of the region and therefore guide the discussions relating to the historic value of the landscape within the EIS study area.



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 ENVIRONMENTAL IMPACT STATEMENT

LOCATION OF PLACES
 OF HISTORICAL SIGNIFICANCE
 AND HISTORIC INTEREST

Significance Levels for the EIS Study Area

The EIS study area has a layered history reflected in a variety of physical and intangible elements, and embodies a range of values that vary in their levels of significance. Assessing cultural heritage significance against set criteria is a widely recognised method of achieving consistent, rational and unbiased assessments.

A range of standards and criteria are available to assist with evaluating the cultural heritage significance of the site. These include recognised benchmarks such as *The Burra Charter: The Australia ICOMOS Charter for the Places of Cultural Significance 1999*, and the QH Act. These findings are summarised in **Table 16-2** though an assessment against criteria established under the QH Act.

No sites within the EIS study area are currently recognised on any heritage registers. Identified sites and the EIS study area as a whole do not satisfy listing on state or national heritage registers when assessed against criteria established in the QH Act.

Table 16-2 Summary of Heritage Values of EIS Study Area, through Application of the QH Act Significance Criteria

Queensland Heritage Act 1992 Criteria	Supportive Information	Conclusion
<p>Criterion (a) - The place is important in demonstrating the evolution or pattern of Queensland's history.</p>	<p>Aspects of the EIS study area represent settlement and pastoral pursuits relevant to the area from the 1850s, when settlers took up pastoral leases in the vicinity of the EIS study area. Most especially, the area known today as Riverside Pastoral Company has been in the same family for five generations and exhibits remnants from a variety of these earlier generations.</p> <p>From settlement, incidents between Aboriginal people and early settlers were recorded in the area. These include associations with the notorious Lieutenant Fredrick Wheeler of the Native Mounted Police and a reported native police camp that may have once existed in the vicinity of the EIS study area.</p> <p>The presence of coal in the area was confirmed by early explorers; however it was not mined on a large scale until the 1970s.</p>	<p>In conclusion, aspects of the EIS study area are considered by this assessment to have low to moderate levels of historic value to the local area.</p>
<p>Criterion (b) –The place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage.</p>	<p>No information provided.</p>	<p>The EIS study area is not considered to contain elements representing this criterion at a local or State level.</p>

Queensland Heritage Act 1992 Criteria	Supportive Information	Conclusion
<p>Criterion (c) — the place has potential to yield information that will contribute to an understanding of Queensland’s history.</p>	<p>A number of sites were recorded that have the potential to reveal information related to the local area, including but not limited to:</p> <ul style="list-style-type: none"> • existing homestead complexes; • a former homestead site; • survey trees; • dumps; • holding yards and associated gates; • associated fences; and • various pastoral remnants. <p>Although none of these elements display any significant level of ingenuity for their time, they do collectively provide a good cross section of cultural record of settlement and pastoral pursuits in the local area since settlement.</p>	<p>In conclusion, aspects of the EIS study area are considered by this assessment to have low levels of information and scientific value to the local area.</p>
<p>Criterion (d) — the place is important in demonstrating the principal characteristics of a particular class of cultural places.</p>	<p>No information provided.</p>	<p>The EIS study area is not considered to contain elements representing this criterion at a local or state level.</p>
<p>Criterion (e) — the place is important because of its aesthetic significance.</p>	<p>Surviving today as what has remained a relatively rural setting, the EIS study area presents a basic level of aesthetic qualities related to natural and historic nature of the site (relevant to the local community).</p>	<p>The EIS study area is not considered to contain elements representing this criterion at a local or state level.</p>
<p>Criterion (f) — the place is important in demonstrating a high degree of creative or technical achievement at a particular period.</p>	<p>No information provided.</p>	<p>The EIS study area is not considered to contain elements representing this criterion at a local or state level.</p>
<p>Criterion (g) — the place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.</p>	<p>Properties in the EIS study area have a connection with the families who have lived and worked on them. The Riverside Pastoral Company has been in the same family for five generations.</p>	<p>Aspects of the EIS study area satisfy criteria for listing on the Local Heritage Register for its social values.</p>
<p>Criterion (h) — if the place has a special association with the life or work of a particular person, group or organisation of importance in Queensland’s history.</p>	<p>No information provided.</p>	<p>The EIS study area is not considered to contain elements representing this criterion at a local or state level.</p>

Significance Levels for Individual Sites

The following RHHAS within the EIS study area boundary have been identified by this assessment to have the following levels of non-Indigenous cultural heritage significance (including archaeological significance) (Table 16-3):

Table 16-3 Summary of Heritage Values of Individual RHHAS within the EIS Study Area

Site ID	Description	Individual Significance Rating	Comments
RHHAS-01	Dump	Low-Moderate	Old dump with potential items of interest.
RHHAS-02	Old water tank	Low	Corrugated iron water storage, disused.
RHHAS-03	Surveyor's mark	Moderate	Indicator of period in time when land selection began and in fair condition.
RHHAS-04	Dump in drainage channel	Low-Moderate	Old dump with potential items of interest.
RHHAS-05	Survey tree	Low-Moderate	1922 survey tree, fair to poor condition with no marks evident.
RHHAS-06	Broadmeadow Homestead complex	Low	Homestead complex, recently relocated as a result of earlier mine expansion.
RHHAS-07	Broadmeadow Cottage	Low	Cottage recently relocated as a result of earlier mine expansion.
RHHAS-08	Old Riverside Homestead complex	Low-Moderate	Former homestead complex with scientific historic and value.
RHHAS-09	Current Riverside Homestead complex	Moderate	Early station that demonstrates continuity of long term pastoral pursuits by predominantly the same family. Part of the main homestead is believed to date back into the nineteenth century and relocated from GRHAS-09.

16.3.3.3 Cultural Heritage Potential within the EIS Study Area

Results identified in **Appendix O** suggest that there is potential for further historic items to exist within the EIS study area. These are likely to be remnant sites relating to pastoral and settlement activities, and may include historic survey trees, remnant boundary fences, stock routes, and old station dumps. Historic sites and places such as mile markers, remote graves and historic camp remnants and associated exotic vegetation, may also potentially be located in the EIS study area, as well as elements associated with older stock routes from times past. Such sites are common in areas of historic pastoral activities.

In particular, potential exists for surface and/or subsurface elements associated with the earlier 'old station yard', which includes the potential siting of the relocated 1950s stockman's hut.

16.3.4 Potential Impacts

16.3.4.1 Types of Potential Impacts

Potential impacts on non-Indigenous cultural heritage from the project will arise due to vegetation clearance and surface and sub-surface disturbance related to underground mining and ancillary above ground infrastructure, including IMG management infrastructure.

Subsidence is expected above underground workings as identified in **Figure 16-3**. Subsidence modelling has estimated that the maximum depths of subsidence will be approximately six metres. Sites RHHAS-04, RHHAS-08 and RHHAS-09 are located within potential subsidence zones.

Indirect impacts may occur from the construction of roads and infrastructure associated with inundation/mining activities, including the day to day operation of vehicles across the broader site.

16.3.4.2 Project Impact on Places of Cultural Heritage Significance

The field surveys identified nine sites of low, low-moderate or moderate levels of non-indigenous cultural heritage significance within the EIS study area. Three historical archaeological sites (RHHAS-04, RHHAS-08 and RHHAS-09) may potentially be directly impacted by the project, as these sites are located within the proposed footprint where IMG management infrastructure (refer to **Section 3.8**) and subsidence may occur (refer to **Figure 16-3** and **Table 16-4**).

If subsidence occurs in the area, impacts on vegetation and historic features can vary markedly. If actual subsidence is around six metres, then RHHAS-04 (dump), RHHAS-08 (old Riverside Homestead) and RHHAS-09 (current Riverside Homestead) may be impacted.

Table 16-4 Significant Historical Archaeological Sites Potentially Impacted by the Project

Impact type	Impacted site/s	Individual Significance Rating
Potential impact (underground mining)	RHHAS-04 (dump in drainage channel)	Low-Moderate
Potential impact (underground mining)	RHHAS-08 (old Riverside Homestead complex)	Low-Moderate
Potential impact (underground mining)	RHHAS-09 (current Riverside Homestead complex)	Moderate

16.3.4.3 Project Impact on Places of Historic Interest

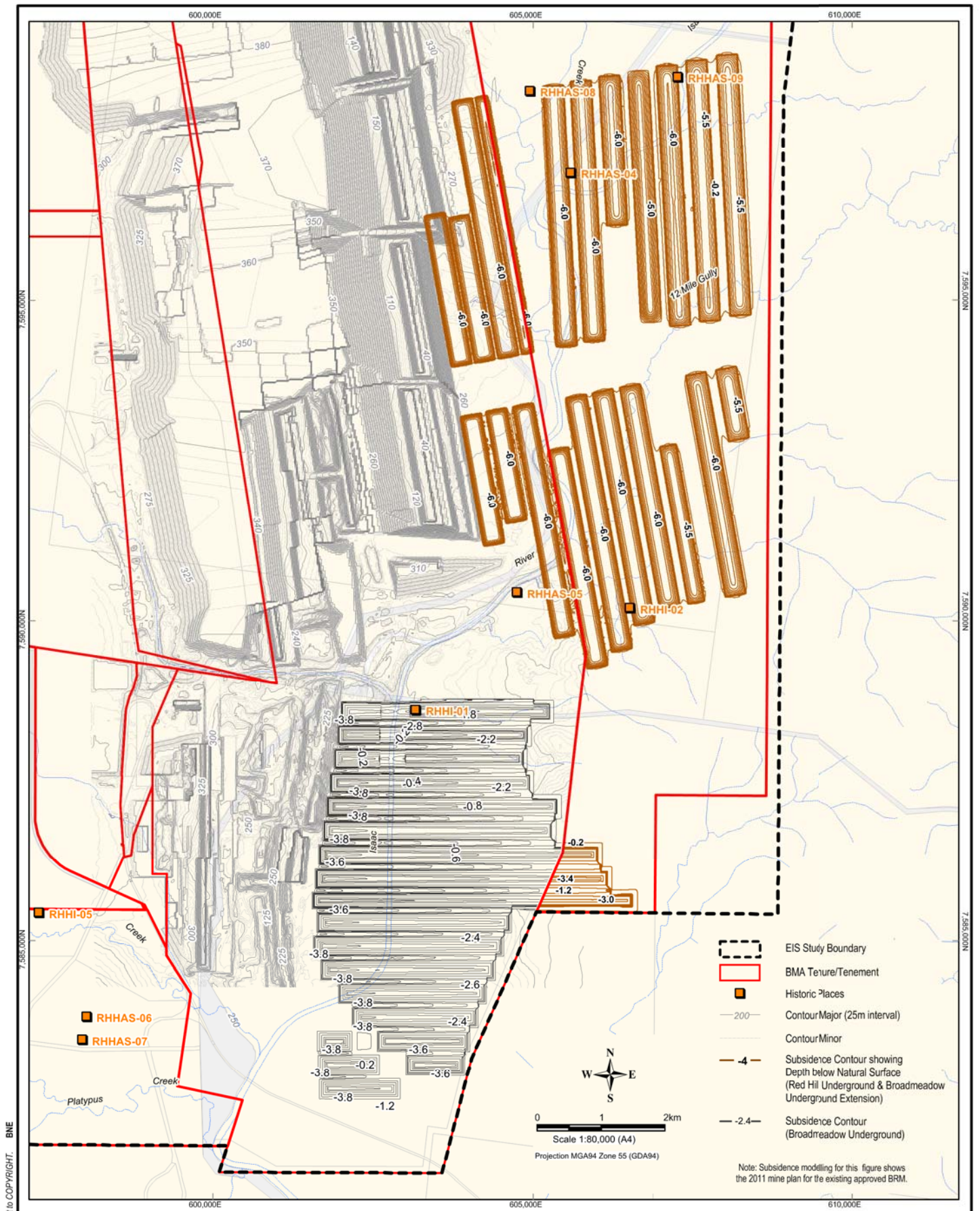
The field survey identified six places of historic interest. Of these, two may potentially be impacted by the project through installation of IMG management infrastructure (refer to **Section 3.8**) and subsidence, as shown in **Table 16-5** and **Figure 16-3**). Archaeological monitoring will be carried out during development in these areas to ensure that the type and extent of any surviving archaeological material is researched, investigated, recorded and mitigated (if required) using acceptable archaeological methods prior to any development or impact on or below ground in these areas.

Table 16-5 Historic Interest Sites Potentially Impacted by the Project

Impact type	Impacted site/s
Potential impact (underground mining)	RHHI-02 (historic property boundary fence 2)
Potential impact (underground mining)	RHHI-04 (possible former native police camp)

16.3.4.4 Project Impact on Potential Further Historic Places/Items

It is concluded that there is some potential for further historic places/items to exist within the EIS study area, as described in **Section 16.2.3.3**. The 'old station yard' was identified as being a potential site located within the EIS study area, and as such has the potential to be impacted by the project, if it exists within the underground footprint.



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PREDICTED
 SUBSIDENCE CONTOURS
 WITH HISTORIC PLACES

16.3.5 Mitigation Measures

16.3.5.1 Approach to Managing Cultural Heritage

The project will take into account each of the HAS sites and places discussed in this report and, where possible, avoid impacting on these sites. If this is not possible, BMA will implement mitigation measures appropriate to the potential cultural heritage value as identified in this report.

16.3.5.2 Further Survey of 'Old Station Yard' and Archaeological Monitoring of RHHI-04

The area identified as the location of the 'old station yard' site will potentially be impacted by the mine development and associated infrastructure. Due to the potential for archaeological material to remain *in situ* in the vicinity of this site, if this site is identified during IMG infrastructure activities, further survey of this area will be conducted to ensure that the type and extent of any surviving archaeological material is investigated, recorded and mitigated (if required) using acceptable archaeological methods prior to any development or impact in these areas.

RHHI-04 was reported as the possible site of a reported former native police camp. Repeated efforts could not locate any evidence of the site, however, to ensure potential subsurface materials that may be present are properly identified and managed, an archaeologist will be present during initial ground disturbing works at this location. If any indication of the native police camp is apparent, the area will be isolated and relevant authorities and parties will be consulted.

16.3.5.3 Recording of Significant Sites and Places Potentially Impacted by the Project

Three sites (RHHAS-04, RHHAS-08 and RHHAS-09) of cultural heritage significance may potentially be impacted by the project.

Each of these three sites could be potentially impacted by subsidence. Prior to works commencing in the area a basic level of photographic recording will be conducted for these sites. This will capture the nature of any identified items and their context within the cultural environment and EIS study area.

16.3.5.4 Cultural Heritage Management within the Environmental Management Plan

Management strategies are required in order to mitigate impact and potential impact to unexpected cultural heritage material or sites found during the construction stage of the project. In particular:

- Workers involved in vegetation clearing and ground disturbance must be made aware of the potential to identify unexpected items of cultural heritage significance.
- In the event that items of possible cultural heritage significance are identified, work in the area should cease and project environmental officers or construction contractor contacted.
- Project environmental officers or construction contractors will determine whether archaeological assessment is required and make arrangements for this assessment.

These measures can be combined with measures related to inadvertent finds of Aboriginal cultural heritage significance (refer to **Section 16.1**).

16.3.5.5 Cultural Heritage Awareness Training

In order to educate construction and mine workers about tangible cultural heritage that may exist in the area, cultural heritage awareness will be incorporated into the general worker induction and cultural heritage will be covered in 'tool box talks' for workers who are activated for project works in the vicinity of the EIS study area.