

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 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 the *Concept Application*.

The chapter also presents a cumulative assessment of both the Delta Electricity and EnergyAustralia Facility footprints.

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 survey area. 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.
- 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.

12.2.1 Consultation

Consultation included the following:

- Consultation with DECC to obtain information concerning previously recorded Aboriginal archaeological sites and completed archaeological studies.

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- 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 the *Concept Application*.

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 Gundungarra 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 Gundungarra 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 Marulan Site and used a Transect Survey methodology. Almost 100% of the Facility footprint was covered by the survey. The wider area within the boundaries of the Marulan Site was not intensively surveyed. Although the majority of the Site was sample surveyed, a number of transects were specifically surveyed and detailed notes recorded along each one. Each transect was determined in order to sample a range of landforms/landscape units along limited areas of the Facility footprint. 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.

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.

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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 study area 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 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.

Overall, the ground disturbance levels within the study area were relatively low, as the study area 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 will 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**.

Marulan Site – Facility Footprint

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

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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
Facility footprint	BH7	Moderate scientific significance	Site located within proposed Facility footprint	Moderate Cultural Values
	BH8	Moderate scientific significance	Site located within proposed Facility footprint	
	BH9	Moderate scientific significance	Site located within proposed Facility 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 Facility 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 Facility 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 Facility 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. Without a doubt, however, such features are uniformly noted as having high Aboriginal archaeological potential on the Southern Tablelands. The presence of artefacts identified at this locality confirms this potential.

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	
	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	

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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.

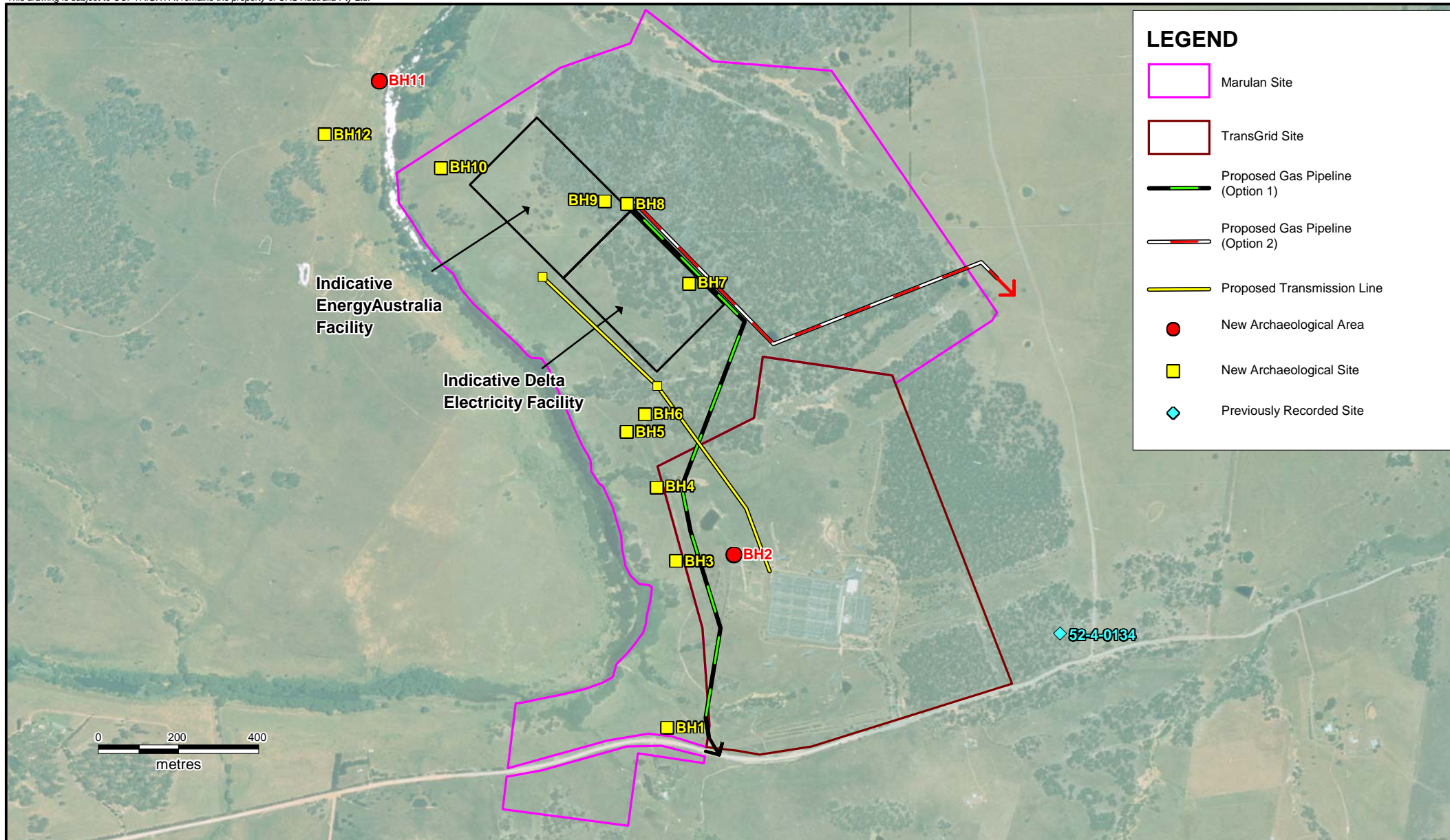
BH6 is considered to be of high scientific significance and has moderate cultural significance. The site consists of a high number of stone artefacts of various types and raw materials. It is located some distance from the Wollondilly River on the upper slope of a moderate rise overlooking the low lying 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 12-2**). 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.



LEGEND

- Marulan Site
- TransGrid Site
- Proposed Gas Pipeline (Option 1)
- Proposed Gas Pipeline (Option 2)
- Proposed Transmission Line
- New Archaeological Area
- New Archaeological Site
- ◆ Previously Recorded Site



Client
DELTA ELECTRICITY

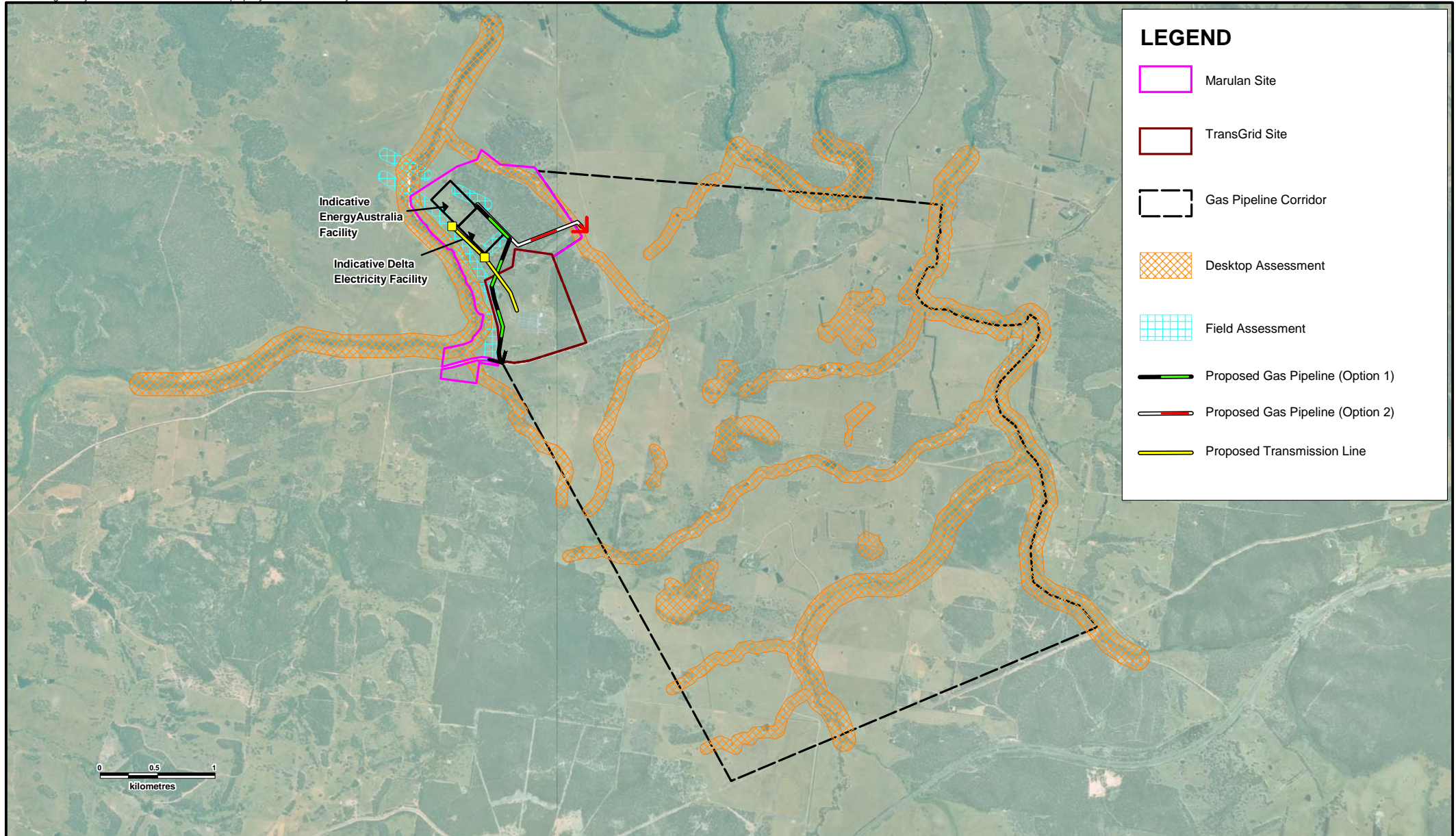


Project
MARULAN GAS TURBINE FACILITY

Drawn: AJW	Approved: NB	Date: 28/08/2008
Job No: 43177371		File No: 43177371-193.wor

Title
NEW ARCHAEOLOGICAL SITES LOCATED DURING SURVEY

Figure: 12-1



LEGEND

- Marulan Site
- TransGrid Site
- Gas Pipeline Corridor
- Desktop Assessment
- Field Assessment
- Proposed Gas Pipeline (Option 1)
- Proposed Gas Pipeline (Option 2)
- Proposed Transmission Line



Source: BIOSIS (2008)

Client DELTA ELECTRICITY 	Project MARULAN GAS TURBINE FACILITY <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">Drawn: AJW</td> <td style="font-size: small;">Approved: NB</td> <td style="font-size: small;">Date: 28/08/2008</td> </tr> <tr> <td style="font-size: small;">Job No: 43177371</td> <td colspan="2" style="font-size: small;">File No: 43177371-191.wor</td> </tr> </table>	Drawn: AJW	Approved: NB	Date: 28/08/2008	Job No: 43177371	File No: 43177371-191.wor		Title AREAS OF ARCHAEOLOGICAL POTENTIAL Figure: 12-2
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Job No: 43177371	File No: 43177371-191.wor							

12.3.6 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.

12.4 Assessment of Potential Impacts – Delta Electricity Facility

The results of preliminary archaeological survey work and desktop assessment have 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.

Potential impacts within the proposed Delta Electricity Facility footprint have been considered as part of the assessment presented in summary in the assessment of cumulative impact of the Facilities in **Section 12.5** and in more detail in the *Concept Application*.

Although some further earthworks may be required for more detailed profiling of the Site for the construction of the Delta Electricity Facility, no further impact from further construction and operation of the Facility from a heritage perspective is likely beyond that considered in the *Concept Application*.

12.5 Assessment of Potential Impacts – Cumulative Impact

12.5.1 Facility 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 impact on identified areas of Aboriginal archaeological potential, thus potentially impacting on unrecorded Aboriginal archaeological cultural material.

Currently proposed construction works within the Facilities footprint would not impact recorded sites BH1, BH3, BH4, BH5, BH6 and BH10.

12.6 Mitigation Measures

Mitigation measures would be implemented for ground disturbance in the Common Shared Works as outlined in the *Concept Application*.

Aboriginal Archaeological Sites

All reasonable attempts would be made to avoid significant Aboriginal archaeological sites within the study area through changes to the proposed design plans and construction methods.

If the Aboriginal archaeological cultural material cannot be avoided by the proposed Facilities, then all attempts to reduce and mitigate impact will be made through the development of a Cultural Heritage Management Plan (CHMP). The CHMP will outline strategies for dealing with recorded and un-recorded Aboriginal archaeological sites encountered within the proposed development area.

All further Aboriginal archaeological cultural material identified as a result of the sub-surface investigation program will be recorded in detail. The archaeological and cultural significance of each site will be assessed prior to ground disturbance works.

Historical archaeological sites

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

12.7 Summary of Mitigation Measures

Table 12-3 presents the mitigation measures for heritage and archaeology. The phase of implementation is indicated in the table by *Cons* – Construction *Ops* – Operation, *Planning* and *Design*.

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.

It is noted that these measures are relevant to the Common Shared Works and therefore are commitments under that application and are presented here for information only.

Table 12-3 Summary of Mitigation Measures

Mitigation Measures	Implementation of mitigation measures	
	Delta Electricity Facility	Cumulative
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 as provided in the <i>Concept Application</i> 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)	✓ (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 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.	✓ (Design & Cons.)	✓ (Design & Cons.)