12.1 Introduction

This archaeological assessment has been conducted to identify and assess Aboriginal and historical cultural heritage values within the Project footprint. The assessment addressed the Marulan Site through preliminary field surveys. A desktop analysis was conducted for the proposed Gas Pipeline Corridor from the Moomba to Sydney Pipeline to the Marulan Site boundary. The two route options proposed for the gas pipeline within the Marulan Site were able to be assessed as part of the surveys of the Marulan Site.

The assessment has been conducted in accordance with the *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DECC Draft, July 2005).

The heritage assessment was conducted by Biosis Research Natural and Cultural Consultants. The following presents a summary of the archaeological assessment with the full assessment presented in **Appendix G.**

12.2 Methodology

The methodology undertaken for this assessment included the following:

- Heritage register searches to identify any previously recorded cultural heritage sites within the Project footprint. Searches included the Aboriginal Heritage Information Management System (AHIMS), the National Heritage List, Commonwealth Heritage List, Register of the National Estate, State Heritage Register, Local Environmental Plan and National Trust heritage lists.
- Consultation with identified statutory stakeholders in the area.
- A comprehensive survey (transect and desktop) of the Project footprint where existing information is limited, with survey coverage targeting landforms with a high potential for heritage places as identified through background research. A desktop survey was conducted for the proposed Gas Pipeline Corridor from the Moomba to Sydney Pipeline to the Marulan Site boundary. The two route options proposed for the gas pipeline within the Marulan Site were able to be assessed as part of the surveys of the Marulan Site.
- Recording and assessing sites identified during the survey in compliance with the guidelines issued by the NSW Department of Environment and Climate Change (DECC) and the NSW Heritage Office.
- Identifying impacts to all identified Aboriginal and historical cultural heritage sites and places based on potential changes as a result of the proposed development.
- Making recommendations to minimise or mitigate impacts to cultural heritage values within the Study Area.

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12.2.1 Consultation

Consultation included the following:

- Consultation with the Department of Environment and Climate Change to obtain information concerning previously recorded Aboriginal archaeological sites and completed archaeological studies.
- Consultation with representatives from the following Aboriginal stakeholder groups:
  - Gundangarra Tribal Council Aboriginal Corporation (David King); and
  - Pejar Local Aboriginal Land Council (LALC) (Delise Freeman).
- The representatives provided input to the survey methods used. These groups were also provided with a copy of the draft of the assessment for comment on the cultural significance of the locality and any archaeological objects or areas recorded in the survey. Copies of correspondence from these groups are provided in **Appendix G**.

As discussed in **Chapter 6**, the consultation process was carried out in accordance with the *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005).

EnergyAustralia and Delta Electricity actively sought the views and ideas of stakeholders on cultural heritage. EnergyAustralia and Delta Electricity did this through the following activities:

- An advertisement inviting groups and individuals to register their interest in the Aboriginal cultural heritage assessment and management program placed in the Goulburn Post on 25 January 2008 with registrations closing 8 February 2008; and
- Letters to the following stakeholders providing notification of the heritage consultation process being undertaken:
  - NSW Department of Environment and Climate Change;
  - Registrar of Aboriginal Owners;
  - Goulburn Mulwaree Shire Council;
  - NSW Native Title Services; and
  - Pejar Local Aboriginal Land Council.
- Two groups responded to the advertisement:
- Office of the Registrar of Aboriginal Owners advising there are no Aboriginal Owners of the subject land; and
- Pejar Local Aboriginal Land Council stating they wished to continue to be consulted regarding the Project including further sub surface testing.

The Gundungurra Tribal Council Aboriginal Corporation, although they did not formally register were contacted and they wished to continue to be consulted regarding the Project, including proposed sub-surface testing.

Consultation would continue with both the Pejar Local Aboriginal Land Council and Gundungurra Tribal Council Aboriginal Corporation.

12.2.2 Survey

The survey methods for Aboriginal sites have been designed to locate archaeological sites within the Project footprint with reference to the following information:

- previously recorded sites within the Project footprint;
- areas of potential as identified by the background research predictive model (regional site patterns as compared to the physical environment of the Study Area, or items identified in historic plans); and
- the proposed Project footprint.

The survey was conducted exclusively within the Project footprint and used the following methods:

- *Transect Survey* – Almost the entire pipeline within the Marulan Site and the Facilities footprint was covered by the survey. The wider area within the boundaries of the Marulan Site was not intensively surveyed. A number of transects were specifically surveyed and detailed notes recorded along each one. A range of landforms/landscape units along limited areas of the Site infrastructure and Facilties footprint were sampled. Information recorded during the survey included the geology of the area, exploitable resources, identifiable land-use impacts and any archaeological sites present in the Study Area. This information was also used to assist in the identification of areas of archaeological potential.
- *Desktop Survey* – Due to land access restrictions, a desktop assessment of the proposed gas pipeline routes between Marulan Site boundary and the Sydney to Moomba Pipeline was undertaken. The portions of the pipeline route options that fell within the Marulan Site were able to be assessed as part of the surveys of the Marulan Site.

Aboriginal representatives from the Pejar Local Aboriginal Land Council and the Gundangarra Tribal Council Aboriginal Corporation participated in the survey. The representatives have contributed input into the survey methods used, and have been asked to provide comment on the cultural significance of the locality and any archaeological objects or areas that are recorded during this survey.

The archaeological field survey of the Study Area was conducted by Melanie Thomson and Chris Lewczak (Biosis Research) accompanied by Pat Little and Justin Boney (Pejar Local Aboriginal Land Council) and Sharon Halls (Gundangarra Tribal Council Aboriginal Corporation) on 26, 27 and 28 September 2006.

12.3 Existing Environment

The environmental aspects of an area influence the type of archaeological remains that are likely to be present. The environmental background to the Project footprint is provided in order to give a context to the archaeological assessment. The assessment stated that overall, the diverse environments found within the Project footprint would have provided a range of resources for exploitation by the Aboriginal people who inhabited the region, including geological, plant and animal resources. It is likely that the

local Aboriginal inhabitants would have utilised these resources in the manufacture of tools and other items, as well as for food, medicine and the like.

12.3.1 Results of Heritage Register Searches

The heritage register searches identified that no Aboriginal or historic sites had been previously recorded within the Project footprint.

12.3.2 Aboriginal Context

Historical material, including magistrates' records and early non-Indigenous memoirs suggest that around six bands of Gundangarra people lived around the Goulburn area. It is impossible to say, however, what the population numbers would have been prior to non-Indigenous settlement.

The records of the local inhabitants that do remain refer to a wide variety of technology including spears, spear throwers, shields, clubs, boomerangs, digging sticks and coolamons. A wide variety of food resources were available and would have included kangaroo, wallaby, possum, emu and other bird species, reptiles, fish, mussels, yabbies and plant foods including berries, tubers and seeds. These records help to build a picture of elements of the lifestyle of the Indigenous inhabitants that are not preserved in the archaeological record. The Project footprint currently falls within the boundary of the Pejar LALC.

By far the most common site type in the Southern Tablelands region is the stone artefact scatter. Such scatters can range from isolated individual artefacts up to complex sites containing thousands of artefacts. Small sites of fewer than ten artefacts may indicate 'one off' occupation events, and are very common. Larger sites can be representative of a range of past activities, including campsites. The location of large, high density artefact occurrences, campsites in particular, have been found to be influenced by environmental factors. These include distance to water, aspect, raw material availability, the underlying geology or 'substrate' and environmental factors such as land fertility and resource diversity. The likelihood of sites being located in the area can be assessed by a consideration of these desirability criteria.

12.3.3 Predictive Model

The archaeological predictive model has been formulated based on the results of the location and type of Aboriginal sites that were recorded within the regional area, the results of the AHIMS database search and information about previous archaeological work. This information has been broken down into patterns that have been compared to the character of the Project footprint to allow for an understanding of Aboriginal archaeological potential.

Based on previous archaeological work and recorded Aboriginal archaeological sites, the following predictive model for the Project footprint has been developed, indicating the most likely through to the least likely site types:

- open campsites (artefact scatters) are likely to be the most common site types in the Project footprint;
- artefact scatters are the most common site type and are likely to occur on level, well-drained ground adjacent to sources of freshwater and wetlands;

- isolated finds are likely to occur anywhere in the landscape;
- scarred trees are likely to occur in all topographies, where old growth trees survive, either as isolated trees or as part of remnant or continuous forest; and
- burial sites may occur in landforms characterised by relatively deep profile of soft sediments, such as sand and alluvium.

12.3.4 Historical Context

There are no formerly registered sites of historic significance in the Project footprint. The dominant land use of the Study Area has been for grazing, as evidenced by the nearby Arthursleigh property within Sydney University Farm which is a working sheep station with a long history. As such, the types of sites which may be expected to occur in the Project footprint are those associated with rural properties such as old infrastructure like sheds, windmills and farm machinery.

12.3.5 Aboriginal Survey Results

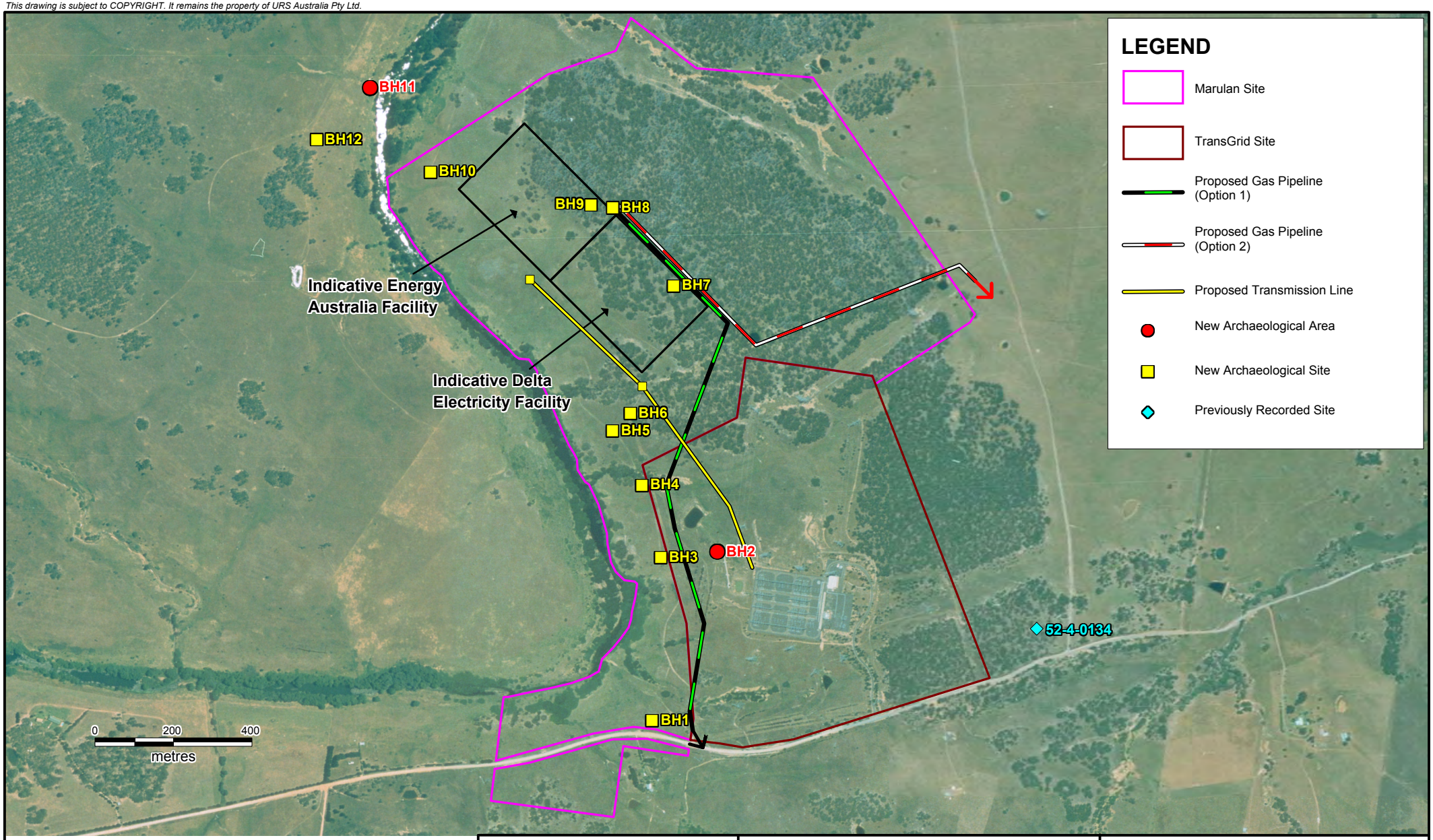
Transects sampled a wide variety of terrain within the identified landscapes. A major limitation to archaeological survey noted during the fieldwork was a lack of visibility and exposure throughout much of the Marulan soil landscape. Poor levels of ground surface visibility can be attributed to thick pasture grass cover that occurs across the majority of the Marulan Site.

Along the pipeline alignment, completed survey transects followed the proposed routes and the entirety of these were surveyed.

Overall, the ground disturbance levels within the Marulan Site were relatively low, as the Marulan Site has only been used for stock grazing. No scarred trees were recorded as no large remnant trees were encountered. With relatively little ground disturbance, and deep alluvial soil deposits across many areas, it is highly likely that undisturbed archaeological sites would occur.

A number of sites were found and recorded during the surveys and are referred to as ‘Aboriginal sites’. In addition, a number of areas were identified as having Aboriginal archaeological potential for sub-surface cultural deposits and are referred to as ‘areas of archaeological potential’.

The locations of the Aboriginal archaeological sites are presented in **Figure 12-1** and the areas of archaeological potential in **Figure 12-2.**



Source: BIOSIS (2008)

Client
DELTA ELECTRICITY AND ENERGYAUSTRALIA

URS

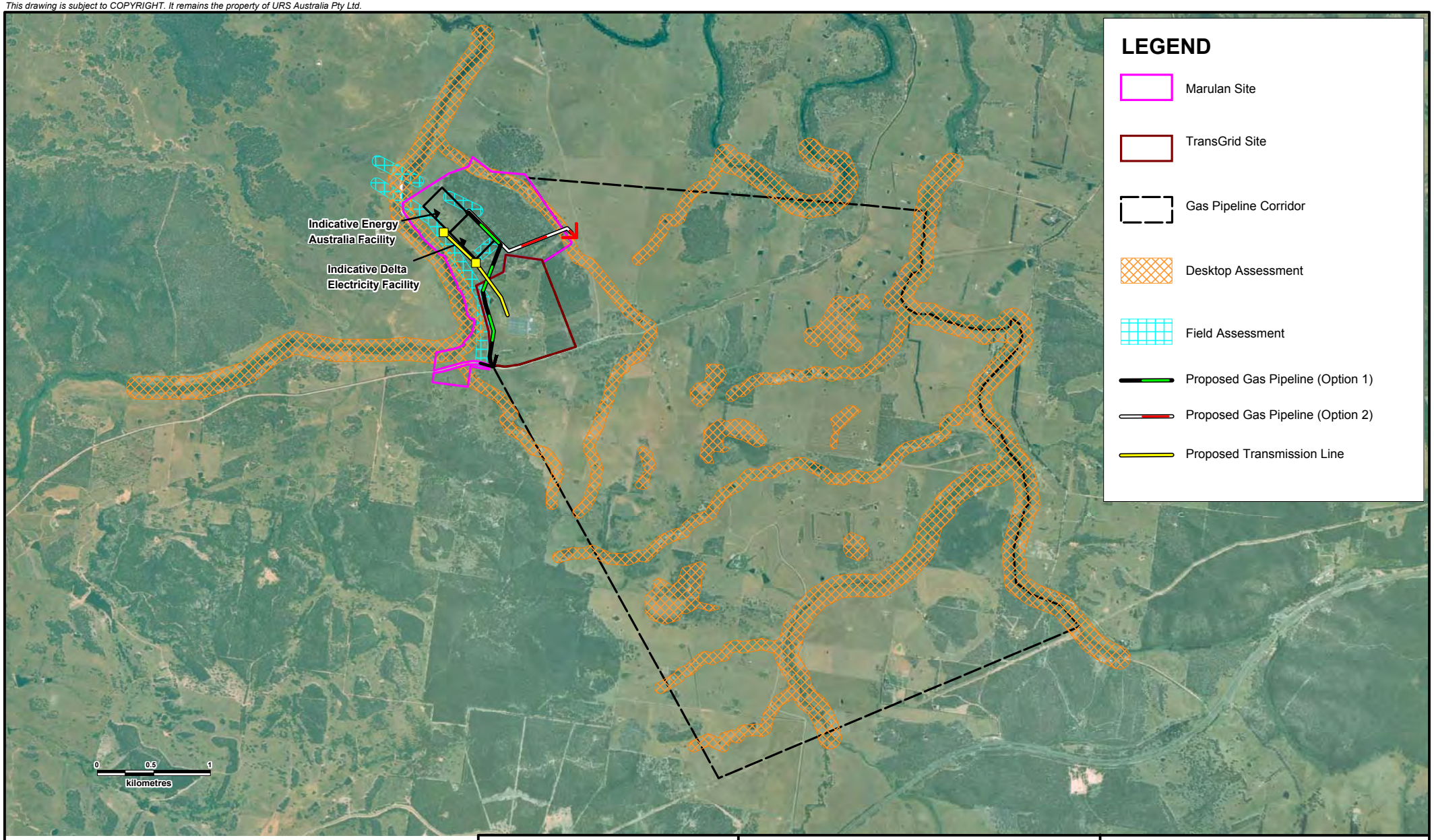
Project
MARULAN GAS TURBINE FACILITIES

Drawn: AJW | Approved: NB | Date: 03/07/2008

Job No: **43177371** | File No: 43177371-125.wor

Title
NEW ARCHAEOLOGICAL SITES LOCATED DURING SURVEY

Figure: **12-1**



Source: BIOSIS (2008)

Client
DELTA ELECTRICITY AND ENERGYAUSTRALIA

URS

Project
MARULAN GAS TURBINE FACILITIES

Drawn: AJW | Approved: NB | Date: 03/07/2008

Job No: **43177371** | File No: 43177371-126.wor

Title
AREAS OF ARCHAEOLOGICAL POTENTIAL

Figure: **12-2**

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12.4 Survey results

12.4.1 Marulan Site – Facilities Footprint

A summary of the recorded Aboriginal sites and areas of archaeological potential within the Facilities footprint is presented in **Table 12-1** and their locations are presented in **Figures 12-1** and **12-2**.

Table 12-1 Summary of Survey Results – Marulan Site

Location	Aboriginal sites and areas of archaeological potential	Significance rating/Level of potential	Potential Impact	Overall Cultural Values
Facilities Location Footprint	BH7	Moderate scientific significance	Site located within proposed Facilities footprint	Moderate Cultural Values
	BH8	Moderate scientific significance	Site located within proposed Facilities footprint	
	BH9	Moderate scientific significance	Site located within proposed Facilities footprint	
	Area of Aboriginal archaeological potential	Moderate scientific significance	Impact footprint situated on area of archaeological potential	

BH7 is considered to be of moderate scientific significance and has moderate cultural significance. The site comprises a single stone tool located on the spoil of a wombat burrow at the base of a small tree. Despite the site being disturbed by the excavation of the wombat burrow, the site consists of a formal tool, which has been specifically manufactured and then utilised. The surrounding topography of the immediate area suggests that this artefact is not likely to indicate further sub-surface cultural material. It is more likely that this tool has been 'lost' or 'dropped' as a result of moving through the region. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. Such site types are not considered rare and it is difficult to predict their location within the wider landscape.

BH8 is considered to be of moderate scientific significance, and has moderate cultural significance. The site comprises three stone artefacts identified on the spoil of a wombat burrow on the crest of a moderate rise. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. Despite the site being disturbed by the excavation of the wombat burrows, two broken quartz flakes and one quartz tool were recorded. These artefacts have been specifically manufactured and then utilised. The depth of excavated sand deposits by the wombats and the topography of the immediate area suggest that this artefact is likely to indicate further sub-surface cultural material. Such site types are considered to be rare within this landscape, as it is located a reasonable distance from the Wollondilly River. Although the site location may reflect changes within the landscape which are no longer present.

BH9 is also considered to be of moderate scientific significance, and has moderate cultural significance. The site comprises three stone artefacts identified on the spoil of a wombat burrow on the crest of a moderate rise. . The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. Despite the site being disturbed by the excavation of the wombat burrows, one quartzite core and one quartzite broken flake were identified. These artefacts indicate that the site was used for stone artefact manufacture. The depth of excavated sand deposits by the wombats and the topography of the immediate area suggest that this artefact is likely to indicate further sub-surface cultural material. Such site types are considered to be rare within this landscape, as it is located a reasonable distance from the Wollondilly River. Although the site location may reflect changes within the landscape which are no longer present.

Areas of Aboriginal archaeological potential - Marulan Site Facilities Footprint

The top of the moderate hill and ridge line overlooking a small drainage line to the north-west and the Wollondilly River to the west are considered to have Aboriginal archaeological potential for sub-surface cultural deposits. This area covers a moderate section of the Marulan Facilities footprint.

The hill is part of the Marulan soil landscape, suggesting slowly accumulated and actively eroded shallow soils, which are identified as being of archaeological potential. Also present within the Marulan Facilities footprint is a small sand deposit, with the relatively deep, soft sand readily identified by wombat burrows and bracken. Sandy deposits like this are a relatively common and often noted feature of the Southern Tablelands, often occurring as small isolated features on other landscapes. It is not clear whether the small sand deposit in this part of the Study Area is an Aeolian feature, or whether it is a residual bar deposit from an old course of the Wollondilly River. However, such features are uniformly noted as having high Aboriginal archaeological potential on the Southern Tablelands. The presence of artefacts identified at this locality in the assessment confirmed this potential.

12.4.2 Marulan Site Generally

A summary of the recorded Aboriginal sites and areas of archaeological potential within the Marulan Site generally outside the proposed Facilities footprint is presented in **Table 12-2** and their locations are presented on **Figures 12-1** and **12-2**

Table 12-2 Summary of Survey Results - Marulan Site generally

Location	Aboriginal sites and areas of archaeological potential	Significance rating/Level of potential	Potential Impact	Overall Cultural Values
Marulan Site generally	BH1	Low scientific significance	No impacts from current project design	Moderate Cultural Values
	BH3	High scientific significance	No impacts from current project design	
	BH4	Moderate scientific significance	No impacts from current project design	
	BH5	Moderate scientific significance	No impacts from current project design	

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Location	Aboriginal sites and areas of archaeological potential	Significance rating/Level of potential	Potential Impact	Overall Cultural Values
	BH6	High scientific significance	No impacts from current project design	
	BH10	Low scientific significance	No impacts from current project design	
	Area of Aboriginal archaeological potential	Moderate to high scientific significance	Impact corridor traverses area of archaeological potential	

BH1 is considered to be of low scientific significance, and has moderate cultural significance. The site consists of a single stone artefact situated in a disturbed context through the construction of the existing overhead powerlines. Due to this disturbance, any further cultural material that may have been associated within this site would be poorly preserved. This site type is not considered to be rare based on previous archaeological work in the region and comprises a waste flake. The site is also located over 200 metres south from the Wollondilly River, beyond the identified area of potential archaeological deposit. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. Overall, the site has low research potential.

BH3 is considered to be of high scientific significance and has moderate cultural significance. The site consists of a number of stone artefacts exposed on farm vehicle tracks. This site is located on the upper slopes on the eastern side of the Wollondilly River. Despite the partial disturbance from the vehicle track, much of this river rise comprises relatively undisturbed deposits. The site includes several waste flakes and core rejuvenation flakes, indicating that this area was used as a stone manufacturing site. Such site types are generally common to occasional within the wider region, with the majority of high density stone artefact scatter sites occurring within close proximity to water sources. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. The sensitive landform on which the site is located is likely to contain further intact cultural material from which significant information can be gathered, including site use and age.

BH4 is considered to be of moderate scientific significance, and has moderate cultural significance. The site consists of a single stone artefact situated on a partially disturbed farm vehicle track in an otherwise intact sensitive landform. The site is situated on the southern crest of a small drainage line. Despite the partial disturbance from the vehicle track, a large section of this drainage bank is relatively undisturbed. The site comprises a single core preparation flake, indicating that locally available quartz material was locally collected and used in the manufacture of stone artefacts. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. It is likely that further cultural material would occur sub-surface along the drainage line and thus contains research potential.

BH5 is considered to be of moderate scientific significance, and has moderate cultural significance. The site consists of a single stone artefact located on a partially disturbed rough farm vehicle track in an otherwise intact sensitive landform. This site is located on top of an open plain, adjacent to the Wollondilly River. Despite the partial disturbance from the vehicle track, much of area is relatively undisturbed. It comprises a single silcrete core, an indication of stone tool manufacture on raw materials that are not locally available. Such site types are generally common to occasional within the

wider region. The sensitive landform on which the site is located has potential to contain further intact cultural material, from which significant information can be gathered.

BH6 is considered to be of high scientific significance, and has moderate cultural significance. The site consists of a high number of stone artefacts of various types and raw materials. It is located some distance from the Wollondilly River on the upper slope of a moderate rise overlooking the low lying plateau adjacent to the river. The artefact types recorded indicate that this site was used as a manufacturing site. Although there is little topsoil across this part of the rise, it is likely that further undisturbed archaeological material exists sub-surface. These intact deposits contain high research potential.

BH10 is considered to be of low scientific significance, and has moderate cultural significance. The site consists of only one stone artefact that was identified in a highly disturbed context. It is situated in a fence gateway near a cattle trough. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. This site type is considered to be a common occurrence within the region and is unlikely to have any further research potential.

Outside of the identified footprint of the Marulan Site facilities footprint, the proposed electricity easement, and the Gas Pipeline Corridor and associated access tracks, no other construction works are proposed at the Marulan Site. Thus, recorded sites BH1, BH3, BH4, BH5, BH6 and BH10 would not be impacted by the assessed design.

Areas of Aboriginal archaeological potential – Marulan Site generally (outside plant footprint)

There are a number of landforms within the Marulan Site generally that are considered to have potential for Aboriginal archaeological sites (**Figure 12-1**). These included the continuous hills/ridgeline that runs parallel to the Wollondilly River, along its eastern margin. This area also includes a 250 metre buffer either side of the Wollondilly River that encompasses the alluvial floodplain and terraces.

12.4.3 Proposed Electricity Transmission line

A summary of the recorded Aboriginal sites and areas of archaeological potential within the proposed electricity transmission line is presented in **Table 12-3** and their locations are presented on **Figure 12-2**.

Table 12-3 Summary of Survey Results – Transmission Line

Location	Aboriginal sites and areas of archaeological potential	Significance rating/Level of potential	Potential Impact	Overall Cultural Values
Proposed Electricity Transmission Line	Area of Aboriginal archaeological potential	To be confirmed	Impact corridor traverses area of archaeological potential	Moderate Cultural Values

Areas of Aboriginal archaeological potential

There is one small area of archaeological potential where the electricity easement meets the Facilities footprint. This includes a moderate hill overlooking a small drainage line and the area between the hill and the Wollondilly River.

12.4.4 Gas Pipeline Corridor

A summary of the recorded Aboriginal sites (identified within the Marulan Site during surveys) and areas of archaeological potential within the Gas Pipeline Corridor is presented in **Table 12-4** and their locations are presented on **Figures 12-1** and **12-2**.

Table 12-4 Summary of Survey Results – Gas Pipeline Corridor

Location	Aboriginal sites and areas of archaeological potential	Significance rating/Level of potential	Potential Impact	Overall Cultural Values
Proposed Gas Pipeline Corridor	BH2	Low scientific significance	Site within impact corridor of proposed pipeline	Moderate Cultural Values
	Area of Aboriginal archaeological potential	To be confirmed	Gas pipeline impact corridor(s) traverse area of archaeological potential	

BH2, located within the impact corridor of proposed pipeline in the Marulan Site, is considered to be of low scientific significance and has moderate cultural significance. The site consists of two stone artefacts situated in a highly disturbed context. Both artefacts were located on the top of excavated drainage mounds adjacent to the TransGrid switchyard. The area has been so heavily disturbed by these ground disturbance works that it is unlikely that site possesses any research potential. Any material which may still exist within this area would be highly disturbed. The site is a tangible reminder of the past, and provides a link with the past for the Aboriginal community. The site was most likely associated with the drainage line that runs north-west into the Wollondilly River.

Areas of Aboriginal archaeological potential

There are a number of landforms within the Gas Pipeline Corridor that are considered to have potential for Aboriginal archaeological sites. These areas consist of sensitive landforms, such as minor water lines and alluvial rises adjacent to water courses. It is likely that further cultural material in undisturbed areas would also contain Aboriginal archaeological material. Along the ridgelines, the deposits consist of shallow gravely silts, whereas the low lying drainage and creek lines consist of much deeper alluvial deposits.

It should be noted however that this area was not surveyed on foot and that it is highly likely that other areas of potential may exist that cannot be identified from aerial photographs and contour maps. Areas that are likely to contain undisturbed archaeological deposits will include the ridgelines that consist of shallow gravely silts, with low lying drainage and creek lines consisting of much deeper alluvial deposits.

Further assessment of the Gas Pipeline Corridor would be undertaken as part of a separate future *Project Application*.

12.4.5 Historic Sites

No historical sites are situated within the Project footprint. Given this, no further archaeological work would be required with regard to historic sites or places within the Study Area.

12.5 Assessment of Potential Impacts – Common Shared Works

The results of preliminary archaeological survey work and desktop assessment has identified the region as being highly sensitive for Aboriginal archaeological sites, particularly within close proximity to the Wollondilly River. Other sensitive landforms include ridgelines and ridge saddles.

The proposed Facilities would involve significant disturbance within the Study Area and this disturbance may impact the physical remains and significance of archaeological sites in identified areas of Aboriginal archaeological potential.

The cultural heritage values of the archaeological sites are directly related to the archaeological value, and the sites existence within the wider landscape as a whole. For individual sites at least, avoidance of impact to the known archaeological sites equates to avoidance of impact to Aboriginal cultural heritage values. In the first instance the mitigation measure considered has been to reduce impact through avoidance of known cultural heritage sites by selecting appropriate locations for the Facilities' footprints. Where it was technically feasible, appropriate and in consideration of managing other constraints (ecological constraints, or minimising incidental cumulative effects) the Facilities have been placed in locations where they would have as little potential for impact on cultural heritage sites as possible, or where they would impact sites of relatively lower archaeological and cultural heritage values. Further to this, the Facilities footprint would be reviewed subsequent to the proposed sub-surface testing of areas of archaeological potential associated with the known sites, and during detailed design. Any further adjustments that would conserve archaeological and cultural heritage values within the proposed footprint would be made at the detailed design stage.

Where impacts have been unavoidable due to other constraining factors (such as those described above) a Cultural Heritage Management Plan would be developed to manage impact to the sites at a level appropriate to their archaeological and cultural heritage values. The Aboriginal community would be involved in the development and implementation of the plan, allowing direct input to the management of cultural values. Aboriginal representatives from the Pejar Local Aboriginal Land Council and the Gundangarra Tribal Council Aboriginal Corporation participated in the survey. The representatives support the subsurface testing program developed.

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12.5.1 Facilities Location Footprint

Ground disturbance works associated within the construction of the proposed Facilities may impact on recorded Aboriginal archaeological sites BH7, BH8 and BH9.

This proposed Facilities footprint would potentially impact on identified areas of Aboriginal archaeological potential, thus potentially impacting on unrecorded Aboriginal archaeological cultural material.

The sites BH2 (address in the gas pipeline corridor), BH7, BH8 and BH9 are open stone artefact sites, some with associated areas of archaeological potential. As such they are an example of the most common type of site to be recorded both in the study area for the project, and the region as a whole. A search of the AHIMS for the study area and immediate surrounds returned 40 Aboriginal archaeological site records. Without exception these records were all open sites, containing one or more stone artefacts. The archaeological survey for this project has discovered an additional 10 Aboriginal archaeological sites, and again all are open stone artefact sites. The four sites that would be potentially impacted by the development do not have any distinctive or unique characteristics compared to the larger assemblage of sites from the study area and surrounds, and have commensurate archaeological and cultural heritage values. Assuming the areas of archaeological potential at BH8 and BH9 contain a similar number and density of artefacts to what is evidenced on the surface at these sites, there would be only a low impact and loss of value to the overall assemblage of sites in the study area and region.

The cultural heritage impact of the proposed development is considered to be low. The physical impact and associated loss of cultural values associated with the sites BH2, BH7, BH8 and BH9 is considered acceptable because both the study area, and wider region, contain an assemblage of sites that adequately represents the class, contents and cultural heritage values of the sites that would be impacted. In addition the site BH2 is located in a highly disturbed context meaning it has already suffered considerable loss of values prior to the current proposal. The areas of archaeological potential associated with the sites BH8 and BH9 are also well represented both within the study area in areas that would not be impacted, and in the wider regional context by other open stone artefact sites and areas of archaeological potential. The archaeological potential of BH8 and BH9 would be detailed through a sub-surface testing program that would precede the proposed development. Cultural heritage impacts would be mitigated to an extent by the implementation of the Cultural Heritage Management Plan.

12.5.2 Marulan Site Generally

Outside of the identified Facilities footprint, electricity easement, gas pipeline and associated access tracks, no other construction works should occur within the Marulan Site. Thus, recorded sites BH1, BH3, BH4, BH5, BH6 and BH10 would not be impacted by the currently proposed construction works.

12.5.3 Electricity Transmission Line

The proposed electricity transmission line would potentially impact on identified areas of Aboriginal archaeological potential, thus potentially impacting on unrecorded Aboriginal archaeological cultural material.

12.6 Assessment of Potential Impacts – Facilities

As Common Shared Works encompass all ground disturbing activities, it is not anticipated that there would be further impact to Aboriginal sites beyond these works.

12.7 Assessment of Impacts - Gas Pipeline Corridor

Within the Marulan Site, Option 1 for the gas pipeline may have the potential to impact on recorded Aboriginal archaeological site BH2, which is located within 15 m. Refer to **Section 12.5.1** for discussion of the overall impact including BH2. Beyond the Marulan Site boundary, a desktop assessment was conducted for the Gas Pipeline Corridor. The proposed gas pipeline has the potential to impact on identified areas of Aboriginal archaeological potential, thus potentially impacting on unrecorded Aboriginal archaeological cultural material.

Further assessment would be undertaken of the gas pipeline when the route is defined.

12.8 Mitigation Measures

The following recommendations give mitigation and management of Aboriginal and historical cultural heritage values within the Project footprint:

- A sub-surface investigation program would be undertaken when the likely areas of ground disturbance within the Marulan Site for the Facilities and associated infrastructure are known, following detailed design, and prior to construction. This sub-surface investigation program would aim to determine the presence of Aboriginal archaeological sites and to identify the extent of the recorded sites. The draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation would be followed.
- All reasonable attempts would be made to avoid significant Aboriginal archaeological sites within the Study Area through changes to the proposed design and construction methods.
- If the Aboriginal archaeological cultural material cannot be avoided by the proposed Facilities, then all reasonable attempts to reduce impact should be made through the development of a Cultural Heritage Management Plan (CHMP). The CHMP would outline strategies for dealing with recorded and un-recorded Aboriginal archaeological sites encountered within the proposed development area.
- Further assessments would be undertaken as part of the Project Application for the gas pipeline.

Historical archaeological sites

No historical sites are situated within the current proposal for the Facilities or associated infrastructure. Given this, no further archaeological work would be required with regard to historic sites or places within the Study Area.

12.9 Summary of Mitigation Measures

The mitigation measures and safeguards would ensure that heritage values are managed within the area proposed to be occupied by the Project footprint.

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Aboriginal representatives from the Pejar Local Aboriginal Land Council and the Gundangarra Tribal Council Aboriginal Corporation participated in the survey. The representatives have contributed input into the survey methods and support the subsurface testing program developed.

Table 12-5 presents the mitigation measures for heritage and archaeology for the Facilities and infrastructure. The phase of implementation is indicated in the table by *Cons* – Construction *Ops* – Operation, *Planning* and *Design.*

Table 12-5 Summary of Mitigation Measures

Mitigation Measures	Implementation of mitigation measures		
	Common Shared Works	Facilities	Gas Pipeline
A sub-surface investigation program would be undertaken when the likely areas of ground disturbance within the Marulan Site for the Facilities and associated infrastructure are known following detailed design, prior to construction. This sub-surface investigation program would aim to determine the presence of Aboriginal archaeological sites and to identify the extent of the recorded sites. The draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation would be followed.	✓ (Design)		
All reasonable attempts would be made to avoid significant Aboriginal archaeological sites within the Study Area through changes to the proposed design and construction methods.	✓ (Design)		✓ (Design)
If the Aboriginal archaeological cultural material cannot be avoided, then all reasonable attempts to reduce impact would be made through the development of a Cultural Heritage Management Plan (CHMP). The CHMP would outline strategies for dealing with recorded and un-recorded Aboriginal archaeological sites encountered within the proposed development area.	✓ (Design & Cons.)		
Further assessments would be undertaken as part of the Project Application for the gas pipeline.			✓ (Design)