Appendix C

Cultural heritage assessment – eastern route

Cultural heritage assessment of gas pipeline (July 2008), Navin Officer

Marulan Gas Turbine Facilities Project

Cultural Heritage Assessment of Gas Pipeline

July 2008

A Report to GHD

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EXECUTIVE SUMMARY

EnergyAustralia and Delta Electricity propose to develop two separate gas turbine power generating facilities on a site located approximately 12 km north of Marulan. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed, along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation.

The Marulan Gas Turbine Facilities Project has been declared a Major Project and will be conducted under Part 3A of the *Environmental Planning and Assessment Act 1979*.

This report documents the results of a cultural heritage assessment of the southern section of the proposed gas pipeline alignment [6 km x 30 m] between the TransGrid switchyard and the Moomba to Sydney Gas Main.

Two Aboriginal sites comprising an isolated artefact (BH1) and an artefact scatter (BH3) have been previously identified in the pipeline study area by Biosis Research (2008).

Three Aboriginal sites comprising one artefact scatter with associated potential archaeological deposit (MGPS1&PAD) and two isolated finds (MGPS 2 and MGPS3) were identified within the Marulan Gas Pipeline study area during the current field survey. A potential archaeological deposit (MGP1) was also identified in the study area.

No historical heritage sites have been identified in the Marulan Gas Pipeline study area.

As the project will be conducted under Part 3A of the *Environmental Planning and Assessment Act 1979*, single-issue approvals under the NP&W Act do not apply to this project. (Section 87 and Section 90 *Aboriginal Heritage Impact Permits* will not be required for this project).

The management recommendations provided in this report should be included in the *Statement of Commitments* for the project.

It is recommended that:

1. Where possible, disturbance to archaeological sites BH1, BH3, MGPS1&PAD, MGPS2, MGPS3 and area of potential archaeological deposit MGP PAD should be avoided.

2. If impact to Aboriginal sites BH1, BH3, MGPS2 and MGPS3 cannot be avoided, then the artefacts should be collected or relocated away from the area of impact.

3. If disturbance is unavoidable in the vicinity of MGPS1&PAD and MGP PAD1, then a program of archaeological subsurface investigation should be conducted to determine the nature, extent and integrity of any potential archaeological deposits that may be present in these areas.

   Should the subsurface testing program determine the presence of high significance sites then archaeological salvage may be required. Alternatively, a redesign of the project infrastructure in that area may be required.

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1. INTRODUCTION

1.1 The Proposal

EnergyAustralia and Delta Electricity propose to develop two gas turbine power generating facilities on a site located approximately 12 km north of Marulan on the NSW southern tablelands. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation (Figure 1.1).

The facilities are designed to generate electricity to help meet peaks in demand which occur on hot and cold days. Gas turbine plants are able to fire up and shut down quickly to cater for these demand peaks.

The following infrastructure would be required to serve both facilities:

- A gas pipeline lateral from the main Moomba to Sydney Pipeline, but excluding respective gas receiving delivery stations at the respective facilities;
- A high voltage transmission lines and connection to TransGrid;
- Back-up electrical supply arrangements;
- External telecommunications connections; and
- A common access road to each facility for construction and operational purposes.

Natural gas would be supplied from the existing Moomba to Sydney gas pipeline. The operating pressure of the existing mainline is typically in the range of 4,400 to 5,000 kPA. The pipeline will be located to the south of the site. A broad pipeline corridor has been subject to a desktop assessment and limited ground survey by Biosis (2008). That assessment recommended that, 'the southern section of the proposed gas pipeline alignment [6 km x 30 m] between the TransGrid switchyard and the Moomba to Sydney Gas Main should be surveyed in detail to identify cultural values' (Biosis 2008:2). Figures 1.1 and 1.2 show the location of that alignment.

On 8 October 2007, the Director-General of the NSW Department of Planning declared the Marulan Gas Turbine Facilities Project to be a Major Project which would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. A cultural heritage assessment is required to support the Part 3A Environmental Assessment.

This report documents the results of a cultural heritage assessment of the proposed gas pipeline route for the Marulan Gas Turbine Facilities Project. The report was commissioned by GHD Pty Ltd.

1.2 Report Outline

This report:

- Documents consultation with the Pejar LALC carried out in the course of the investigation;
- Outlines the study methodology;
- Describes the environmental setting of the study area;
- Provides a background of regional and local archaeology and history for the study area;
- Documents the results of a field survey of the study area and identifies the likely cultural heritage values that may exist within it;
- Defines statutory requirements relevant to the cultural heritage of the area; and
- Provides recommendations relating to the cultural heritage resource of the study area.

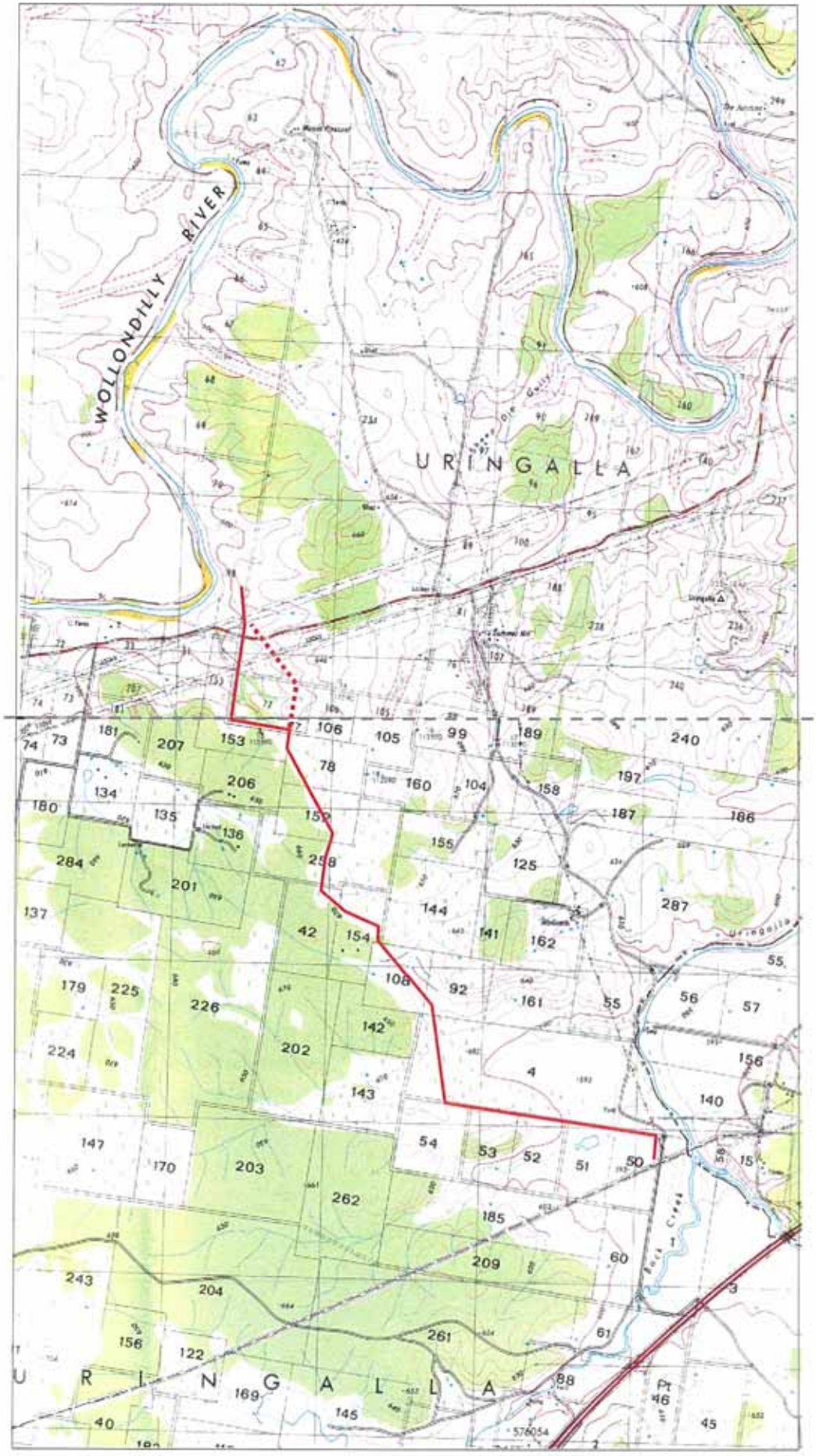

Figure 1.1 Location of proposed gas pipeline (solid red line) (extracts from 1:25,000 topographic maps of Canyonleigh 8928-IV-N (top) & Wingello 8928-4-S (bottom), 2nd Eds.)

2. ABORIGINAL PARTICIPATION AND CULTURAL VALUES

The study area falls within the boundaries of the Pejar LALC, which is based in Goulburn and within a native title claim area of the Gundungurra Aboriginal Heritage Association Inc., which is based in Lawson, in the Blue Mountains of NSW.

The NSW Department of Environment and Climate Change (DECC) *Draft Guidelines for Aboriginal Community Heritage Impact Assessment and Community Consultation* (2005) have been previously implemented for this project and relevant Aboriginal groups have been identified through that process.

Aboriginal consultation for this stage of the project involved phone contact and invitations to the interested parties/groups to participate in field inspections, and provide input to management and/or mitigation recommendations.

The Pejar LALC and the Gundungurra Aboriginal Heritage Association Inc. were contacted on 9 June 2008 and were invited to provide a representative to participate in the fieldwork component of the project, and to provide their organisation's views regarding any Aboriginal sites or cultural heritage issues that may be identified during the project.

Consequently, Mr Justin Boney, representing the Pejar LALC, and Sharon Halls, representing the Gundungurra Aboriginal Heritage Association Inc., attended on each of the two days of the site survey (17 and 18 July 2008, inclusive), and actively participated in the survey.

A *Record of Aboriginal Participation* is provided in Appendix 1.

As noted in the DECC Aboriginal Cultural Heritage Standards & Guidelines Kit (NPWS 1997:2, 8), participation of Aboriginal communities and Aboriginal owners in archaeological field assessments should not be construed as 'consultation'. It is not a substitute for an assessment of Aboriginal cultural interests or values in a particular area of land or particular sites, such assessments are separate from archaeological assessments and should be made by Aboriginal people themselves.

As such, both the Pejar LALC and the Gundungurra Aboriginal Heritage Association Inc. have been requested to provide a written report giving their organisation's views and an assessment of the Aboriginal cultural values of the area surveyed.

A copy of that request is provided in Appendix 2.

3. STUDY METHODOLOGY

3.1 Literature and Database Review

A range of archaeological and historical documentation was reviewed for the Marulan Gas Pipeline study area and its surrounds. This literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Department of Environment and Climate Change (DECC) and associated files and catalogue of archaeological reports. Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Statutory Listings
    - : Aboriginal Heritage Information Management System (AHIMS) (NSW DECC);
    - : The National Heritage List (Australian Heritage Council);
    - : The Commonwealth Heritage List (Australian Heritage Council);
    - : The State Heritage Register (NSW Heritage Office); and
    - : Heritage Schedule(s) from the Goulburn Mulwaree Local Environmental Plan 2007.
- Non-Statutory Listings
    - : The Register of the National Estate (Australian Heritage Council);
    - : The State Heritage Inventory (NSW Heritage Office); and
    - : Register of the National Trust of Australia (NSW);

3.2 Fieldwork and Project Personnel

Fieldwork was undertaken over two days (Thursday 17 and Friday 18 July 2008) by archaeologist Nicola Hayes and Lindsay Smith. Mr Justin Boney and Ms Sharon Halls from the Pejar LALC and the Gundungurra Aboriginal Heritage Association Inc. also participated in the survey. Personnel conducted a survey of the site on foot using straight line and opportunistic transects across the assessment area.

The straight line transects involved inspecting the ground while walking evenly-spaced transects along the length of the proposed pipeline easement. Opportunistic transects were undertaken to inspect areas of bare ground within the assessment area. The majority of bare ground within the assessment area was inspected and, in areas of limited exposure, an assessment was made of the potential for that area to include Aboriginal sites below the ground.

This report was prepared by Nicola Hayes and Lindsay Smith.

3.3 Recording Parameters

3.3.1 Aboriginal Sites and PADs

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts. Potential recordings fall into three categories: isolated finds, sites and potential archaeological deposits.

Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

- Random loss or deliberate discard of a single artefact;
- The remnant of a now dispersed and disturbed artefact scatter; and
- An otherwise obscured or sub-surface artefact scatter.

Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* present within any particular landform.

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations. Given the varied incidence of ground surface exposure and deposit disturbance within the study area, and the lack of background baseline data, the specification of 60 metres is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Background scatter

Background scatter is a term used generally by archaeologists to refer to artefacts which cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses).

However, there is no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. Commonly agreed is that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated discard of artefacts during travel along a route or pathway. Examples of 'focused activity' are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.

Sites

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity.

Frequently encountered site types within southeastern Australia include open artefact scatters, coastal and freshwater middens, rock shelter sites including occupation deposit and/or rock art,

grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in the identification of these site types are outlined.

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees. Artefacts situated within, or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). In a rockshelter, a site is defined as one or more artefacts occurring within or immediately adjacent to the sheltered space. Unlike a single artefact in an open context, a rock shelter provides a probable occupational focus to the interpretation of a single artefact and can therefore be considered to be indicative of a site. An exception would be a single artefact which may have been deposited in the shelter through natural processes.

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of the marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity of the site.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit. Table 3.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

Table 3.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit.

		Potential to contain Aboriginal objects		
		Low	*Moderate*	*High*
Potential archaeological significance	*Low*	---	**low**	**moderate**
	Moderate	---	**moderate**	**high**
	High	---	**high**	**high**

3.3.2 Historical Sites and Features

Historical archaeology refers to the 'post-contact' period and includes: domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The three primary types of places or items that may form part of the historical archaeology context include:

1. Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined;

2. Areas of land that display evidence of human activity or occupation; and

3. Shipwrecks, deposits and structures associated with maritime activities.

Within these broad parameters, an historical archaeological site may include:

- Topographical features and evidence of past environments (that is, resident in pollens and diatoms);

- Evidence of site formation, evolution, redundancy and abandonment (that is, features and materials associated with land reclamation, sequences of structural development, demolition/deconstruction, and renewal);

- Evidence of function and activities according to historical theme/s represented (for example, an industrial site may contain diagnostic evidence of process, products and by-products);

- Evidence associated with domestic occupation including household items and consumables, ornaments, personal effects and toys;

- Evidence of diet including animal and fish bones, and plant residues;

- Evidence of pastimes and occupations including tools of trade and the often fragmentary signatures of these activities and processes;

- Methods of waste disposal and sanitation, including the waste itself which may contain discarded elements from all classes of artefact as well as indicators of diet and pathology; and

- Any surviving physical evidence of the interplay between site environment and people.

The information found in historical archaeological sites is often part of a bigger picture which offers opportunities to compare and contrast results between sites. The most common comparisons are made at the local level, however, due to advances in research and the increasing sophistication and standardisation of methods of data collection, the capacity for wider reference (nationally and, occasionally, internationally) exists and places added emphasis on identification and conservation of historical archaeological resources.

4. ENVIRONMENTAL CONTEXT

4.1 Geology

The Southern Tablelands occur as part of the Lachlan Fold Belt, which Hird (1991:9) considers 'the most complex geological province in NSW.' The province is characterised by Ordovician, Silurian and Devonian sedimentary units and Early Silurian volcanics that have been subsequently subject to periods of major orogenic activity and Devonian and Carboniferous granitic intrusions. More recently, Tertiary volcanic activity and Quaternary sedimentary deposition has occurred in the Goulburn area of the Lachlan Ford Belt (Branagan and Packham 2000:6-20).

The study area is dominated by tertiary formations comprising clay, sand, claystone and sandstone. The Wollondilly River has a bed-load that is comprised of Quaternary sand, clay and gravel. That river and its tributaries are the most southerly portions of the large and complex Hawkesbury River system. The streams are 'underfit' streams, so called because they occupy valleys that are much larger than the streams themselves (Branagan and Packham 2000:275).

The Ordovician/Silurian formations are just beyond the study area and very common in the region. They comprise silty sandstone, quartz greywacke, siltstone quartzite, shale phyllite and minor amounts of porphyry. Volcanic basalt formations also outcrop close to the study area (Goulburn 1:250,000 Geology Mapsheet).

4.2 Topography

The study area generally comprises moderate to steep rolling hills and extended ridgelines, dissected by major and minor water lines. A number of minor drainage lines and open low lying swampy flats also occur between ridgelines. The Wollondilly River is the major hydrological feature within the present study area. A number of minor creek lines and drainage lines are also present within the study area.

4.3 Flora and Fauna

Observations of early European explorers and settlers in the Goulburn area often included mention of its treeless grassy plains (Paton 1990). In general, it is likely that the area was an open woodland landscape containing a variety of plants, which may have been used by the Aborigines. During a visit to the Goulburn in 1836, James Backhouse recorded an Aboriginal woman eating 'sow-thistle'. This is believed to be a variety of the *Asateraceae* family (also including the yam daisy) (Lance and Koettig 1986). Other plant resources local to the area included flowers, nectar and fruits from edible plants, such as *Melaleuca, Grevillia, Hakea and Banksia.*

At higher elevations around the study area the sandy granite derived soils of the region are likely to have supported a savannah woodland community of Yellow Box and Blakleys Red Gum (Hird 1991). Remnant basalt and basalt derived soils would have supported 'a brown barrel-ribbon' gum community, which is a type of intermediate sclerophyll forest vegetation.

The various environments found throughout the study area would have provided habitat for a range of mammal, bird, reptile and aquatic species. The open grassland would have been habitat for kangaroos, while the sheltered forest would have been home to koalas, rock wallabies, bandicoots, as well as birds, such as cockatoos, falcons and owls. Along the waterways there would have been frogs and platypuses, and in the waters there would have been numerous fish species, such as perch, eels and galaxias.

Bennet observed Aborigines roasting echidnas and hunting platypus on the Wollondilly River, as well as individuals eating Banksia nectar (MacDonald and Garling 1998). Eels, freshwater mussels and insects would also have added to the large variety of food resources available to the inhabitants of the area (Paton 1990). Possum, kangaroo and wallaby as well as fish and birds have also been recorded in observations of the traditional Aboriginal diet in the study area (Flood 1980).

In addition to being a food resource, plants and animals were also used for tool manufacture and also provided a significant contribution to the social and ceremonial aspects of Aboriginal life. For example, *Xanthorrhoea* sp. (grass tree) is known to have been used for spear shafts and resin. Along with Kurrajong trees, grass trees were also utilised for their bark fibres to manufacture items, such as string bags and fishing lines. Tree bark would also have been used for coolamons (carrying containers) and to construct shelters. Animal sinews, teeth and bones were used to manufacture tools, decorations and ornaments, and fur was used for cloaks.

4.4 Landuse

Today, almost all the original vegetation has been cleared in the study area. It has been used for many years as grazing land. Small isolated pockets of remnant woodland and others of regrowth occur in some locations in the study area. Much of the area has undergone extensive modification as a result of European activities. The survival of archaeological sites will have been prejudiced as a result of some of these activities. Landscape disturbance has occurred as a result of:

- Clearance of original native vegetation;
- Establishment and maintenance of improved pasture grassland;
- Construction of high voltage overhead powerlines; and
- Construction of farm dams, fences, sheds, and roads and tracks.

Disturbance to Aboriginal sites will have variously occurred as a result of any land clearance and pastoral activities. Certain types of fragile Aboriginal site types would have been destroyed, while others such as larger campsites may have been partially destroyed or scattered. In aggrading topographies such as alluvial flats and basal slopes, undisturbed artefactual material may remain below the plough zone. In cleared areas, which have undergone minimal ploughing, Aboriginal artefact scatters are likely to have survived with their size and distribution within a horizontal plane relatively intact. The degree of vertical disturbance will depend on the depth and type of the soil profile, the extent of ploughing, and type of clearing methods practised.

Vegetation clearance activities frequently have a major impact on Aboriginal sites such as scarred trees and open artefact scatters located on crests where tracks have been made. The removal of old growth trees from cleared areas minimises the potential for surviving Aboriginal scars.

5. ABORIGINAL CONTEXT

5.1 The Aborigines of the Marulan/Goulburn Area

Tindale (1974) has determined that Goulburn was situated at the boundary of two tribes - the Gandangara to the north and the Ngun(n)awal to the south. Early settlers describe large numbers of Aborigines (over 3,000) attending ceremonies in the Goulburn district (in Wyatt 1941:112). Large groups such as this would have collected from a number of neighbouring 'tribes' and the fact that Goulburn was the scene of the gathering suggests that it may have been centrally located between these tribes. However, early commentators often confused hordes or clan divisions, which were, in fact, more relevant to everyday life, with broad tribal groupings. Early ethnographers tended to describe any large groups of Aborigines as 'tribes'.

It is probable that tribal boundaries, clan estates and band ranges were fluid, varying over time. Consequently, tribal boundaries as delineated today must be regarded as approximations only, and relative to the period of, or immediately before, European contact.

Tribal boundaries are based largely on linguistic evidence. It has been observed that the word lists recorded from both the Ngun(n)awal and Gandangara languages were virtually identical (Eades 1976:6). 'This may indicate that the tribal division was inaccurately recorded by Mathews (1902, 1904, 1908), or that the Aborigines to the north and south of Goulburn were linguistically related and had close social, and maternal kinship ties' (Koettig & Lance 1986:13).

The study area at Marulan was probably located within the boundaries the Gandangara tribe. However taking into consideration the fluid nature of tribal boundaries, the area may well have been within Ngun(n)awal territory, or within a sub-set of either of these 'tribes'. The area today is located within the boundaries of the Pejar Local Aboriginal Land Council.

Estimates of the pre-European size of the Aboriginal population in the Marulan/Goulburn region cannot be confidently based on the inadequate ethno-historical sources for the area. By extrapolating Radcliffe-Brown's (1930:696) population estimate for the whole of Australia, and Tindale's (1974) tribe numbers, Flood estimated that the population density for the Southern Tablelands was about 1:36 km^2. She admits, however, that 'It is of course impossible to estimate the population of any one particular area from this crude index of population density for the tribal population as a whole, but such an index can be useful in making comparisons with other tribal territories containing similarly unequal resource zones' (Flood 1980:43).

5.2 Regional Overview

The Marulan gas pipeline study area is located within the Southern Tablelands of NSW. The topography of the Tablelands is characterised by low undulating terrain and rolling hills. Aboriginal archaeological studies have been carried out in this region since the late 1970s. Broad scale regional studies and research include Witter's work on site prediction in Australia (1980) and Flood's early synthesis of the archaeology of the highlands of southeastern New South Wales, which included the Goulburn district (1980). Koettig and Lance produced an *Aboriginal Resources Planning Study* for the City of Goulburn in 1986.

The majority of archaeological studies in the Southern Tablelands area have, however, been small-scale surveys of areas that were under consideration for some form of development. Archaeological surveys conducted in the vicinity of Marulan include:

- Brayshaw & Associates (1984) carried out an investigation of a proposed 60 ha blue metal (andesite) quarry and plant and an associated 800 m haul road located 16 km west of Marulan. The topography of the area was essentially gently undulating upland plains, with local relief varying from 630 to 720 m AHD. No Aboriginal relics were located in the course of this survey, and this was attributed to 'the absence of a significant water course which could have provided a focus of occupation' (1984:8);

- Haglund (1986) carried out a survey of particular areas within the Bungonia State Recreation Area which is located approximately 10 km south of Marulan. Fifteen sites were located in the course of this survey. Lithic material in these sites was typical of other Southern Tableland sites, that is, silcrete, quartz and indurated mudstone;

- Koettig (1987a) carried out an assessment of the archaeological resources within the Soapy Flat Reserve. A total of twenty eight open artefact scatters were recorded. Koettig (1987b) also carried out a survey of a proposed gravel quarry near Wingello, east of Marulan but no sites were recorded during that study;

- Koettig (1988) surveyed a proposed rural subdivision at Tallong east of Marulan. Two rock shelters with archaeological deposit, seven open scatters and three isolated finds were recorded;

- Navin (1990) surveyed a 100 ha proposed hard rock quarry site and its surrounding environs located west of the Hume Highway and 2.5 km southwest of Marulan. Two artefact scatters and three isolated finds were located in the course of the survey. The sites were located on the lower slopes of a low spurline knoll and within 20 m of a shallow drainage channel and on a low spurline. Raw materials included alluvial pebbles, quartz, chert/chalcedony and volcanics;

- Brayshaw and Dallas (1993v.1) conducted an archaeological investigation of the Mount Piper – Marulan 500 kV transmission line. That report consolidated all prior investigations for the transmission line. Twenty-six new Aboriginal sites were recorded during the study, one of which was a shelter site (near Mount Piper) and the others were all open camp sites. Sandstone scarps and prominent ridgelines were considered to have the highest sensitivity for archaeological sites; creek and river flats and adjacent high ridgetops, the Wollondilly River flats and adjacent hillslopes were identified as having high sensitivity; and gently undulating land, containing creeks and adjacent ridgelines that extend between Bannaby and Marulan were identified as having moderate sensitivity for archaeological sites;

- Brayshaw and Dallas (1993v.2) undertook test excavations of seven archaeological sites that they identified for the Mount Piper – Marulan 500 kV transmission line. At one of those sites, Arthursleigh (Site No. 52-4-0085), they recovered nine artefacts, which were located at a depth between 5 and 20 cm in a gravelly soil mix that appeared to be slope wash;

- Johnston and Huys (AASC 1995) surveyed a proposed quarry expansion area near Marulan, locating five artefact scatters and one isolated find in the course of their survey;

- Officer and Navin (1996) surveyed approximately 22 ha of undulating low gradient landscape comprising broad ridges and slopes, saddles and low spurs located adjacent to the Hume Highway south of Marulan. Three Aboriginal sites and three isolated finds were located in the course of the survey of the area. The sites comprised low density artefact scatters containing artefacts made from raw materials typical to the Southern Tablelands, that is, silcrete, quartz and chert;

- In 1997, Elf Farm Supplies Pty Ltd and Mittagong Mushrooms Pty Ltd proposed to construct a mushroom substrate production facility and associated access road at Winfarthing Road. An archaeological assessment of the development area, including the access route, was conducted by Navin Officer in 1997 (Dearling for Navin Officer 1997). The study area consisted of approximately 16 ha of low gradient landscape comprising broad ridges and slopes, saddles and spurs. One high density Aboriginal open artefact scatter, two low density Aboriginal open artefact scatters and three isolated finds were recorded in the course of the field survey;

- In 2004a, b, Dibden undertook an archaeological assessment of Greenwich Park, a subdivision at Towrang, approximately 5 km west of the current study area. Nineteen Aboriginal sites were recorded during Stage I of the survey. Those sites comprised a total of 86 stone artefacts, all of which were found on spur crests, spur slopes or drainage depressions. Silcrete was the most common material type (65%), and other material types included quartz (15%), quartzite, chert and volcanics. Twenty-nine Aboriginal sites were identified during Stage 2 of the survey. Similar to Stage 1 findings, the most common artefact

material was silcrete (49%), quartz comprised 32% and the remainder was made up of chert, quartzite and volcanics;

- In 2005, Umwelt Environmental Consultants conducted an archaeological assessment of a proposed quarry at Marulan. A total of 52 previously unrecorded sites were located during the survey, 29 of which were artefact scatters; 12 were isolated finds; seven were scarred trees and two were stone arrangements. The artefact scatters and isolated finds recorded during the survey were located on exposed creek lines and on slopes and crests. None of the sites was assessed as likely to have subsurface artefacts in an undisturbed context; and

- In 2006, CPC Land Development Consultants Pty Ltd proposed to subdivide an area of approximately 650 ha east of Winfarthing Road, northwest of Marulan on the NSW Southern Tablelands, for the purpose of developing 19 rural residential housing blocks. A cultural heritage assessment of the area by Navin Officer Heritage Consultants (2006) identified ten Aboriginal sites. They comprised six previously identified sites and new recordings of three artefact scatters and one isolated find.

5.3 Previous Research in the Marulan Gas Pipeline Study Area

A search of the AHIMS database indicated that no Aboriginal sites have been previously recorded in the vicinity Marulan Gas Pipeline study area.

In April 2008, Biosis Research conducted a cultural heritage assessment of the site proposed for the development of the two gas turbine facilities and associated infrastructure, which forms part of the northern section of the current study area. No Aboriginal sites had been previously recorded within that area. Ten Aboriginal archaeological sites were recorded during the field survey of that area. All of the sites were stone artefact scatters or isolated stone artefact occurrences. A number of landforms within that proposed development area were also identified as having potential to contain further Aboriginal archaeological sites.

The report of that study recommended:

- A subsurface investigation be undertaken at the site of the facilities footprint, and within areas of the proposed electricity transmission line with archaeological potential;

- All attempts should be made to avoid significant Aboriginal archaeological sites and, if impact to those sites is unavoidable then a Cultural Heritage Management Plan be developed and implemented for specific sites and for the general Marulan site; and

- The southern section of the proposed gas pipeline alignment between the TransGrid Switchyard and the Moomba to Sydney Gas Main should be surveyed in detail to identify cultural values. Known areas of archaeological potential along this proposed pipeline should be subject to a detailed subsurface investigation program. (This recommendation is the subject of this current study).

Two sites (BH1 and BH3) identified by Biosis Research (2008) are located in the current study area These sites described in the 'results' section of this report (below).

5.4 Predictive Aboriginal Archaeology Statement

An assessment of the size, context and location of Aboriginal sites in the Goulburn area by Koettig and Lance (1986) has resulted in a model of site patterning for the region.

On present evidence it appears that large sites are found on alluvial flats along major watercourses. These sites probably represent focal points of Aboriginal activity and are large, dense, and in close proximity to permanent water sources.

Smaller sites, which comprise the major portion of the sites identified in the region, are found on undulating hills. There appears to be a decrease in the size and frequency of sites the further the

distance from water. Sites also become fewer in number where ground is steeply sloping, such as on hillsides and ridge sides.

- *Open Artefact Scatters* may occur almost anywhere that Aborigines have travelled and may be associated with hunting and gathering activities, domestic camps, or the manufacture and maintenance of stone tools. These sites are sometimes referred to as 'open campsites'.

  Open artefact scatters are the most common site type found in the Marulan region and have been recorded in a number of topographic contexts. These include ridges and hills, and the lower slopes of knolls and spurs. The sites are often associated with watercourses.

- *Isolated Finds* occur anywhere in the landscape and may represent the remnants of dispersed artefact scatters, or random loss or discard of artefacts.

- *Scarred Trees* result when bark has been removed from a tree for some particular purpose such as for the manufacture of a shield, canoe or coolamon. Scars may also be the result of making footholds in a tree to collect foodstuffs or to facilitate the removal of bark. These sites may occur almost anywhere, and may potentially survive wherever old growth trees remain within the landscape. The identification of scars as Aboriginal in origin can often remain problematic.

- *Carved Trees* are a much rarer site type than scarred trees, and are sometimes found in association with ceremonial or burial grounds. They characteristically include carved figurative and non-figurative motifs on the exposed wood created within a scar produced by bark removal.

  Etheridge (1918) recorded a number of carved trees which had been located in the Goulburn district. One tree was located on the site of the now abandoned Yarra Railway Station, approx. 6 km southeast of Goulburn. Two others were at Mount Wayo, 16 km north of Goulburn and were located near an Aboriginal grave (Koettig & Lance 1986:20).

- *Quarry (Extraction)* sites are typically exposures of a geological raw material where evidence for human extraction and or preliminary processing has survived. Typically these involve the extraction of siliceous rock types for the manufacture of artefacts or the removal of ochre. To date only one Aboriginal quarry site, a chert quarry, has been located in the Goulburn district (Paton 1989).

- *Stone Arrangements* are defined as any arrangement of placed rocks that can be reasonably assigned to Aboriginal activity. Typically these include rock cairns and alignments of single or grouped stones.

- *Bora/Bunan Grounds (Earth Circles)* functioned as a prepared stage for initiation and other ceremonial activities which held a key role in the teaching and maintenance of the complex social and religious framework within Aboriginal society. Bora grounds consist mostly of one or more circular rings defined by mounded earth, sand and/or rocks. There may also be an associated depression within the ring. A pathway generally connected two rings and was often many hundreds of metres long. Typically, one circle was associated with more public ceremonies and the second with restricted and sacred information.

  Several bora grounds are known to have existed in the Goulburn area. Macalister (1904:85) notes that a bora ground site was located on a small hill near the existing Kenmore Hospital. Others were located at Eastgrove and in the vicinity of the Goulburn railway station (Koettig & Lance 1986:20).

  Bora grounds can only be recognised or located either through detailed oral accounts or identifying surviving ground surface features. Unfortunately, most physical evidence of bora grounds is fragile and easily destroyed by minimal agricultural activities.

- *Burials* are generally found in soft sediments such as sand or alluvial silts, but may also occur in middens, rockshelters or hollow trees. Burials are generally only visible where there has

been some disturbance of sub-surface sediments or where some erosional process has exposed them.

Historical records for the Goulburn area indicate that the main methods employed for disposal of the dead in the district were 'placement in hollow trees, interrment (sic) in soft soil or sand with a mound built over the grave, or burial in rocky ground on hill tops' (Koettig & Lance 1986:20).

It is unlikely that burials on rocky hilltops would have survived to the present day. The shallow soils typical of hilltops would not allow for deep burial, consequently the likelihood of disturbance from soil erosion, animal activities and land clearance would be high. These factors would adversely affect burials even if protective stone cairns were placed over them.

6. HISTORICAL CONTEXT

6.1 Historical Overview

Europeans first accessed the Goulburn area in the late 1790s when a party of four men made two journeys south of Sydney under orders from Governor Hunter. The explorers included an ex convict named James Wilson, Henry Hacking (quartermaster from the 'Sirius'), a man named Collins and a 'lad' known as Barracks (Wyatt 1941:24). On the second journey the group reached Mount Towrang from which they could clearly see the area in which Goulburn is now located.

Further official exploration of the area did not resume until after 1814 when Hamilton Hume, John Oxley and James Meehan undertook a number of expeditions along various routes to as far south as Lake Bathurst. Governor Macquarie and John Oxley traversed the current site of Goulburn in 1820. Macquarie subsequently named the area 'Goulburn Plains' (Wyatt 1941:26).

Rapid settlement of the country took place shortly thereafter with productive use of the land being actively encouraged by the government through the issuing of grants. Numerous large properties were established in and around the Goulburn Plains and by the early 1820s the district was being used to grow wheat, sheep and cattle for the Sydney market (Bayley 1954:17).

By 1824, several houses are known to have been built a short distance to the northeast of the current town site and plans had been drawn up for the area to be subdivided as 'Veteran Allotments' for the settling of discharged soldiers (Bayley 1954:16, Wyatt 1941:35). However, the 'original' town site was abandoned in favour of the current location in 1832 when government buildings were constructed further downstream on the Mulwaree River. This early settlement was known as 'Strathallen', a garrison town drawing largely upon the labour of convicts quartered at Towrang. Until the cessation of transportation to New South Wales in 1840, ironed gangs were used in the construction of local infrastructure including the Main Southern Road (Wyatt 1941:63).

In 1841, Goulburn had a population of 655 people and was composed of 90 houses of brick or wood including a number of mansions and a hospital (Wyatt 1941:46-47). This population had almost doubled by 1845 and by the late 1840s a steam-powered flourmill and brewery were operating in the town (Bayley 1954:28, Wyatt 1941:49). By this stage Goulburn had become a centre for the production of a range of agricultural crops including wheat, oats, barley, maize and potatoes. Varieties of fruit trees and vines were also well established in the area (Bayley 1954:64). Wheat production peaked in the 1860s, no doubt aided by provision of ready access to external markets with the opening of the Sydney-Goulburn Railway Line in 1869 (Wyatt 1941:87). Despite this, grain crops gradually receded in favour of wool in the late 1800s and had almost disappeared by the early part of the twentieth century.

Where the south road forked to Bungonia and Goulburn, a township (meant as a way station) was drawn up by Mitchell and surveyed by Hoddle in 1834. The township of Marulan was officially gazetted on 11 March 1835.

At Marulan, as usual, a large church reserve was set aside but the first establishment seems to have been the Woolpack Inn, the forerunner of the great roadhouses of today, and a post office (1836). By 1845, there were another two inns, one store, and several bark huts. A chapel had been added by 1847, and in that year the police station (originally at Inverary, then Bungonia) was moved to Marulan, along with a Court of Petty Sessions. In 1850, there was also a schoolhouse, a blacksmith and wheelwright to serve the local population and passersby. St Patrick's Catholic Church was built in 1863 and later a Church of England in 1866.

The original South Road (from Sutton Forest to Barbers Creek, then to Bungonia) in 1828 had by then been replaced by a line of road from Sutton Forest to Marulan, then on to Goulburn and Bungonia. In the earliest days it took two weeks by bullock waggon from Campbelltown to Marulan. By 1836, however, there was a daily mail service to the post office, and in 1848 a two horse coach ran a one day service from Camden to Marulan and on to Goulburn. Later there was a night coach on the run. From 1868 Cobb & Co. ran a service from Marulan to Goulburn and on to Cooma but this was to disappear with the coming of the railways.

Hospitable as Marulan was, with its bustling traffic on the highway, in the 1860s it attracted the attention of some unwanted visitors - bushrangers attracted to the gold shipments from Braidwood. In 1864, the notorious Ben Hall was in the area, and his gang - and later Lowry's, held up mail coaches at Marulan. Hall was at it again in 1865 at Paddys River and was to bail up the town itself.

Marulan is a town of changes, the first occurring on 6 August 1868 when the great southern railway reached Marulan. The station, however, (originally known as Mooroowoolen) with its goods shed and stockyard was built 2.5 km east of the existing town.

At the time of construction of the railway, the population in the Marulan neighbourhood increased, however, at the end of 1867, as work on the viaduct across Barbers Creek neared completion, many of the railway workers moved to the next section of the line. John Morrice, the owner of the property 'Glenrock' took advantage of the railway's construction by subdividing the land fronting the main road in the vicinity of the railway. 'Glenrock' was first taken up as a land grant by George Barber in 1826. Barber married Isabella Hume (sister of explorer Hamilton Hume) and the present house was commenced probably in the early 1840s. Barber drowned in a flooded creek in 1844. In 1862, the house was sold to Morrice, one of whose sons still owned the property in 1944.

Morrice named the town Mooroowoolen, and an advertisement for the sale of lots appeared in 1867. It was about 2.5 miles from of Old Marulan. Over the next 10 years the town slowly moved to Mooroowoolen, which became known as Marulan. The old township was in a state of ruin and the new town contained all the relevant services to cater for travellers' needs.

By the 1890s, the main part of the town as it stands today had 10 stores, a police station, the Post Office, an Oddfellows Hall (used as Court House), a School of Arts, and numerous residences. The original village faded away – the post office moved in 1878, a new All Saints Church was built to replace the old St. Jude's Church of England, and St. Stephens Presbytery (1873).

On 1 September 1878, the new town was officially given the name of the original Marulan.

In 1928, the main road was proclaimed a state highway (named after explorer Hamilton Hume) and it came under state control. In the 1930s the Marulan section was concreted from Mt. Otway to Marulan South (the present freeway follows this route). For the next 50 years Marulan became a highway town, until it too faded in importance when the freeway was built to bypass it in 1985.

For many years and until recently Marulan Village was surrounded by large farming areas. In recent times these farms have begun to be subdivided into smaller rural areas, and sold off to newcomers seeking a change in lifestyle. This sell off has resulted in many new small rural and associated businesses being established in the Bungonia, Brayton, Big Hill, Greenwich Park, Marulan, Tallong, Towrang, and surrounding districts.

The study area is located site located approximately 12 km north of present-day Marulan. The proposed pipeline alignment traverses several large and small late nineteenth and early twentieth century land portions in the area (Figure 5.1). From north to south these include the properties identified as being owned by Thomas Holt, Murdoc Campbell (later owned by Isaac Shepherd), Conrad and H. G. Seiler, Patrick O'Connell, John Miller, Robert Campbell and M. Ryan (later owned by Thomas Henry Casburn).

Today, the proposed alignment study area is still a mixture of large and small private land holdings, most of which operated as small farms.

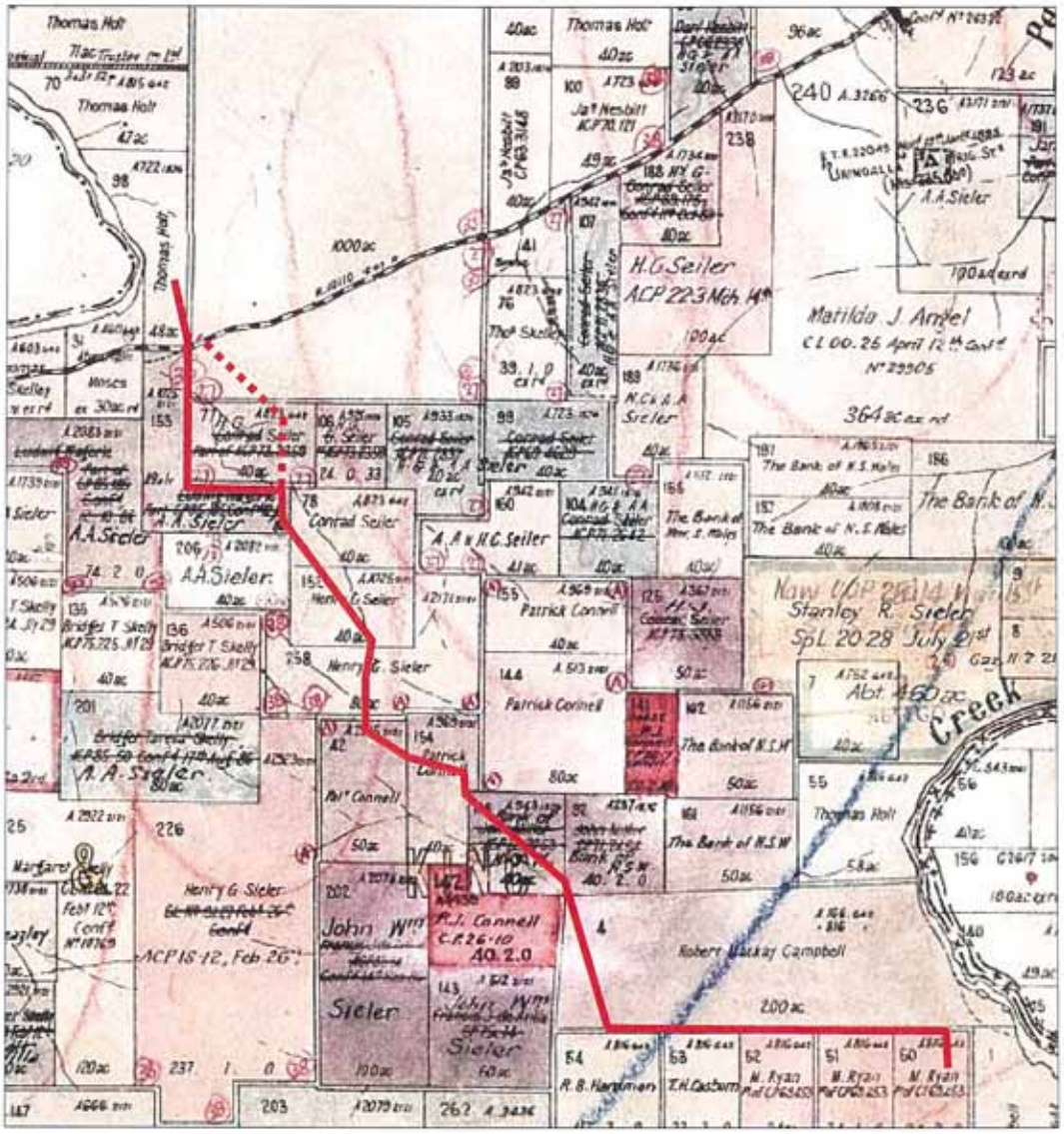

Figure 5.1 Extract from Uringalla Parish Map dated 2 April 1913, showing approximate location of proposed pipeline overlain on late nineteenth/early twentieth century land portions in study area (Dept. of Lands. Map Ref. 10195501).

6.2 Previous Cultural Heritage Studies

In April 2008, Biosis Research conducted a cultural heritage assessment of the site proposed for the development of the two gas turbine facilities and associated infrastructure, which forms part of the northern section of the current study area. No historical sites had been previously recorded within that area and no such sites were recorded during the field survey of that area.

6.3 Heritage Listed Items

There are no heritage listed historic items within the current Marulan gas pipeline study area.

6.4 Predictive Historical Archaeology Statement

Unrecorded historic sites and features of heritage significance that may occur within the study area include:

- Nineteenth-century structures, such as farm dwellings, outbuildings, selector's huts, which may survive as standing buildings, ruins or archaeological deposits and are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes;

- Traces of agricultural processing or extractive sites, such as dairies, factories, and quarries, which may be found throughout agricultural lands;

- Sites associated with early roads, which will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points;

- Archaeological sites, such as the occupation remains of former dwellings, including homesteads, houses and huts, which will be distributed in close association with land settlement patterns, and correlated with favourable agricultural lands, trading nodes and transport corridors;

- Transport and access routes, such as bridle paths and stock routes of varying forms and ages, which may survive as abandoned remnants adjacent to modern transport routes, or as alignments now followed by more modern or upgraded road and track infrastructure;

- Old fence lines, such as post and rail fencing, which may occur along road easement boundaries and farmlands; and

- Other indications of field systems, such as drainage channels and ridge and furrow ploughlands, which are likely to survive in low lying agricultural ground, especially in areas that are now used for grazing, rather than cropping.

7. RESULTS

7.1 Summary

Two Aboriginal sites comprising an isolated artefact (BH1) and an artefact scatter (BH3) were identified in the study area by Biosis Research in 2008.

Three Aboriginal sites comprising one artefact scatter with associated potential archaeological deposit (MGPS1&PAD) and two isolated finds (MGPS 2 and MGPS3) were identified within the Marulan Gas Pipeline study area during the current field survey. A potential archaeological deposit (MGP1) was also identified in the study area.

No historical heritage sites have been identified in the Marulan Gas Pipeline study area.

Site and PAD locations are shown on Figure 7.6.

7.2 Aboriginal Sites and PADs

7.2.1 Previously Recorded Sites

BH1 *(GDA 229394.6165366)*

This site consisted of an isolated artefact situated at the base of an existing overhead power line tower. The site comprises only a single quartz artefact on the southern side of a small drainage line.

BH3 *(GDA 229416.6165780)*

This site consisted of a small scatter of four stone artefacts situated on the upper eastern bank of the Wollondilly River. The stone artefacts comprised 3 quartz flakes with a quartzite core trimming flake. A number of other quartz fragments were also noted along the vehicle track.

7.2.2 Sites and PADs Recorded in Current Study

Marulan Gas Pipeline Site 1 and PAD (MGPS1&PAD)

GDA 229425.6164665 to 229480.6164756 to 229580.6164741 to 229630.6164741

This site is a scatter of eleven artefacts located on the crest and slopes of a spurline between a drainage line and a creek line (Figures 7.1 and 7.2). Artefacts are visible over an area approximately 250 x 150 m. The artefacts were identified in six locations with the wider site area.

The soil in the area was sandy with some quartz gravels. Disturbance across the areas was 10% and visibility within the disturbed areas was 70%. Disturbance occurred under trees and on animal tracks. There is moderate potential for the site to be larger and to contain subsurface Aboriginal objects. The PAD is assessed as having moderate archaeological potential.

Artefacts

GDA 229528.6164739

1. grey and pink silcrete flake, 29 x 19 x 4 mm

GDA 229545.6164752

2. grey quartzite flake, 22 x 15 x 3 mm
3. grey tuff flake, 27 x 10 x 8 mm

GDA 229551.6164768

4. red tuff flaked piece 25 x 13 x 7 mm

GDA 229555.6164743

5. white quartz flaked piece, 27 x 17 x 4 mm
6. grey quartz flake, 17 x 15 x 4 mm

GDA 229572.6164774

7. white quartz flake, 33 x 20 x 4 mm
8. possible pebble hammerstone, broken, 80 x 80 x 4 mm

GDA 229594.6164773

9. red tuff flake, 24 x 10 x 3 mm, pebble cortex
10. red tuff flake, 40 x 20 x 10 mm
11. white quartz core, 22 x 28 x 20 mm, 2 negative scars

Figure 7.1 Location of MGPS1&PAD looking east

Figure 7.2 MGPS1&PAD: artefact 1

Marulan Gas Pipeline Site 2 (MGPS2)

GDA 230123.6164060

This site is an isolated find located on the top of a high ridgecrest on the edge of the tree line (Figure 7.3). The disturbance incidence on the crest was 20% with 60% visibility within the disturbed areas due to the abundance of pebbles that have eroded out of the conglomerate bedrock. There is low potential for this site to be larger or to contain subsurface Aboriginal objects.

Artefact:

1. white silcrete flaked piece, 31 x 23 x 11 mm

Figure 7.3 Location of site MGPS2- looking northwest

Marulan Gas Pipeline Site 3 (MGPS3)

GDA 230934.6162448

This site is an isolated find located on the edge of a drainage line at the base of a spur side slope at the end of a dam wall (Figure 7.4). The disturbance incidence on the crest was <10%.

There is low potential for this site to be larger and to contain subsurface Aboriginal objects.

Artefact:

1. black silcrete flake, 30 x 20 x 4 mm

Figure 7.4 Location of site MGPS3 - looking northeast

Marulan Gas Pipeline PAD (MGP PAD1)

GDA 229440.6164895 to 229470.6165066

This area of potential archaeological deposit is located on a low spurline between the confluence of two small creek/drainage lines (Figure 7.5). The PAD is approximately 200 x 75 m.

The PAD is assessed as having moderate archaeological potential.

Figure 7.5 4 Location of MGP PAD1 - looking north

7.3 Aboriginal Cultural Values

Participating Aboriginal groups have been invited to provide comment/information on the Aboriginal cultural values the project area. (Refer Appendix 2).

7.4 Inventory of Site Locations

Recording Type	Recording Code	GDA Reference
Artefact scatter and PAD	MGPS1&PAD	229425.6164665 to 229480.6164756 to 229580.6164741 to 229630.6164741
Isolated find	MGPS2	230123.6164060
Isolated find	MGPS3	230934.6162448
PAD	MGP PAD1	229440.6164895 to 229470.6165066
Isolated find	BH1	229394.6165366
Artefact scatter	BH3	229416.6165780

Figure 7.6 Location of sites along the Marulan Gas Pipeline (red line) (extracts from 1:25,000 topo maps of Canyonleigh 8928-IV-N (top) & Wingello 8928-4-S (bottom), 2nd Eds.)

7.5 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels. Two variables of ground surface visibility were estimated during the survey:

A percentage estimate of the total area of ground inspected which contained useable exposures of bare ground; and

A percentage estimate of the average levels of ground surface visibility within those exposures. This is a net estimate and accounts for all impacting visual and physical variables including the archaeological potential of the sediment or rock exposed.

The obtrusiveness of different site types is also an important factor in assessing the impact of visibility levels. Artefacts made from locally occurring rock such as quartz may be more difficult to detect under usual field survey conditions than rock types that are foreign to the area. The impact of natural gravels on artefact detection was taken into account in the visibility variables estimates outlined above.

The natural incidence of sandstone platforms suitable for grinding grooves or engraving, together with the incidence of old growth trees, are important considerations in identifying both survey effectiveness and site location patterns outside of environmentally determined factors.

Table 7.1 summarises estimates for the degree to which separate landforms within the study area were examined and also indicates the exposure incidence and average ground visibility present in each case. A total of 93% of the ground area in the study area was inspected during the survey, with 27% providing useable archaeological exposures.

A graphic approximation of the surface survey coverage achieved within the study area is shown in Figure 7.7.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the effective survey coverage (ESC) was 16.3% of the total survey area. The ESC attempts to provide an estimate of the proportion of the total study area that provided a net 100% level of ground surface visibility to archaeological surveyors.

The ESC calculation is defined and required by the DECC and stated to be of use in assessing and cross comparing the adequacy of archaeological surface surveys. The actual utility of the ESC calculation however is challenged by many archaeologists. The limitations of the ESC calculation are emphasised by differences in the subjective assessment of exposure and visibility levels, variations in how survey units are defined and measured, and differences in how and which variables are estimated and combined. In reality, ESC results tend only to be meaningful when compared across surveys conducted by the same surveyors and ESC measurers.

Table 7.1: Survey Coverage Data

Survey division	Survey unit	Landform	Survey mode	Main exposure types	Estimated Survey Unit area (ha)	Proportion of unit surveyed %	Area of unit surveyed (ha)	Exposure incidence %	Average exposure visibility %	Net effective exposure (ha)	Effective survey coverage of survey unit %	Aboriginal Archaeological recordings
A	1	Minor hills and ridgelines, flat open areas and small drainage/creek lines	Foot		18	93	16.7	27	65	2.9	16.3	4
Total					*18*		*16.7*			*2.9*	*16.3*	

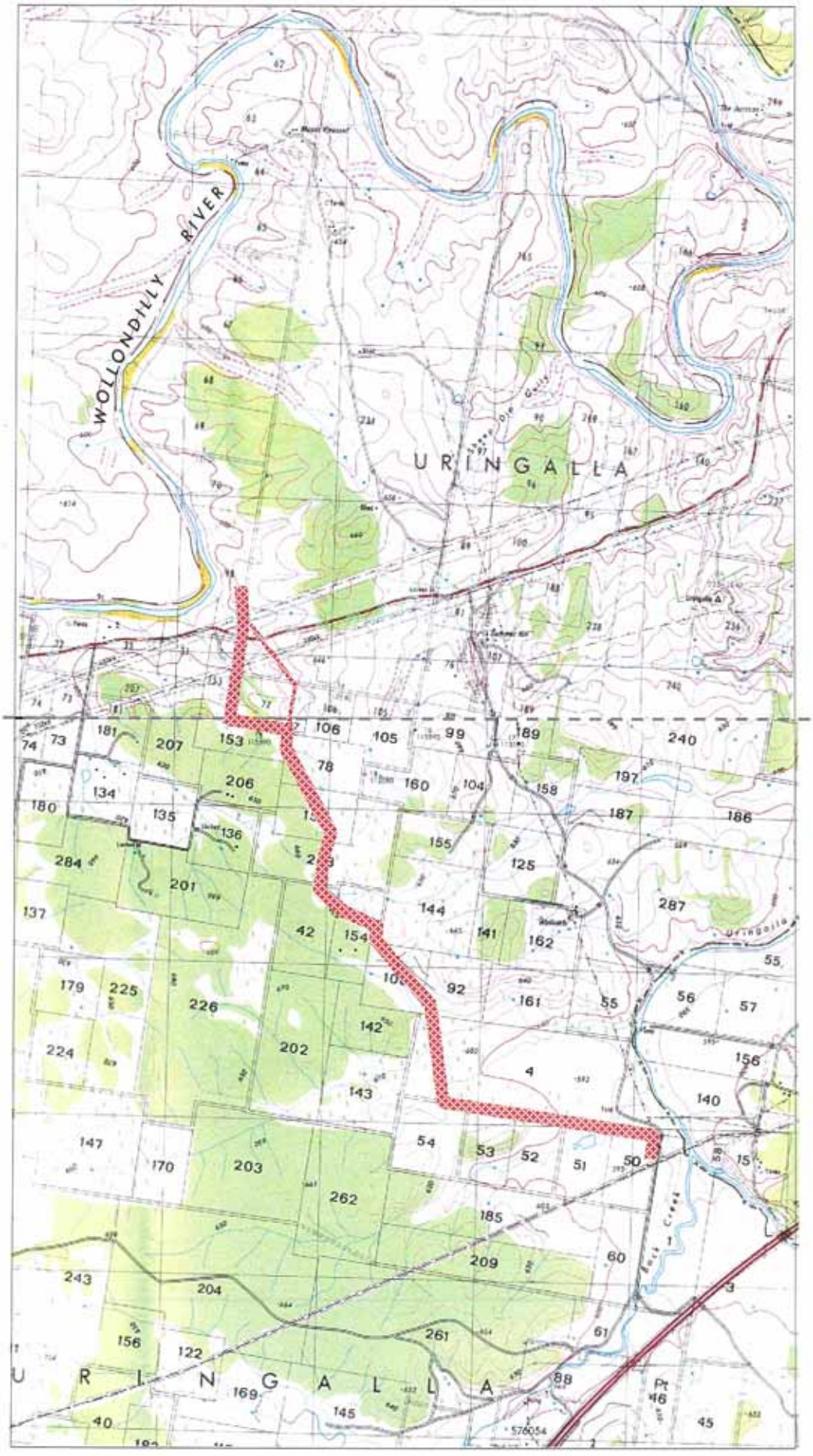

Figure 7.7 A graphic approximation of the survey area (shaded red line) (extracts from 1:25,000 topo maps of Canyonleigh 8928-IV-N (top) & Wingello 8928-4-S (bottom), 2nd Eds.)

8. SIGNIFICANCE ASSESSMENT

8.1 Assessment Criteria

The Burra Charter of Australia defines cultural significance as 'aesthetic, historical, scientific or social value for past, present and future generations' (Aust. ICOMOS 1987). The assessment of the cultural significance of a place is based on this definition but often varies in the precise criteria used according to the analytical discipline and the nature of the site, object or place.

In general, Aboriginal archaeological sites are assessed using five potential categories of significance:

- Significance to contemporary Aboriginal people;
- Scientific or archaeological significance;
- Aesthetic value;
- Representativeness; and
- Value as an educational and/or recreational resource.

Many sites will be significant according to several categories and the exact criteria used will vary according to the nature and purpose of the evaluation. Cultural significance is a relative value based on variable references within social and scientific practice. The cultural significance of a place is therefore not a fixed assessment and may vary with changes in knowledge and social perceptions.

Aboriginal significance can be defined as the cultural values of a place held by and manifest within the local and wider contemporary Aboriginal community. Places of significance may be landscape features as well as archaeologically definable traces of past human activity. The significance of a place can be the result of several factors including: continuity of tradition, occupation or action; historical association; custodianship or concern for the protection and maintenance of places; and the value of sites as tangible and meaningful links with the lifestyle and values of community ancestors. Aboriginal cultural significance may or may not parallel the archaeological significance of a site.

Scientific significance can be defined as the present and future research potential of the artefactual material occurring within a place or site. This is also known as archaeological significance.

There are two major criteria used in assessing scientific significance:

1. The potential of a place to provide information which is of value in scientific analysis and the resolution of potential research questions. Sites may fall into this category because they: contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a constituent of a larger significant structure such as a site complex.

2. The representativeness of a place. Representativeness is a measure of the degree to which a place is characteristic of other places of its type, content, context or location. Under this criteria a place may be significant because it is very rare or because it provides a characteristic example or reference.

The value of an Aboriginal place as an educational resource is dependent on: the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

The cultural significance of a place can be usefully classified according to a comparative scale which combines a relative value with a geographic context. In this way a site can be of low, moderate or high significance within a local, regional or national context. This system provides a means of comparison, between and across places. However it does not necessarily imply that a place with a limited sphere of significance is of lesser value than one of greater reference.

The following assessments are made with full reference to the scientific, aesthetic, representative and educational criteria outlined above. Reference to Aboriginal cultural values has also been made where these values have been communicated to the consultants. It should be noted that Aboriginal cultural significance can only be determined by the Aboriginal community, and that confirmation of this significance component is dependent on written submissions by the appropriate representative organisations.

8.2 The Marulan Gas Pipeline Study Area

Marulan Gas Pipeline Site 1 and PAD (MGPS1&PAD)

This site is a scatter of eleven stone artefacts associated with an area of potential archaeological deposit (PAD). The visible artefacts are common artefact types and common raw materials.

The potential for the site to contain more artefacts and to be associated with subsurface archaeological deposit is considered to be moderate.

The significance of site/deposit cannot be determined based on the present available data

Marulan Gas Pipeline Site 2 and Three (MGPS2 and MGPS3)

These sites are isolated finds. The visible artefacts are common artefact types and common raw materials. The sites have low potential to be associated with undisturbed archaeological deposit. The site are therefore assessed as having low archaeological significance.

9. STATUTORY AND POLICY CONTEXT[1]

9.1 Environmental Planning and Assessment Act 1979

This Act (EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the *Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act 2005.*

There are four main areas of protection under the Act:

- Planning instruments allow particular uses for land and specify constraints. Part 3 governs the preparation of planning instruments. Both Aboriginal and Historical (Non-Indigenous) cultural heritage values should be assessed when determining land use;

- A separate streamlined and integrated development assessment and approvals regime for major infrastructure and other projects of significance to the State is defined by Part 3A;

- Section 90 lists impacts which must be considered before development approval is granted. Part 4 relates to the development assessment process for local government authorities. Impact to both Aboriginal and Historical (Non-Indigenous) cultural heritage values are included; and

- State Government agencies which act as the determining authority on the environmental impacts of proposed activities must consider a variety of community and cultural factors in their decisions, including Aboriginal and Historical (Non-Indigenous) cultural heritage values. Part 5 relates to activities which do not require consent but still require an environmental evaluation, such as proposals by government authorities.

Part 3A of the EP&A Act

Part 3A of the Act is an amendment which establishes a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, development that was previously classified as State Significant development, and other projects, plans or programs declared by the Minister for Planning.

Part 3A removes the stop-the-clock provisions and the need for single-issue approvals under eight other Acts, including the NP&W Act and the Heritage Act 1977. Environmental planning instruments such as the heritage provisions within REP and LEPs, (other than State environmental planning policies) do not apply to projects approved under Part 3A.

Where warranted the Minister may declare any project subject to Part 3A to be a critical infrastructure project. These projects only require a concept approval in contrast to other Part 3A projects which require project approval. In most circumstances, a concept approval will be obtained to establish the environmental performance requirements and consultation requirements for the implementation of the subsequent stages of the project.

Under the provisions of Part 3A, proponents of major and infrastructure projects must make a project application seeking approval of the Minister. The application is to include a preliminary assessment of the project. Application may be for concept plan approval or full approval. Following input from relevant agencies and council(s), DoP will issue the proponent with requirements for the preparation of an Environmental Assessment and a Statement of Commitments. The Statement of Commitments will include how the project will be managed in an environmentally sustainable manner, and consultation requirements.

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[1] The following information is provided as a guide only and is accurate to the best knowledge of Navin Officer Heritage Consultants. Readers are advised that this information is subject to confirmation from qualified legal opinion.

Following submission of an Environmental Assessment and draft Statement of Commitments to DoP, these documents are variously evaluated, reviewed, circulated and exhibited. The proponent may modify the proposal to minimise impacts in response to submissions received during this process. The proponent then provides a Statement of Commitments and, following any project changes, a Preferred Project Report. An assessment report is then drafted by the Director-General and following consultation with relevant agencies, a final report with recommendations for approval conditions or application refusal is submitted to the Minister. The Minister may refuse the project, or approve it with any conditions considered appropriate.

9.2 Implications for the Marulan Gas Pipeline Development

Aboriginal 'objects' as defined under the *National Parks and Wildlife Act 1974* have been identified within the Marulan Gas Pipeline study area. However, as the project will be conducted under Part 3A of the *Environmental Planning and Assessment Act 1979,* single-issue approvals under the NP&W Act do not apply to this project. (Section 87 and Section 90 *Aboriginal Heritage Impact Permits* will not be required for this project).

The management recommendations provided in this report should be included in the *Statement of Commitments* for the project.

10. CONCLUSIONS AND RECOMMENDATIONS

The Marulan Gas Pipeline project will necessitate the disturbance of ground within the footprint of the new gas pipeline.

Five Aboriginal sites, BH1, BH3, MGPS1&PAD, MGPS2 and MGPS3, and one area of potential archaeological deposit, MGP PAD1, are located within the study area and may be impacted by the proposed new gas pipeline.

No European sites were identified as occurring within the study area.

This project is to be assessed under Part 3A of the EP&A Act. The following recommendations should be included in the *Statement of Commitments* for the project.

It is recommended that:

1. Where possible, disturbance to archaeological sites BH1, BH3, MGPS1&PAD, MGPS2, MGPS3 and area of potential archaeological deposit MGP PAD should be avoided.

2. If impact to Aboriginal sites BH1, BH3, MGPS2, and MGPS3 cannot be avoided then the artefacts should be collected or relocated away from the area of impact.

3. If disturbance is unavoidable in the vicinity of MGPS1&PAD and MGP PAD1, then a program of archaeological subsurface investigation should be conducted to determine the nature, extent and integrity of any potential archaeological deposits that may be present in these areas.

   The timing of the subsurface testing may occur after consent is granted and should be included in the conditions of consent for the project.

   Should the subsurface testing program determine the presence of high significance sites then archaeological salvage may be required. Alternatively, a redesign of the project infrastructure in that area may be required.

4. Three copies of this report should be forwarded to the NSW DECC for their records at the following address:

   Cultural Heritage Officer
   Conservation Planning Unit
   Southern Region
   PO Box 2115
   QUEANBEYAN NSW 2620

5. One copy of this report should be forwarded to each of the Aboriginal stakeholder groups for their consideration and comment.

11. REFERENCES

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APPENDIX 1

ABORIGINAL PARTICIPATION FORMS

Record of Aboriginal Representative Participation*

Project Name **Marulan Gas Pipeline**

Name(s) of Aboriginal Representative: Sharyn Halls

Name of Aboriginal Organisation: Gundungurra Aboriginal Heritage Association Inc.

Archaeologist: Nicola Hayes & Lindsay Smith

address: Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, KINGSTON, ACT 2604
ph: (02) 6282 9415; fax: 62829416

Client name: Ben Herrington
GHD
10 Bond Street Sydney NSW 2000
(please send your invoice to this address)

Type of participation:

- ☐ Guided inspection of study area and sites
- ☐ Accompanied/participated in archaeological survey/salvage
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Period of participation:

Date(s)	Start	Finish
17/7/08	9am	2pm

Comments:

Signed *(archaeologist)*: N V Hayes

Signed *(Aboriginal representative(s))*: S Halls

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

Record of Aboriginal Representative Participation*

Project Name **Marulan Gas Pipeline**

Name(s) of Aboriginal Representative: Justin Boney

Name of Aboriginal Organisation: Pejar LALC

Archaeologist: Nicola Hayes & Lindsay Smith

address: Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, KINGSTON, ACT 2604
ph: (02) 6282 9415; fax: 62829416

Client name: Ben Herrington
GHD
10 Bond Street Sydney NSW 2000
(please send your invoice to this address)

Type of participation:

- ☐ Guided inspection of study area and sites
- ☑ Accompanied/participated in archaeological survey/~~salvage~~
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Period of participation:

Date(s)	Start	Finish
17/7/08	9am	2pm

Comments:

Signed *(archaeologist)*: N Hayes

Signed *(Aboriginal representative(s))*:

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

APPENDIX 2

INVITATION FOR ABORIGINAL CULTURAL HERITAGE REPORTS

23 July 2008

Chairperson,
Pejar Local Aboriginal Land Council

Chairperson,
Gundungurra Aboriginal Heritage Association Inc.

Navin Officer
heritage consultants pty ltd
abn: 28 092 901 605
Kerry Navin
Kelvin Officer
Nicola Hayes
Lindsay Smith

Dear Sir/Madam,

Request for Information on Aboriginal Cultural Heritage Values for Proposed Marulan Gas Pipeline, Marulan, NSW

Thank you for your organisation's participation in the archaeological field survey component of this investigation.

As you know, participation of Aboriginal communities and Aboriginal owners in archaeological field assessments should not be construed as 'consultation'. It is not a substitute for an assessment of Aboriginal cultural interests or values in a particular area of land or particular sites, such assessments are separate from archaeological assessments and should be made by Aboriginal people themselves.

As such, we invite your organisation to provide a written report giving your organisation's views and assessment of the Aboriginal cultural values of the area surveyed.

Your report could provide the following:

- A title page; maps of the study area; a table of contents; an introduction; the qualifications/ experience of persons providing the report; a methodology; a description of the study area and proposed activity/development;
- Information on whether there are Aboriginal cultural heritage values associated with the subject site – this will include information detailing the landscape, the history of the peoples living on that land, the material evidence, and the cultural and social values attached to the land and the material evidence;
- Information on the social/cultural values including on the spiritual, traditional, historical or contemporary associations and attachments which the place or area has for *the present-day Aboriginal community* – this may include a description of the physical setting of the land to be assessed and its resources, and relevant archival, historical and ethnographic sources;
- An assessement of the significance of the identified Aboriginal cultural heritage values;
- An assessment of the *level* of significance of the identified Aboriginal cultural heritage values;
- An assessment of the impact of the proposed development on Aboriginal objects and Aboriginal places;
- A description and justification of the proposed outcomes and alternatives;

- A conclusion, and recommendations for the appropriate protection of Aboriginal cultural heritage; and

- As necessary, references, a glossary, appendices, photographs, figures, etc., may be included with the report.

Could you please provide your written report to the address or fax number shown on this letter. In order that your organisation's views can be taken into account at this stage, it would be appreciated if your organisation could provide a response within the next two weeks.

If no response is received by the end of that period then it will be assumed that your organisation does not associate any cultural values with the study area, other than those that may have been identified by your organisation's representatives during the field survey.

Finally, we would like to thank you for your participation in the project and look forward to working with you again in the future.

Yours sincerely,

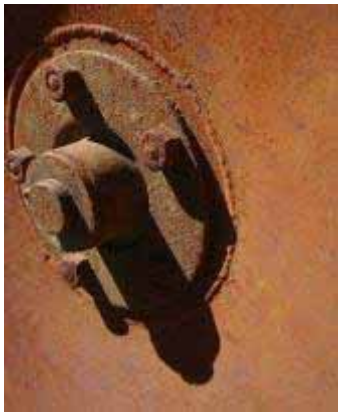
Nicola Hayes

BA/BSc GradDipArts(Archaeology) *ANU*

Appendix D

Cultural heritage assessment – western route

Cultural heritage assessment of alternative gas pipeline routes (November 2008), Navin Officer



Marulan Gas Turbine Facilities Project

Cultural Heritage Assessment of Alternative Gas Pipeline Routes

November 2008

A Report to GHD

Navin Officer

heritage consultants Pty Ltd

acn: 092 901 605

Number 4
Kingston Warehouse
71 Leichhardt St.
Kingston ACT 2604

ph 02 6282 9415
fx 02 6282 9416

EXECUTIVE SUMMARY

EnergyAustralia and Delta Electricity propose to develop two separate gas turbine power generating facilities on a site located approximately 12 km north of Marulan. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed, along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation.

The Marulan Gas Turbine Facilities Project has been declared a Major Project and will be conducted under Part 3A of the *Environmental Planning and Assessment Act 1979*. Given that the project will be conducted under Part 3A, approval provisions under the *National Parks and Wildlife Act 1974* (section 87 permits and section 90 consents) and the *Heritage Act 1977* (section 139 excavation permits) do not apply.

This report documents the results of a cultural heritage assessment of two alternative routes for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project. The total length of the two alternative routes is approximately 5.6 kilometres. The report was commissioned by GHD Pty Ltd.

The assessment included the conduct of background research, comprehensive archaeological field survey, consultation with representatives of local Aboriginal organisations, assessment of cultural heritage significance and the drafting of recommended management strategies.

Two Aboriginal recordings, a previously recorded isolated find (BH1), and a low density surface scatter of stone artefacts with an associated potential archaeological deposit (MGPS4), were identified within the study area.

Three historical (European) heritage recordings were made within the study area, a remnant two rail wooden fence line (MGPHS1), a boundary marking stone arrangement (MGPHS2), and a collection of four items of forestry and/ or farm machinery (MGPHS3).

It is recommended that the following strategies be included in the Statement of Commitments for the project:

1. Where feasible, disturbance to Aboriginal heritage recordings BH1 and MGPS4 will be avoided. This could be realised by avoiding the area of the existing transmission line tower at BH1, and amending the alignment of alternative route 2 so that the valley floor area of MGPS4 is avoided.

2. If impact to Aboriginal site BH1, cannot be avoided then any surface Aboriginal artefacts within the construction footprint will be recovered and re-positioned in a nearby position away from the area of impact.

3. If impact to Aboriginal site MGPS4 cannot be avoided then an archaeological test excavation program will be conducted within the construction footprint. The objectives of the program will be to determine the nature, extent and integrity of any archaeological deposits present, and to determine management requirements in the context of the pending construction disturbance. Should the testing program determine the presence of significant archaeological deposits, then a further program of salvage excavation may be required. The curation of any recovered Aboriginal objects will be the subject of consultation with the Department of Environment and Climate Change and the Aboriginal stakeholders

4. No further cultural heritage management actions are required in relation to historical recordings MGPHS1 and MGPHS2. Unnecessary direct impact to these recordings will however be avoided where feasible.

5. If it is anticipated that direct impact will occur to the movable heritage items in recording MGPHS3, then these items will be moved, in consultation with the owners of the items, to a location where there is no potential for construction impact

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TABLE OF CONTENTS

1. INTRODUCTION

1.1 The Proposal

EnergyAustralia and Delta Electricity propose to develop two gas turbine power generating facilities on a site located approximately 12 km north of Marulan on the NSW southern tablelands. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation.

The facilities are designed to generate electricity to help meet peaks in demand which occur on hot and cold days. Gas turbine plants are able to fire up and shut down quickly to cater for these demand peaks.

The following infrastructure would be required to serve both facilities:

- A gas pipeline lateral from the main Moomba to Sydney Pipeline, but excluding respective gas receiving delivery stations at the respective facilities;
- A high voltage transmission lines and connection to TransGrid;
- Back-up electrical supply arrangements;
- External telecommunications connections; and
- A common access road to each facility for construction and operational purposes.

Natural gas would be supplied from the existing Moomba to Sydney gas pipeline. The operating pressure of the existing mainline is typically in the range of 4,400 to 5,000 kPA. The pipeline will be located to the south of the site. A broad pipeline corridor has been subject to a desktop assessment and limited ground survey by Biosis (2008). That assessment recommended that, 'the southern section of the proposed gas pipeline alignment (6 km x 30 m) between the TransGrid switchyard and the Moomba to Sydney Gas Main should be surveyed in detail to identify cultural values' (Biosis 2008:2).

On 8 October 2007, the Director-General of the NSW Department of Planning declared the Marulan Gas Turbine Facilities Project to be a Major Project which would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. A cultural heritage assessment is required to support the Part 3A Environmental Assessment.

This report documents the results of a cultural heritage assessment of two alternative routes for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project (Figure 1.1 and 1.2).

The total length of the two alternative routes is approximately 5.6 kilometres. The report was commissioned by GHD Pty Ltd.

1.2 Report Outline

This report:

- Documents consultation with the Pejar LALC carried out in the course of the investigation;
- Outlines the study methodology;
- Describes the environmental setting of the study area;
- Provides a background of regional and local archaeology and history for the study area;
- Documents the results of a field survey of the study area and identifies the likely cultural heritage values that may exist within it;
- Defines statutory requirements relevant to the cultural heritage of the area; and

- Provides recommendations relating to the cultural heritage resource of the study area.

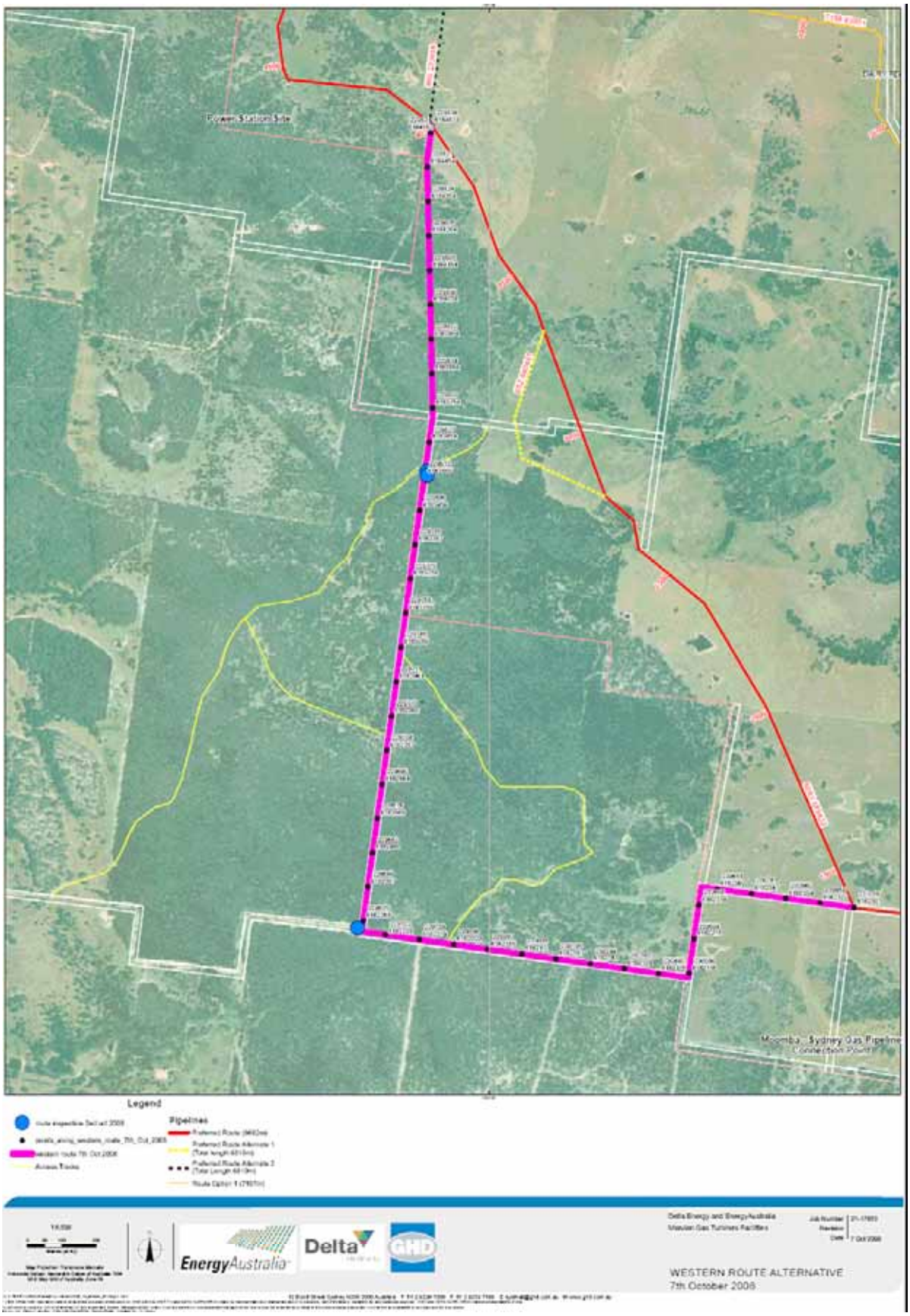


Figure 1.1 Location of proposed alternative gas pipeline route 1 (solid pink line) (map supplied by GHD)

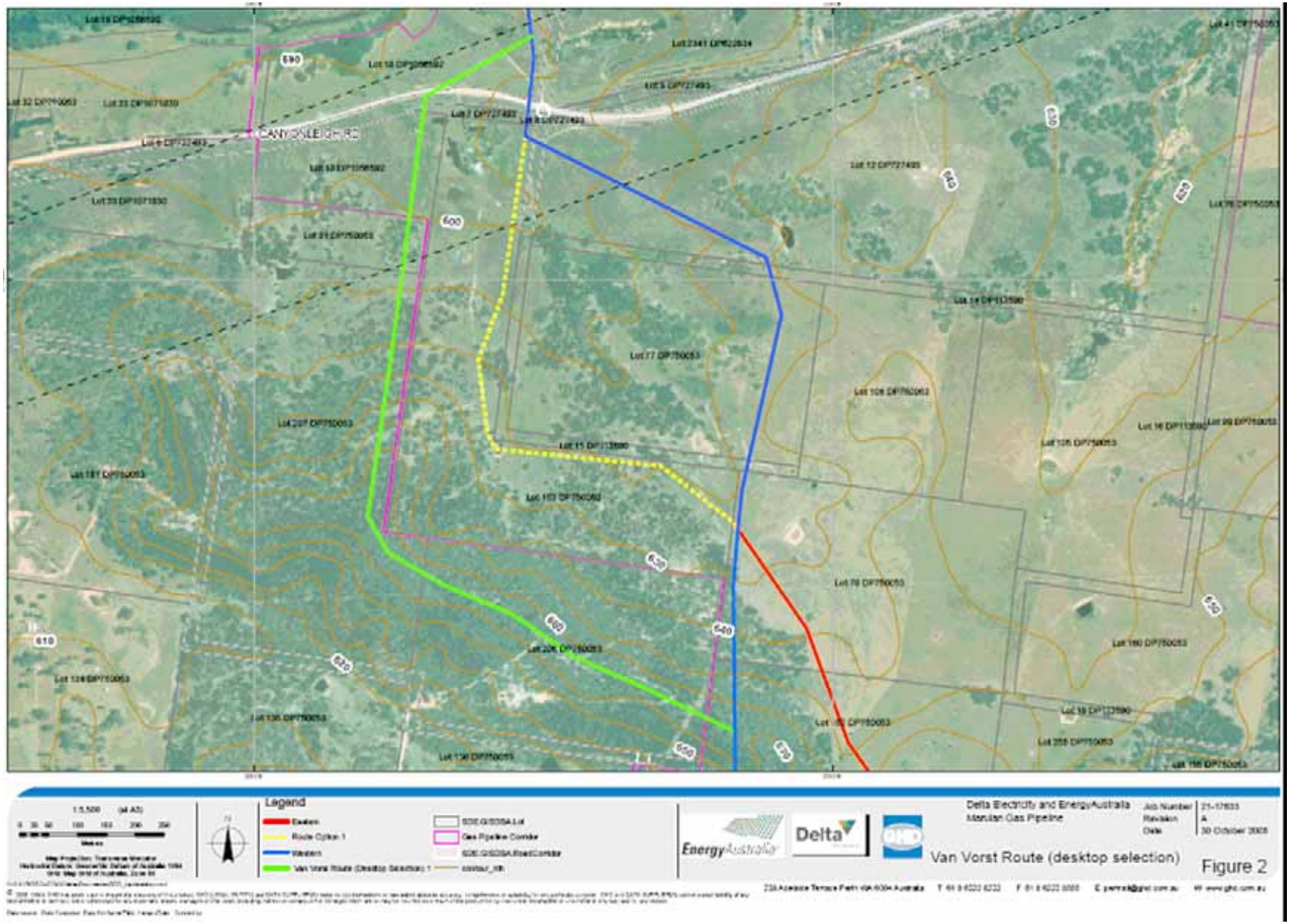


Figure 1.2 Location of proposed alternative gas pipeline route 2 (green line) (map supplied by GHD)

2. ABORIGINAL PARTICIPATION

The study area falls within the boundaries of the Pejar Local Aboriginal Land Council, which is based in Goulburn. It is also located within a native title claim area of the Gundungurra Aboriginal Heritage Association Inc., which is based in Lawson, in the Blue Mountains of NSW.

The NSW Department of Environment and Climate Change (DECC) *Draft Guidelines for Aboriginal Community Heritage Impact Assessment and Community Consultation* (2005) have been previously implemented for this project and relevant Aboriginal groups have been identified through that process.

Aboriginal consultation for the project involved phone contact and invitations to the interested parties/groups to participate in field inspections, and provide input to management and/or mitigation recommendations.

The Pejar LALC and the Gundungurra Aboriginal Heritage Association Inc. were contacted and were invited to provide a representative to participate in the fieldwork component of the project, and to provide their organisation's views regarding any Aboriginal sites or cultural heritage issues that may be identified during the project.

Consequently, Mr Justin Boney, representing the Pejar LALC, and Sharon Halls, representing the Gundungurra Aboriginal Heritage Association Inc., attended of the field survey, and actively participated in the survey.

A *Record of Aboriginal Field Participation* is provided in Appendix 1.

Plate 2.1 Survey along the southern portion of the study area

Plate 2.2 Sharon Halls at historical recording MGPHS3.

3. STUDY METHODOLOGY

3.1 Literature and Database Review

A range of archaeological and historical documentation was reviewed for the Marulan Gas Pipeline study area and its surrounds. This literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Department of Environment and Climate Change (DECC) and associated files and catalogue of archaeological reports. Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Statutory Listings
    - Aboriginal Heritage Information Management System (AHIMS) (NSW DECC);
    - The National Heritage List (Australian Heritage Council);
    - The Commonwealth Heritage List (Australian Heritage Council);
    - The State Heritage Register (NSW Heritage Office); and
    - Heritage Schedule(s) from the Goulburn Mulwaree Local Environmental Plan 2007.
- Non-Statutory Listings
    - The Register of the National Estate (Australian Heritage Council);
    - The State Heritage Inventory (NSW Heritage Office); and
    - Register of the National Trust of Australia (NSW);

3.2 Field Survey and Project Personnel

The field survey was undertaken over one day in October 2008 by archaeologist Kelvin Officer and field assistant Alyce Cameron with the participation of Mr Justin Boney from the Pejar LALC, Ms Sharon Halls from the Gundungurra Aboriginal Heritage Association Inc. and Mr David Chapple from GHD. All of the survey was conducted on foot and involved field personnel walking straight line and opportunistic traverses along and across the assessment area.

The total length of the proposed alternative pipeline alignments was approximately 5.6 kilometres. The width of the area subject to archaeological survey varied from a minimum of 30 m in clearly defined areas (such as within a fenced road easement), to up to 100 m in areas of lesser definition or field navigation accuracy.

Straight line traverses involved inspecting the ground while walking evenly-spaced roughly parallel transects along the length of the proposed pipeline easement. Opportunistic transects were undertaken to inspect old growth trees, rock outcrops and areas of ground surface visibility within the assessment area. A high proportion of all bare ground within the assessment area was inspected and, in areas of limited exposure, an assessment was made of the potential for that area to include

Aboriginal sites below the ground. All old growth trees within or near the study area were inspected for potential human origin scarring.

All map grid references were generated using a hand-held GPS unit.

This report was prepared by Nicola Hayes and Kelvin Officer.

3.3 Recording Parameters

3.3.1 Aboriginal Sites and PADs

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts. Potential recordings fall into three categories: isolated finds, sites and potential archaeological deposits.

Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

- Random loss or deliberate discard of a single artefact;
- The remnant of a now dispersed and disturbed artefact scatter; and
- An otherwise obscured or sub-surface artefact scatter.

Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* present within any particular landform.

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations. Given the varied incidence of ground surface exposure and deposit disturbance within the study area, and the lack of background baseline data, the specification of 60 metres is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Sites

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity.

Frequently encountered site types within southeastern Australia include open artefact scatters, coastal and freshwater middens, rock shelter sites including occupation deposit and/or rock art, grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in the identification of these site types are outlined.

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees. Artefacts situated within, or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). In a rockshelter, a site is defined as one or more artefacts occurring within or immediately adjacent to the sheltered space. Unlike a single artefact in an open context, a rock shelter provides a probable occupational focus to the interpretation of a single artefact and can therefore be considered to be indicative of a

site. An exception would be a single artefact which may have been deposited in the shelter through natural processes.

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of the marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity of the site.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit. Table 3.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

Table 3.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit.

		Potential to contain Aboriginal objects		
		Low	*Moderate*	*High*
Potential archaeological significance	*Low*	---	**low**	**moderate**
	Moderate	---	**moderate**	**high**
	High	---	**high**	**high**

3.3.2 Historical Sites and Features

Historical archaeology refers to the 'post-contact' period and includes: domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The three primary types of places or items that may form part of the historical archaeology context include:

1. Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined;

2. Areas of land that display evidence of human activity or occupation; and

3. Shipwrecks, deposits and structures associated with maritime activities.

Within these broad parameters, an historical archaeological site may include:

- Topographical features and evidence of past environments;
- Evidence of site formation, evolution, redundancy and abandonment (that is, features and materials associated with land reclamation, sequences of structural development, demolition/deconstruction, and renewal);
- Evidence of function and activities according to historical theme/s represented (for example, an industrial site may contain diagnostic evidence of process, products and by-products);
- Evidence associated with domestic occupation including household items and consumables, ornaments, personal effects and toys;
- Evidence of diet including animal and fish bones, and plant residues;
- Evidence of pastimes and occupations including tools of trade and the often fragmentary signatures of these activities and processes;
- Methods of waste disposal and sanitation, including the waste itself which may contain discarded elements from all classes of artefact as well as indicators of diet and pathology; and
- Any surviving physical evidence of the interplay between site environment and people.

The information found in historical archaeological sites is often part of a bigger picture which offers opportunities to compare and contrast results between sites. The most common comparisons are made at the local level, however, due to advances in research and the increasing sophistication and standardisation of methods of data collection, the capacity for wider reference (nationally and, occasionally, internationally) exists and places added emphasis on identification and conservation of historical archaeological resources.

4. ENVIRONMENTAL CONTEXT

4.1 Geology

The Southern Tablelands occur as part of the Lachlan Fold Belt, which Hird (1991:9) considers 'the most complex geological province in NSW.' The province is characterised by Ordovician, Silurian and Devonian sedimentary units and Early Silurian volcanics that have been subsequently subject to periods of major orogenic activity and Devonian and Carboniferous granitic intrusions. More recently, Tertiary volcanic activity and Quaternary sedimentary deposition has occurred in the Goulburn area of the Lachlan Ford Belt (Branagan and Packham 2000:6-20).

The study area traverses three broad geological types. At the northern end of the study area, in the area of the Marulan-Canyonleigh Road, the underlying bedrock consists of Devonian aged granite, granodiorite and porphyry. A surface outcrop of granitic boulders is situated at the northern end of the pipeline route. The valley floors across the study area have formed from Ordovician bedrocks including slate, quartzite and phyllite. These are evident as gravels in soil exposures creek beds, and road cuttings. The rangelands, which include the majority of the study area, have formed from the Megalong Conglomerate, a Permian aged unit of the Berry formation. This particular portion of the Megalong Conglomerate forms part of the southwestern edge of the Sydney sedimentary basin (Wollongong SI 56-9 1:250,000 Geology Mapsheet, 2nd Ed 1966, NSW Gov. Printer). The bedrock conglomerate includes a high proportion of well rounded alluvial pebbles, which remain, often as very dense residual gravels on the ground surface and soil substrate. Surface outcrops of conglomerate occur on the steeper slopes and in the bed of upper catchment streamlines, however no significant overhangs were noted within the study area.

The Wollondilly River has a bed-load that is comprised of Quaternary sand, clay and gravel. The river and its tributaries are the most southerly portions of the large and complex Hawkesbury River system. (Branagan and Packham 2000:275).

Small areas of volcanic basalt formations outcrop close to the study area, an example being Pleasant Hill, situated four kilometres to the northeast of the study area (Wollongong SI 56-9 1:250,000 Geology Mapsheet, 2nd Ed 1966, NSW Gov. Printer).

4.2 Topography

The study area is characterised by moderate to steeply graded rangelands and extended ridgelines, separated by open and low gradient valley floors with rolling terrain and drained by unnamed, upper catchment tributary streamlines. A ridgeline, traversed in the middle of the study area, forms the watershed between the Wollondilly River in the north and west, and the Uringalla Creek and Paddys River catchments to the east. The ridge reaches an elevation of 700 m AHD, approximately 100 m above the surrounding valley floors.

The study area terminates within 150 m of the southern bank of the Wollondilly River. Approximately three kilometres downstream of this point the open floor of the river valley gives way to an increasingly incised and deepening gorge

4.3 Flora and Fauna

The study area traverses cleared agricultural grasslands and open woodland within valley floor contexts, and native forest on ridge crests and slopes. The forested areas are characterised by a dense canopy of Casuarina and Eucalypt species, formed from relatively evenly aged regrowth (probably the result of wildfire events), and a small number of isolated old-growth trees.

Observations of early European explorers and settlers in the Goulburn area often included mention of its treeless grassy plains (Paton 1990). In the Marulan area, it is likely that prior to European landuse, the open valley floors supported an open woodland and the slopes and rangelands were forested..

The sandy granite-derived soils of the region are likely to have supported a savannah woodland community of Yellow Box and Blakleys Red Gum (Hird 1991). Remnant basalt and basalt derived

soils would have supported ‘a brown barrel-ribbon’ gum community, which is a type of intermediate sclerophyll forest vegetation.

4.4 Landuse

The study area has been significantly altered by European landuse practices. The valley floors have been cleared of tree cover and now support agricultural grasslands and croplands. Some of the drainage lines are incised and display varying degrees of bank erosion. The slopes and rangelands remain forested, but appear to have been subject to selective logging, bush grazing, and some areas of past vegetation clearance. Few old growth trees remain and much of the dominant canopy trees are of similar age, suggesting uniform regrowth after hot wildfire or cessation of bush grazing.

The southern two thirds of the study area is situated within road reserves, the southern half of which includes a well formed, cut and benched, gravel road. The northern half traverses steeper and forested ground and probably only included rough, shallow and unformed tracks.

The northern alternate route option traverses the crest of a ridgeline and northern spur for much of its length. A well formed vehicle track has been constructed along most of this landform.

Landscape disturbance within the study area has occurred as a result of:

- Clearance of original native vegetation;
- Establishment and maintenance of improved pasture grassland;
- ploughing and cropping;
- construction of vehicle tracks, bridges and culverts
- Construction of high voltage overhead powerlines; and
- Construction of farm dams, fences, sheds, and roads and tracks.

Disturbance to Aboriginal sites will have varied in scope and degree as a result of the activities listed above. Certain fragile Aboriginal site types would have been destroyed, while others such as larger campsites may have been partially destroyed or scattered. The practice of constructing vehicle tracks on ridge and spur crests has often substantially disturbed Aboriginal artefact distributions which were formerly situated on these landforms.

In aggrading topographies such as alluvial flats and fans, undisturbed artefactual material may remain below the plough zone. In cleared areas, which have undergone minimal ploughing or surface erosion, Aboriginal artefact distributions may retain some of their original characteristics such as overall size and internal patterning within a horizontal plane. The degree of vertical disturbance within the soil profile will depend on depth and soil type and the type and extent of ploughing or clearing methods.

Plate 4.1 Open valley floor landscape at the southern end of the study area, looking east.

Plate 4.2 A typical forested spurline crest within the study area

5. ABORIGINAL CONTEXT

5.1 The Aborigines of the Marulan/Goulburn Area

Tindale (1974) has determined that Goulburn was situated at the boundary of two tribes - the Gandangara to the north and the Ngun(n)awal to the south. Early settlers describe large numbers of Aborigines (over 3,000) attending ceremonies in the Goulburn district (in Wyatt 1941:112). Large groups such as this would have collected from a number of neighbouring 'tribes' and the fact that Goulburn was the scene of the gathering suggests that it may have been centrally located between these tribes. However, early commentators often confused hordes or clan divisions, which were, in fact, more relevant to everyday life, with broad tribal groupings. Early ethnographers tended to describe any large groups of Aborigines as 'tribes'.

It is probable that tribal boundaries, clan estates and band ranges were fluid, varying over time. Consequently, tribal boundaries as delineated today must be regarded as approximations only, and relative to the period of, or immediately before, European contact.

Tribal boundaries are based largely on linguistic evidence. It has been observed that the word lists recorded from both the Ngun(n)awal and Gandangara languages were virtually identical (Eades 1976:6). 'This may indicate that the tribal division was inaccurately recorded by Mathews (1902, 1904, 1908), or that the Aborigines to the north and south of Goulburn were linguistically related and had close social, and maternal kinship ties' (Koettig & Lance 1986:13).

The study area at Marulan was probably located within the boundaries the Gandangara tribe. However taking into consideration the fluid nature of tribal boundaries, the area may well have been within Ngun(n)awal territory, or within a sub-set of either of these 'tribes'. The area today is located within the boundaries of the Pejar Local Aboriginal Land Council.

Estimates of the pre-European size of the Aboriginal population in the Marulan/Goulburn region cannot be confidently based on the inadequate ethno-historical sources for the area. By extrapolating Radcliffe-Brown's (1930:696) population estimate for the whole of Australia, and Tindale's (1974) tribe numbers, Flood estimated that the population density for the Southern Tablelands was about 1:36 km^2. She admits, however, that 'It is of course impossible to estimate the population of any one particular area from this crude index of population density for the tribal population as a whole, but such an index can be useful in making comparisons with other tribal territories containing similarly unequal resource zones' (Flood 1980:43).

During a visit to the Goulburn area in 1836, James Backhouse recorded an Aboriginal woman eating 'sow-thistle'. This is believed to be a variety of the *Asateraceae* family (also including the yam daisy) (Koettig and Lance 1986). Other plant resources local to the area included flowers, nectar and fruits from edible plants, such as *Melaleuca, Grevillia, Hakea and Banksia*.

The various environments found throughout the study area would have provided habitat for a range of mammal, bird, reptile and aquatic species. The open grassland would have been habitat for kangaroos, while the sheltered forest would have been home to koalas, rock wallabies, bandicoots, as well as birds, such as cockatoos, falcons and owls. Along the waterways there would have been frogs and platypuses, and in the waters there would have been numerous fish species, such as perch, eels and galaxias.

Bennet observed Aborigines roasting echidnas and hunting platypus on the Wollondilly River, as well as individuals eating Banksia nectar (MacDonald and Garling 1998). Eels, freshwater mussels and insects would also have added to the large variety of food resources available to the inhabitants of the area (Paton 1990). Possum, kangaroo and wallaby as well as fish and birds have also been recorded in observations of the traditional Aboriginal diet in the study area (Flood 1980).

In addition to being a food resource, plants and animals were also used for tool manufacture and also provided a significant contribution to the social and ceremonial aspects of Aboriginal life. For example, *Xanthorrhoea* sp. (grass tree) is known to have been used for spear shafts and resin. Along with Kurrajong trees, grass trees were also utilised for their bark fibres to manufacture items, such as

string bags and fishing lines. Tree bark would also have been used for coolamons (carrying containers) and to construct shelters. Animal sinews, teeth and bones were used to manufacture tools, decorations and ornaments, and fur was used for cloaks.

5.2 Regional Overview

The Marulan gas pipeline study area is located within the Southern Tablelands of NSW. The topography of the Tablelands is characterised by low undulating terrain and rolling hills. Aboriginal archaeological studies have been carried out in this region since the late 1970s. Broad scale regional studies and research include Witter's work on site prediction in Australia (1980) and Flood's early synthesis of the archaeology of the highlands of southeastern New South Wales, which included the Goulburn district (1980). Koettig and Lance produced an *Aboriginal Resources Planning Study* for the City of Goulburn in 1986.

The majority of archaeological studies in the Southern Tablelands area have, however, been small-scale surveys of areas that were under consideration for some form of development. Archaeological surveys conducted in the vicinity of Marulan since 1990 include:

- Navin (1990) surveyed a 100 ha proposed hard rock quarry site and its surrounding environs located west of the Hume Highway and 2.5 km southwest of Marulan. Two artefact scatters and three isolated finds were located in the course of the survey. The sites were located on the lower slopes of a low spurline knoll and within 20 m of a shallow drainage channel and on a low spurline. Raw materials included alluvial pebbles, quartz, chert/chalcedony and volcanics;

- Brayshaw and Dallas (1993v.1) conducted an archaeological investigation of the Mount Piper – Marulan 500 kV transmission line. That report consolidated all prior investigations for the transmission line. Twenty-six new Aboriginal sites were recorded during the study, one of which was a shelter site (near Mount Piper) and the others were all open camp sites. Sandstone scarps and prominent ridgelines were considered to have the highest sensitivity for archaeological sites; creek and river flats and adjacent high ridgetops, the Wollondilly River flats and adjacent hillslopes were identified as having high sensitivity; and gently undulating land, containing creeks and adjacent ridgelines that extend between Bannaby and Marulan were identified as having moderate sensitivity for archaeological sites;

- Brayshaw and Dallas (1993v.2) undertook test excavations of seven archaeological sites that they identified for the Mount Piper – Marulan 500 kV transmission line. At one of those sites, Arthursleigh (Site No. 52-4-0085), they recovered nine artefacts, which were located at a depth between 5 and 20 cm in a gravelly soil mix that appeared to be slope wash.

- Johnston and Huys (AASC 1995) surveyed a proposed quarry expansion area near Marulan, locating five artefact scatters and one isolated find in the course of their survey.

- Officer and Navin (1996) surveyed approximately 22 ha of undulating low gradient landscape comprising broad ridges and slopes, saddles and low spurs located adjacent to the Hume Highway south of Marulan. Three Aboriginal sites and three isolated finds were located in the course of the survey of the area. The sites comprised low density artefact scatters containing artefacts made from raw materials typical to the Southern Tablelands, that is, silcrete, quartz and chert.

- In 1997, Elf Farm Supplies Pty Ltd and Mittagong Mushrooms Pty Ltd proposed to construct a mushroom substrate production facility and associated access road at Winfarthing Road. An archaeological assessment of the development area, including the access route, was conducted by Navin Officer in 1997 (Dearling for Navin Officer 1997). The study area consisted of approximately 16 ha of low gradient landscape comprising broad ridges and slopes, saddles and spurs. One high density Aboriginal open artefact scatter, two low density Aboriginal open artefact scatters and three isolated finds were recorded in the course of the field survey.

- In 2004 Dibden undertook an archaeological assessment of Greenwich Park, a subdivision at Towrang, approximately five kilometres west of the current study area. Nineteen Aboriginal sites were recorded during Stage I of the survey. Those sites comprised a total of 86 stone artefacts, all of which were found on spur crests, spur slopes or drainage depressions. Silcrete was the most common material type (65%), and other material types included quartz (15%), quartzite, chert and volcanics. Twenty-nine Aboriginal sites were identified during Stage 2 of the survey. Similar to Stage 1 findings, the most common artefact material was silcrete (49%), quartz comprised 32% and the remainder was made up of chert, quartzite and volcanics (Dibden 2004).

- In 2005, Umwelt Environmental Consultants conducted an archaeological assessment of a proposed quarry at Marulan. A total of 52 previously unrecorded sites were located during the survey, 29 of which were artefact scatters; 12 were isolated finds; seven were scarred trees and two were stone arrangements. The artefact scatters and isolated finds recorded during the survey were located on exposed creek lines and on slopes and crests. None of the sites was assessed as likely to have subsurface artefacts in an undisturbed context.

- In 2006, CPC Land Development Consultants Pty Ltd proposed to subdivide an area of approximately 650 ha east of Winfarthing Road, northwest of Marulan on the NSW Southern Tablelands, for the purpose of developing nineteen rural residential housing blocks. A cultural heritage assessment of the area by Navin Officer Heritage Consultants (2006) identified ten Aboriginal sites. They comprised six previously identified sites and new recordings of three artefact scatters and one isolated find.

5.3 Previous Research in the Marulan Gas Pipeline Study Area

A search of the AHIMS database indicated that no Aboriginal sites have been previously recorded in the vicinity Marulan Gas Pipeline study area.

In April 2008, Biosis Research conducted a cultural heritage assessment of the site proposed for the development of the two gas turbine facilities and associated infrastructure, which forms part of the northern section of the current study area. No Aboriginal sites had been previously recorded within that area. Ten Aboriginal archaeological sites (stone artefact scatters and isolated finds) were recorded during the field survey of that area. A number of landforms within that proposed development area were also identified as having potential to contain further Aboriginal archaeological sites.

The report documenting the results of that study recommended that:

- A subsurface investigation be undertaken at the site of the facilities footprint, and within areas of the proposed electricity transmission line with archaeological potential;

- All attempts should be made to avoid significant Aboriginal archaeological sites and, if impact to those sites is unavoidable then a Cultural Heritage Management Plan be developed and implemented for specific sites and for the general Marulan site; and

- The southern section of the proposed gas pipeline alignment between the TransGrid Switchyard and the Moomba to Sydney Gas Main should be surveyed in detail to identify cultural values. Known areas of archaeological potential along this proposed pipeline should be subject to a detailed subsurface investigation program. (This recommendation is the subject of this current study).

One site (BH1) identified in the Biosis Research investigation (2008) is located in the current study area. This site is described in the 'results' section of this report (below).

5.4 Predictive Aboriginal Archaeology Statement

An assessment of the size, context and location of Aboriginal sites in the Goulburn area by Koettig and Lance (1986) has resulted in a model of site patterning for the region.

On present evidence it appears that large sites are found on alluvial flats along major watercourses. These sites probably represent focal points of Aboriginal activity and are large, dense, and in close proximity to permanent water sources.

Smaller sites, which comprise the major portion of the sites identified in the region, are found on undulating hills. There appears to be a decrease in the size and frequency of sites the further the distance from water. Sites also become fewer in number where ground is steeply sloping, such as on hillsides and ridge sides.

- *Open Artefact Scatters* may occur almost anywhere that Aborigines have travelled and may be associated with hunting and gathering activities, domestic camps, or the manufacture and maintenance of stone tools. These sites are sometimes referred to as 'open campsites'.

  Open artefact scatters are the most common site type found in the Marulan region and have been recorded in a number of topographic contexts. These include ridges and hills, and the lower slopes of knolls and spurs. The sites are often associated with watercourses.

- *Isolated Finds* occur anywhere in the landscape and may represent the remnants of dispersed artefact scatters, or random loss or discard of artefacts.

- *Scarred Trees* result when bark has been removed from a tree for some particular purpose such as for the manufacture of a shield, canoe or coolamon. Scars may also be the result of making footholds in a tree to collect foodstuffs or to facilitate the removal of bark. These sites may occur almost anywhere, and may potentially survive wherever old growth trees remain

within the landscape. The identification of scars as Aboriginal in origin can often remain problematic.

- *Carved Trees* are a much rarer site type than scarred trees, and are sometimes found in association with ceremonial or burial grounds. They characteristically include carved figurative and non-figurative motifs on the exposed wood created within a scar produced by bark removal.

  Etheridge (1918) recorded a number of carved trees which had been located in the Goulburn district. One tree was located on the site of the now abandoned Yarra Railway Station, approx. 6 km southeast of Goulburn. Two others were at Mount Wayo, 16 km north of Goulburn and were located near an Aboriginal grave (Koettig & Lance 1986:20).

- *Quarry (Extraction)* sites are typically exposures of a geological raw material where evidence for human extraction and or preliminary processing has survived. Typically these involve the extraction of siliceous rock types for the manufacture of artefacts or the removal of ochre. To date only one Aboriginal quarry site, a chert quarry, has been located in the Goulburn district (Paton 1989).

- *Stone Arrangements* are defined as any arrangement of placed rocks that can be reasonably assigned to Aboriginal activity. Typically these include rock cairns and alignments of single or grouped stones.

- *Bora/Bunan Grounds (Earth Circles)* functioned as a prepared stage for initiation and other ceremonial activities which held a key role in the teaching and maintenance of the complex social and religious framework within Aboriginal society. Bora grounds consist mostly of one or more circular rings defined by mounded earth, sand and/or rocks. There may also be an associated depression within the ring. A pathway generally connected two rings and was often many hundreds of metres long. Typically, one circle was associated with more public ceremonies and the second with restricted and sacred information.

  Several bora grounds are known to have existed in the Goulburn area. Macalister (1904:85) notes that a bora ground site was located on a small hill near the existing Kenmore Hospital. Others were located at Eastgrove and in the vicinity of the Goulburn railway station (Koettig & Lance 1986:20).

  Bora grounds can only be recognised or located either through detailed oral accounts or identifying surviving ground surface features. Unfortunately, most physical evidence of bora grounds is fragile and easily destroyed by minimal agricultural activities.

- *Burials* are generally found in soft sediments such as sand or alluvial silts, but may also occur in middens, rockshelters or hollow trees. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

  Historical records for the Goulburn area indicate that the main methods employed for disposal of the dead in the district were ‘placement in hollow trees, interrment (sic) in soft soil or sand with a mound built over the grave, or burial in rocky ground on hill tops' (Koettig & Lance 1986:20).

  It is unlikely that burials on rocky hilltops would have survived to the present day. The shallow soils typical of hilltops would not allow for deep burial, consequently the likelihood of disturbance from soil erosion, animal activities and land clearance would be high. These factors would adversely affect burials even if protective stone cairns were placed over them.

6. HISTORICAL CONTEXT

6.1 Historical Overview

Europeans first accessed the Goulburn area in the late 1790s when a party of four men made two journeys south of Sydney under orders from Governor Hunter. The explorers included an ex convict named James Wilson, Henry Hacking (quartermaster from the 'Sirius'), a man named Collins and a 'lad' known as Barracks (Wyatt 1941:24). On the second journey the group reached Mount Towrang from which they could clearly see the area in which Goulburn is now located.

Further official exploration of the area did not resume until after 1814 when Hamilton Hume, John Oxley and James Meehan undertook a number of expeditions along various routes to as far south as Lake Bathurst. Governor Macquarie and John Oxley traversed the current site of Goulburn in 1820. Macquarie subsequently named the area 'Goulburn Plains' (Wyatt 1941:26).

Rapid European settlement of the country took place shortly thereafter with agricultural development being actively encouraged by the government through the issuing of grants. Numerous large properties were established in and around the Goulburn Plains and by the early 1820s the district was being used to grow wheat, sheep and cattle for the Sydney market (Bayley 1954:17).

By 1824, several houses had been built a short distance to the northeast of the current Marulan town site and plans had been drawn up for the area to be subdivided as 'Veteran Allotments' for the settling of discharged soldiers (Bayley 1954:16, Wyatt 1941:35).

The original South Road which passed from Sutton Forest to Barbers Creek, and then to Bungonia had by the 1930s been replaced by a line of road from Sutton Forest to Marulan, then on to Goulburn. The township of Marulan, intended as a way station where the south road forked to Bungonia and Goulburn, was drawn up by Mitchell, and surveyed by Hoddle in 1834. The township was officially gazetted on 11 March 1835.

This early Marulan settlement was known as 'Strathallen', a garrison town drawing largely upon the labour of convicts quartered at Towrang. Until the cessation of transportation to New South Wales in 1840, ironed gangs were used in the construction of local infrastructure including the Main Southern Road (Wyatt 1941:63).

In 1841, Goulburn had a population of 655 people and was composed of 90 houses of brick or wood including a number of mansions and a hospital (Wyatt 1941:46-47). This population had almost doubled by 1845 and by the late 1840s a steam-powered flourmill and brewery were operating in the town (Bayley 1954:28, Wyatt 1941:49). By this stage Goulburn had become a centre for the production of a range of agricultural crops including wheat, oats, barley, maize and potatoes. Varieties of fruit trees and vines were also well established in the area (Bayley 1954:64). Wheat production peaked in the 1860s, aided by the access to external markets provided by the opening of the Sydney-Goulburn Railway Line in 1869 (Wyatt 1941:87). Despite this, grain crops gradually receded in favour of wool in the late 1800s and had almost disappeared by the early part of the twentieth century.

The first establishment at Marulan appears to have been the Woolpack Inn, and a post office (1836). By 1845, there were another two inns, one store, and several bark huts. A chapel had been added by 1847, and in that year the police station (originally at Inverary, then Bungonia) was moved to Marulan, along with a Court of Petty Sessions. In 1850, there was also a schoolhouse, a blacksmith and wheelwright. St Patrick's Catholic Church was built in 1863 and later a Church of England in 1866.

In 1868 the great southern railway reached Marulan. The station, however, (originally known as Mooroowoolen) with its goods shed and stockyard was built 2.5 km east of the existing town.

In 1867 land situated between the rail station and the highway was subdivided by an enterprising landowner named Morrice. He named the settlement Mooroowoolen. It was about 2.5 miles from of Old Marulan. Over the next 10 years the town slowly moved to Mooroowoolen, which became known

as Marulan. The old township by contrast gradually fell into a state of ruin. The post office moved in 1878. On 1 September 1878, the new town was officially given the name of the original Marulan.

In 1928, the main road was proclaimed a state highway (named after explorer Hamilton Hume) and it came under state control. In the 1930s the Marulan section was concreted from Mount Otway to Marulan South (the present freeway follows this route).

The study area is located approximately 12 km northeast of Marulan. The pipeline routes traverse or pass adjacent to a patchwork of original land portions ranging in size from 30 to just over 200 acres (refer Figure 5.1). The earliest is a large land grant of 200 acres to Robert Mackay Campbell, which is situated adjacent to Uringalla Creek at the southern end of the study area. This grant is shown in Baker's Australian County Atlas which dates to the 1840s (Baker 1843-1846). Other early portions are situated at the northern end of the study area, on the banks of the Wollondilly River (portions 31 and 98) Based on their size (30 and 48 acres), these alienations probably date to the latter half of the nineteenth century following the Robertson Land Acts. Portion 98 formed part of Thomas Holt's estate which was centred on 'Mount Pleasant' 3 km further north on a meander bend of the river. The other river portion in the study area (portion 30), was originally owned by Abraham Moses, who also owned river frontage further upstream.

The land portions between these two drainage lines were less appealing due to their more elevated and rocky ground and were selected progressively later into the late nineteenth and early decades of the twentieth century. Freehold to most of these lands was eventually gained by members of the Sieler family who had substantial holdings to the northeast. The Sielers advantageously took over failed conditional purchases by previous selectors including Francis J. de Avilla (adjacent to Campbell's grant), and Ludwig Wagerle (south of the river portions).

An exception to this pattern was portion 42 (situated in the middle of the study area), an area of 50 acres selected by Patrick Connell. This land formed part of a 210 acre estate of original land selections centred on portion 144, an 80 acre area of open valley country 1 km to the northeast.

Today, the study area remains a mixture of large and small private land holdings, most of which are operated as small farms.

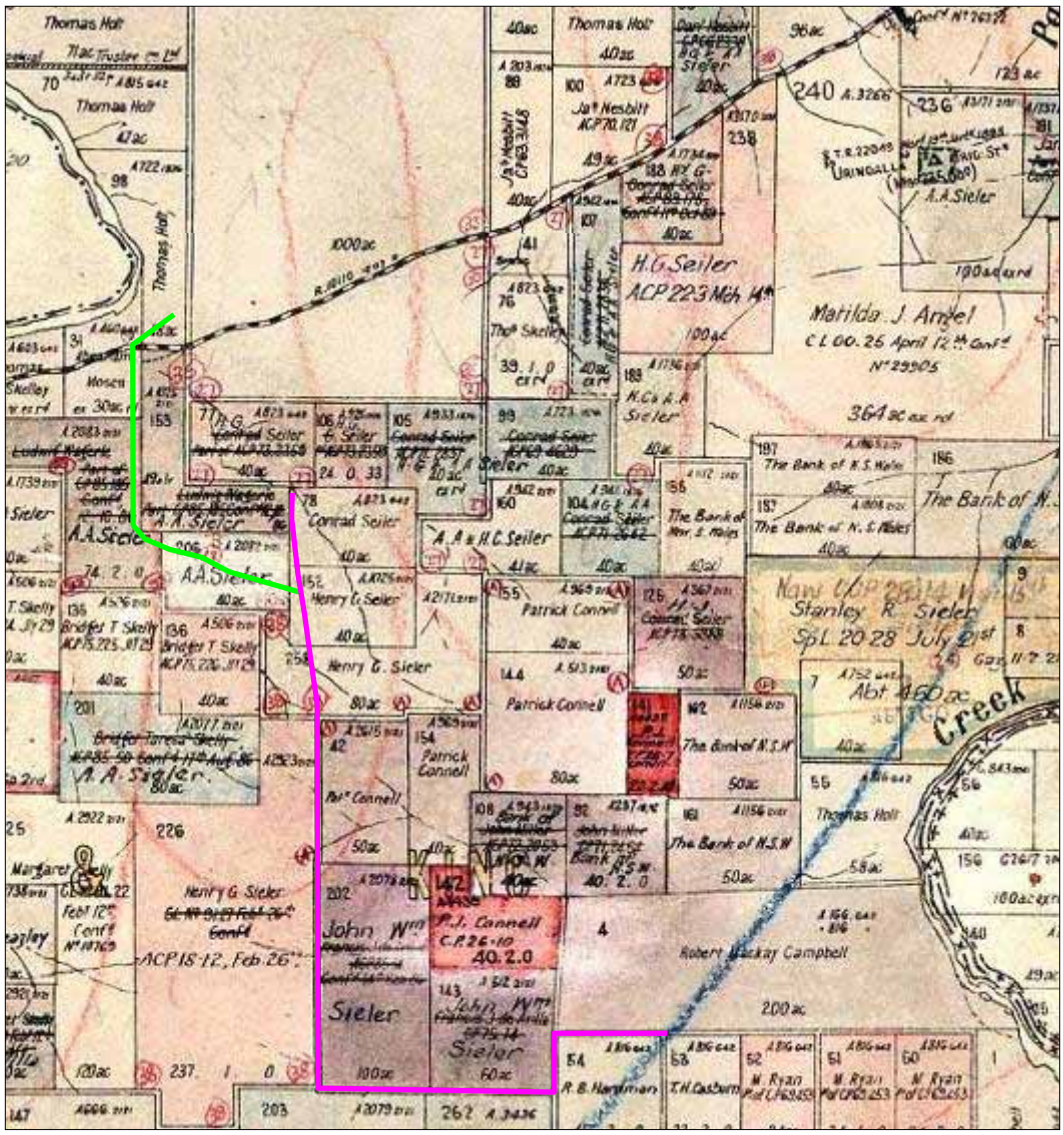


Figure 5.1 Extract from Uringalla Parish Map dated 2 April 1913 (edition 4), showing approximate location of proposed alternate routes (pink = alternate 1 and green = alternate 2) pipeline overlain on late nineteenth/early twentieth century land portions in the study area (Dept. of Lands. Map Ref. 10195501).

6.2 Previous Cultural Heritage Studies

In April 2008, Biosis Research conducted a cultural heritage assessment of the proposed site for the development of two gas turbine facilities and associated infrastructure, situated at the northern end of the current study area. No historical sites had been previously recorded within that area and no sites were recorded during the Biosis Research survey.

6.3 Heritage Listed Items

There are no heritage listed historic items within the current Marulan gas pipeline study area.

6.4 Predictive Historical Archaeology Statement

Unrecorded historic sites and features of heritage significance that may occur within the study area include:

- Nineteenth-century structures, such as farm dwellings, outbuildings and selector's huts; which may survive as standing buildings, ruins or archaeological deposits; and are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes;

- Traces of agricultural processing or extractive sites, such as dairies, factories, and quarries, which may be found throughout agricultural lands;

- Occupation sites (such as camps, and inns) associated with early roads, and which will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points;

- Archaeological sites, such as the occupation remains of former dwellings, including homesteads, houses and huts, which will be distributed in close association with land settlement patterns, and correlated with favourable agricultural lands, trading nodes and transport corridors;

- Transport and access routes, such as bridle paths and stock routes of varying forms and ages, which may survive as abandoned remnants adjacent to modern transport routes, or as alignments now followed by more modern or upgraded road and track infrastructure;

- Old fence lines, such as post and rail fencing, which may occur along road easement boundaries and farmlands; and

- Other indications of field systems, such as drainage channels and ridge and furrow ploughlands, which are likely to survive in low lying agricultural ground, especially in areas that are now used for grazing, rather than cropping.

7. RESULTS

7.1 Summary

One Aboriginal site, comprising an isolated artefact (BH1) was previously identified in the study area by Biosis Research in 2008. This find was not re-found during the current investigation

Four new heritage recordings (one Aboriginal and three historical) were made within the study area during the current investigation. These are:

- a low density surface scatter of Aboriginal stone artefacts with an associated area of potential archaeological deposit (MGPS4),
- a remnant two rail fence line consisting of isolated standing and fallen wooden posts (MGPEH1),
- a stone alignment marking a cadastral boundary (MGPEH2), and
- a collection of four items of disused forestry and farm machinery (MGPEH3).

In addition, the location of a modern chapel building labelled “The Little Bush Chapel of Burnt Hills” is noted.

The locations of these recordings are shown on Figure 7.1.

7.2 Aboriginal Recordings

7.2.1 Previous Recordings

BH1

Map grid reference: 229394.6165366 (GDA)

This recording consists of an isolated artefact situated at the base of an existing overhead power line tower. The site comprises a single quartz artefact on the crest of a low and broad spurline, situated 200 m southeast of the Wollondilly River.

This find could not be re-found during the current investigation.

7.2.2 Current Investigation Recordings

Marulan Gas Pipeline Site 4 (MGPS4)

Map grid reference: 229287.6165244 (approximate midpoint) (GDA)

This recording consist of a low density surface scatter of three stone artefacts and an associated area of potential archaeological deposit (Plates 7.1 to 7.4). All of the artefacts are exposed in or near gully embankments which are approximately 1 m high and situated in valley floor deposits along an unnamed tributary creek. This section of the creek floor is approximately 50 south of the Marulan – Canyonleigh Road, and 200 m upstream of its confluence with the Wollondilly River.

One artefact (no.1) was exposed apparently *in situ*, 30 cm below the top of the bank section (Plates 7.3 and 7.4). The surface artefacts occur within an area of 25 x 15 m. The formation of multiple gullies on either side of the floor of this valley has caused the majority of the floor deposit to be bounded by gully scarps and to have the appearance of an elevated island. This remaining block of sediment is recorded as a potential archaeological deposit (PAD). The basal slopes on either side of the gullies may also include deposits containing artefacts and the PAD should be considered to extend at least 20 m upslope from the gullies. The total area of the PAD is around 50 x 75 m.

The incidence of ground exposures along the gully scarps was around 20% and the visibility within the exposures around 70%. Given the low number of visible artefacts within this degree of visibility, it

is concluded that the areal incidence of artefacts within the remaining block of valley floor deposit is also likely to be low.

The gully sections reveal a soil profile with a brown sandy gravelly loam which grades into a gravel rich clay at around 40 cm in depth. There is moderate potential for the site to be larger and high potential to contain subsurface Aboriginal objects. The potential for *in situ* archaeological material is considered to be moderate. The PAD is assessed in general as having moderate archaeological potential.

Artefacts descriptions:

Map grid reference: 229280.6165237 (GDA)

1. yellow brown fine grained quartzite flake, focal platform distal end consists of mottled cortex for 30% of margin; 57 x 40 x 10 mm

Map grid reference: 229279.6065247 (GDA)

2. milky quartz flake, broad platform, 24 x 11 x 4 mm

Map grid reference: 229289.6165261 (GDA)

3. light brown veined milky quartz flake, 27 x 21 x 8 mm

Plate 7.1 General view of MGPS4, looking southeast (upstream). Note remnant valley floor deposit bordered by gullies in middle distance.

Plate 7.2 General view of MGPS4 (middle distance), looking northwest (downstream).

Plate 7.3 View of gully scarp in which artefact no.1 is exposed, looking southeast.

Plate 7.4 Detail of artefact no.1 (arrowed) exposed *in situ* within bank.

7.3 Historical Recordings

Marulan Gas Pipeline Historical Site 1 (MGPHS1)

Map grid reference: 229765.6163163 to 229811.6163524 (GDA)

This recording comprises a 400 m aligned series of remnant two rail wooden fence posts. The alignment corresponds with the western boundary of portion 42 and the eastern boundary of a crown road reserve. The poles are aligned along a magnetic bearing of 178 degrees. The posts consist of roughly split poles, and all display (where surviving), two rectangular mortice holes for rail attachment (approximately 6 x 16 cm), and two drilled holes for wire located between ground level and the lower mortice hole. Many poles have not survived and the alignment is discontinuous. The poles are highly variable in condition, with all showing varying degrees of burning, and many in very poor condition. A few examples survive in a fallen condition.

Plate 7.5 General view of two remnant two rail fence posts (recording MGPH1), looking north.

Plate 7.6 An example of a fallen fence post (MGPH1), note enlarged (by burning) drill holes for wires below mortice holes

Plate 7.7 Examples of standing fence posts (MGPH1).

Marulan Gas Pipeline Historical Site 2 (MGPHS2)

Map grid reference: 229811.6163524 (GDA)

This recording comprises a linear arrangement of 12 (visible) single stones measuring 4 m in length, a variable width of 30-50 cm, and a maximum height of 20 cm. The arrangement is aligned on a magnetic bearing of 177º. The alignment corresponds with a fallen remnant fence posts belonging to recording MGPHS1.

Based on its location, alignment and correspondence with MGPHS1, this arrangement is almost certainly a cadastral boundary marker for the boundary between Portion 42 and the adjacent crown road reserve.

Plate 7.8 General view of stone arrangement (MGPHS2)

Plate 7.9 Detail view of stone arrangement (MGPHS2) looking north

Plate 7.10 Fallen two rail fence post (part of MGPHS1), in association with stone arrangement (MGPHS2)

Marulan Gas Pipeline Historical Site 3 (MGPHS3)

Map grid reference: 229679.6164317 (GDA)

This recording comprises a collection of four items of disused forestry and/or farm machinery. The collection appears to have been recently placed and is currently situated on the northern side of a ridgecrest vehicle track. The items consist of:

- a machine towed four shear plough (Plate 7.12);
- a machine towed 'Britstand' ground scraper (Identificatory marks include 'Britstand Sydney Australia, British Standard Machinery Co. Ltd, Mascot Australia, Model 4RS, Serial 9Rs.745') (plates 7.13 and 14);
- an all metal construction hand trolly with full metal wheels (Plate 7.15); and
- a machine towed two wheeled platform (probably made of composite machinery parts) of unknown function (the two metal wheels, suitable for running on light rail tracks have marks 'Dangar Gedye & Co Sydney') (Plate 7.16).

Plate 7.11 General view of recording MGPHS3, a collection of disused movable farm and/or forestry machinery looking northwest.

Plate 7.12 A four shear plough (part of MGPHS3)

Plate 7.13 A ground scraper (part of MGPHS3)

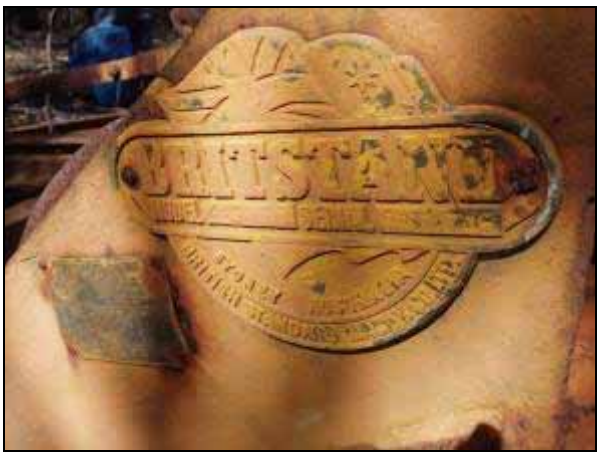


Plate 7.14 Brand device and details on scoop

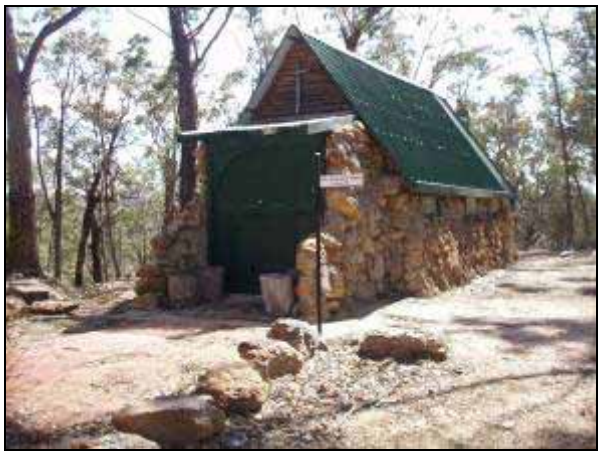
Plate 7.15 Hand trolly (part of MGPHS3)

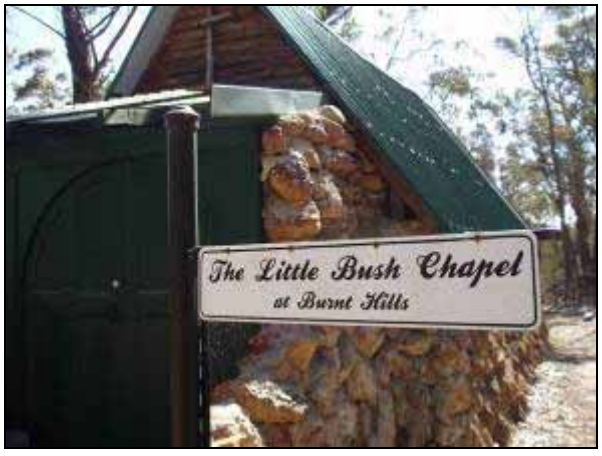
Plate 7.16 Machinery with an unknown function (part of MGPHS3)

'Little Bush Chapel of Burnt Hills'

Map grid reference: 229544.6164342 (GDA)

The location of this relatively recently constructed, single room, religious chapel is noted. This structure is not considered to be an historical site, but has been included in this report for the information of the proponent.





Plates 7.17 – 7.20 General views of 'The Little Bush Chapel at Burnt Hills'

This site is "The Little Bush Chapel" of Burnt Hills.

7.4 Inventory of Recording Locations

Recording Type	Recording Code	GDA Reference
Aboriginal - Isolated find	BH1	229394.6165366
Aboriginal - Artefact scatter and PAD	MGPS4	229287.6165244
Historical - Remnant wooden two rail fenceline	MGPHS1	229765.6163163 to 229811.6163524
Historical - Stone arrangement	MGPHS2	229811.6163524
Historical - Collection of machinery	MGPHS3	229679.6164317
Chapel		229544.6164342

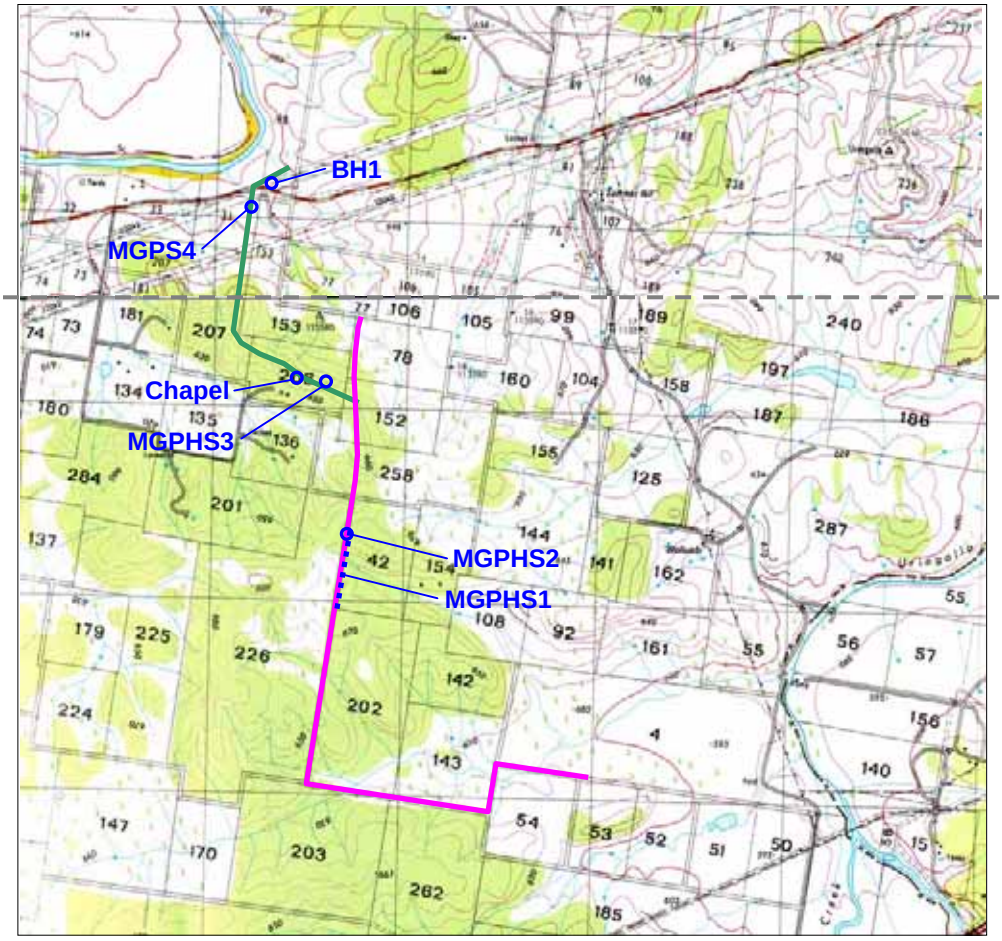


Figure 7.1 Location of cultural heritage recordings relative to the two alternative Marulan Gas Pipeline routes (green and pink) (extracts from 1:25,000 topo maps of Canyonleigh 8928-IV-N (top) & Wingello 8928-4-S (bottom), 2nd Eds. [AGD map grids])

7.5 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels. Two variables of ground surface visibility were estimated during the survey:

A percentage estimate of the total area of ground inspected which contained useable exposures of bare ground; and

A percentage estimate of the average levels of ground surface visibility within those exposures. This is a net estimate and accounts for all impacting visual and physical variables including the archaeological potential of the sediment or rock exposed.

The obtrusiveness of different site types is also an important factor in assessing the impact of visibility levels. Artefacts made from locally occurring rock such as quartz may be more difficult to detect under usual field survey conditions than rock types that are foreign to the area. The impact of natural gravels on artefact detection was taken into account in the visibility variables estimates outlined above. Across the basal and higher slopes of study area, natural gravels derived from the bedrock conglomerates created considerable visual interference for surveyors and reduced the ability to detect Aboriginal artefacts. This is because the materials typically used in artefact manufacture are also predominant within the alluvial gravels derived from the bedrock.

The natural incidence of sandstone platforms suitable for grinding grooves or engraving, together with the incidence of old growth trees, are also important considerations in identifying both survey effectiveness and site location patterns outside of environmentally determined factors.

Table 7.1 summarises estimates for the degree to which separate landforms within the study area were examined and also indicates the exposure incidence and average ground visibility present in each case. A total of 78% of the ground area in the study area was inspected during the survey.

A graphic approximation of the surface survey coverage achieved within the study area is shown in Figure 7.2.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the effective survey coverage (ESC) was 12.6% of the total survey area. The ESC attempts to provide an estimate of the proportion of the total study area that provided a net 100% level of ground surface visibility to archaeological surveyors.

The ESC calculation is defined and required by the DECC and stated to be of use in assessing and cross comparing the adequacy of archaeological surface surveys. The actual utility of the ESC calculation however is challenged by many archaeologists. The limitations of the ESC calculation are emphasised by differences in the subjective assessment of exposure and visibility levels, variations in how survey units are defined and measured, and differences in how and which variables are estimated and combined. In reality, ESC results tend only to be meaningful when compared across surveys conducted by the same surveyors and ESC measurers.

Table 7.1: Survey Coverage Data

Survey division	Survey unit	Landform	Survey mode	Main exposure types	Estimated Survey Unit area (ha)	Proportion of unit surveyed %	Area of unit surveyed (ha)	Exposure incidence %	Average exposure visibility %	Net effective exposure (ha)	Effective survey coverage of survey unit %	Aboriginal Archaeological recordings
A	1	open valley floor	Foot	vehicle tracks	7.6	80	6.1	25	60	0.91	12.0	
	2	ridge and spur slopes	Foot	vehicle tracks, animal digging and tracks, erosion scalds and gullying	9.2	60	5.5	15	40	0.33	3.6	
	3	ridge and spur crests	Foot	vehicle tracks, animal digging and tracks,	8.1	90	7.3	40	70	2.04	25.2	
	4	drainage lines	Foot	creek banks and gully scarps	2.9	95	2.7	20	40	0.21	7.2	1
Total					*27.8*		*21.6*			*3.49*	*12.6*	

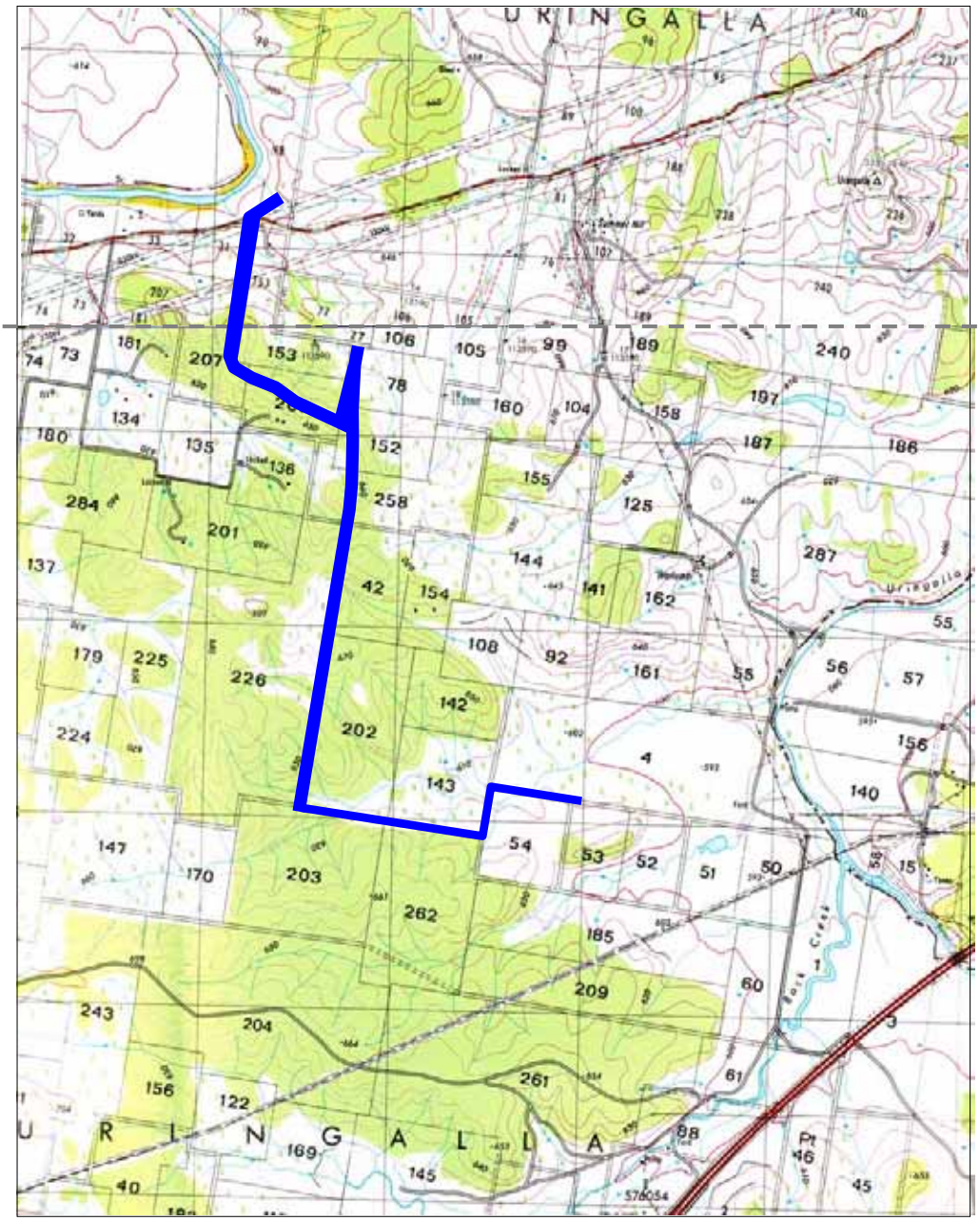


Figure 7.2 A graphic approximation of the survey area (blue area) (extracts from 1:25,000 topo maps of Canyonleigh 8928-IV-N (top) & Wingello 8928-4-S (bottom), 2nd Eds.)

8. SIGNIFICANCE ASSESSMENT

8.1 Aboriginal Heritage

8.1.1 Assessment Criteria

The Burra Charter of Australia defines cultural significance as 'aesthetic, historical, scientific or social value for past, present and future generations' (Aust. ICOMOS 1987). The assessment of the cultural significance of a place is based on this definition but often varies in the precise criteria used according to the analytical discipline and the nature of the site, object or place.

In general, Aboriginal archaeological sites are assessed using five potential categories of significance:

- Significance to contemporary Aboriginal people;
- Scientific or archaeological significance;
- Aesthetic value;
- Representativeness; and
- Value as an educational and/or recreational resource.

Many sites will be significant according to several categories and the exact criteria used will vary according to the nature and purpose of the evaluation. Cultural significance is a relative value based on variable references within social and scientific practice. The cultural significance of a place is therefore not a fixed assessment and may vary with changes in knowledge and social perceptions.

Aboriginal significance can be defined as the cultural values of a place held by and manifest within the local and wider contemporary Aboriginal community.

Scientific significance can be defined as the present and future research potential of the artefactual material occurring within a place or site. This is also known as archaeological significance.

There are two major criteria used in assessing scientific significance:

1. The potential of a place to provide information which is of value in scientific analysis and the resolution of potential research questions. Sites may fall into this category because they: contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a constituent of a larger significant structure such as a site complex.

2. The representativeness of a place. Representativeness is a measure of the degree to which a place is characteristic of other places of its type, content, context or location. Under this criteria a place may be significant because it is very rare or because it provides a characteristic example or reference.

The value of an Aboriginal place as an educational resource is dependent on: the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

The cultural significance of a place can be usefully classified according to a comparative scale which combines a relative value with a geographic context. In this way a site can be of low, moderate or high significance within a local, regional or national context. This system provides a means of

comparison, between and across places. However it does not necessarily imply that a place with a limited sphere of significance is of lesser value than one of greater reference.

The following assessments are made with full reference to the scientific, aesthetic, representative and educational criteria outlined above. Reference to Aboriginal cultural values has also been made where these values have been communicated to the consultants. It should be noted that Aboriginal cultural significance can only be determined by the Aboriginal community, and that confirmation of this significance component is dependent on written submissions by the appropriate representative organisations.

8.1.2 The Marulan Gas Pipeline Study Area

Marulan Gas Pipeline Site 4 (MGPS4)

This recording consists of a low density surface scatter of three Aboriginal stone artefacts associated with an area of potential archaeological deposit (PAD) with moderate archaeological potential. The visible artefacts are of locally common types and in typical raw materials. There is a moderate assessed potential for archaeological material to be present subsurface and *in situ,* however the areal incidence of this material is likely to low.

Based on the limited surface evidence and the assessed archaeological potential of the associated potential archaeological deposit, this site is tentatively assessed as having low to moderate archaeological significance within a local context. This assessment is subject to confirmation following the conduct of test archaeological excavations within the associated deposits.

The two Aboriginal community representatives who participated in the field survey indicated that the Aboriginal cultural values of this site warranted its conservation, where and if feasible.

8.2 European Heritage

8.2.1 Assessment Criteria

The NSW Heritage Office has defined a methodology and set of criteria for the assessment of cultural heritage significance for items and places, where these do not include Aboriginal heritage from the pre-contact period (NSW Heritage Office & DUAP 1996, NSW Heritage Office 2000). The assessments provided in this report follow the Heritage Office methodology.

The following heritage assessment criteria are those set out for Listing on the State Heritage Register. In many cases items will be significant under only one or two criteria. The State Heritage Register was established under Part 3A of the Heritage Act (as amended in 1999) for listing of items of environmental heritage that are of state heritage significance. Environmental heritage means those places, buildings, works, relics, moveable objects, and precincts, of state or local heritage significance (section 4, Heritage Act 1977).

An item will be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the following criteria:

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

Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

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

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

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

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

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
- cultural or natural environments.

(or a class of the local area's

- cultural or natural places; or
- cultural or natural environments.)

An item is not to be excluded from the Register on the ground that items with similar characteristics have already been listed on the Register. Only particularly complex items or places will be significant under all criteria.

In using these criteria it is important to assess the values first, then the local or State context in which they may be significant.

Different components of a place may make a different relative contribution to its heritage value. For example, loss of integrity or condition may diminish significance. In some cases it is constructive to note the relative contribution of an item or its components. Table 8.1 provides a guide to ascribing relative value.

Table 8.1 Guide to ascribing relative heritage value

Grading	Justification	Status
Exceptional	Rare or outstanding item of local or State significance. High degree of intactness Item can be interpreted relatively easily.	Fulfils criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage significance.	Does not fulfil criteria for local or State listing.

8.2.2 The Marulan Gas Pipeline Study Area

Marulan Gas Pipeline Historical Site 1 (MGPHS1)

This recording consists of a remnant wooden 2 rail fence line. It is incomplete, discontinuous and in a poor and remnant condition. The fenceline does not display features which are technologically distinctive or unusual for the local area, and there are no demonstrable historical links with significant persons or events.

This recording is not considered to fulfil criteria for local or State listing.

Marulan Gas Pipeline Historical Site 2 (MGPHS2)

This recording comprises a stone alignment that marks a shared boundary between a freehold portion and a crown road reserve. The alignment has some value as a representative example of its type, but in other respects does not present rare, unusual or interpretive features of note.

This recording is not considered to fulfil criteria for local or State listing.

Marulan Gas Pipeline Historical Site 3 (MGPHS3)

This site comprises a collection of movable disused agricultural and/or forestry machinery. It is likely that these items form part of a deliberate placed and reserved, privately owned collection, and possibly includes locally sourced items of known provenance and history. If the latter possibilities could be confirmed, then these items could be considered to have a degree of local significance under criterion (g), and possibly also criteria (b) and (d) depending on provenance.

This assessment must remain tentative subject to confirmation from further research and liaison with the owner of the items.

9. STATUTORY AND POLICY CONTEXT[1]

9.1 Environmental Planning and Assessment Act 1979

This Act (the EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the *Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act 2005*.

There are four main areas of protection under the Act:

- Planning instruments allow particular uses for land and specify constraints. Part 3 governs the preparation of planning instruments. Both Aboriginal and Historical (Non-Indigenous) cultural heritage values should be assessed when determining land use;

- A separate streamlined and integrated development assessment and approvals regime for major infrastructure and other projects of significance to the State is defined by Part 3A;

- Section 90 lists impacts which must be considered before development approval is granted. Part 4 relates to the development assessment process for local government authorities. Impact to both Aboriginal and Historical (Non-Indigenous) cultural heritage values are included; and

- State Government agencies which act as the determining authority on the environmental impacts of proposed activities must consider a variety of community and cultural factors in their decisions, including Aboriginal and Historical (Non-Indigenous) cultural heritage values. Part 5 relates to activities which do not require consent but still require an environmental evaluation, such as proposals by government authorities.

Part 3A of the EP&A Act

Part 3A of the Act is an amendment which establishes a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, development that was previously classified as State Significant development, and other projects, plans or programs declared by the Minister for Planning.

Part 3A removes the stop-the-clock provisions and the need for single-issue approvals under eight other Acts, including the NP&W Act and the Heritage Act 1977. Environmental planning instruments such as the heritage provisions within REP and LEPs, (other than State environmental planning policies) do not apply to projects approved under Part 3A.

Where warranted the Minister may declare any project subject to Part 3A to be a critical infrastructure project. These projects only require a concept approval in contrast to other Part 3A projects which require project approval. In most circumstances, a concept approval will be obtained to establish the environmental performance requirements and consultation requirements for the implementation of the subsequent stages of the project.

Under the provisions of Part 3A, proponents of major and infrastructure projects must make a project application seeking approval of the Minister. The application is to include a preliminary assessment of the project. Application may be for concept plan approval or full approval. Following input from relevant agencies and council(s), DoP will issue the proponent with requirements for the preparation of an Environmental Assessment and a Statement of Commitments. The Statement of Commitments will include how the project will be managed in an environmentally sustainable manner, and consultation requirements.

[1] The following information is provided as a guide only and is accurate to the best knowledge of Navin Officer Heritage Consultants. Readers are advised that this information is subject to confirmation from qualified legal opinion.

Following submission of an Environmental Assessment and draft Statement of Commitments to DoP, these documents are variously evaluated, reviewed, circulated and exhibited. The proponent may modify the proposal to minimise impacts in response to submissions received during this process. The proponent then provides a Statement of Commitments and, following any project changes, a Preferred Project Report. An assessment report is then drafted by the Director-General and following consultation with relevant agencies, a final report with recommendations for approval conditions or application refusal is submitted to the Minister. The Minister may refuse the project, or approve it with any conditions considered appropriate.

Section 75U of the EP&A Act (as amended) establishes exemptions to the requirement for permits and consents under the *National Parks & Wildlife Act 1974*. to disturb, move, impact or destroy Aboriginal objects, and for an excavation permit under s139 of the NSW *Heritage Act 1977* to disturb subsurface relics. This section states that such permits are not required for an approved project subject to the provisions of Part 3A of the EP&A Act. Section 75U also extends this exemption to include 'any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this Part in connection with an application for approval to carry out the project or of a concept plan for the project' (s75(U)4 EP&A Act 1979 (as amended)).

9.2 Implications for the Marulan Gas Pipeline Development

Aboriginal 'objects' as defined under the *National Parks and Wildlife Act 1974* and European historical 'relics' as defined under the *NSW Heritage Act 1997* have been identified within the Marulan Gas Pipeline study area. However, as construction of the project would be conducted subject to an approval under Part 3A of the *Environmental Planning and Assessment Act 1979,* the statutory provisions within the former acts that require the receipt of permits and or consents prior to impacting relics and Aboriginal objects do not apply.

Not withstanding this, the demonstrated management of cultural heritage values, and the avoidance or mitigation of impact to significant heritage values remains an objective of the Environmental Assessment process defined by the EP&A Act and its administration by the NSW Department of Planning. It is recommended that to this end, the management strategies drafted in this report be adopted by the proponent and included in the *Statement of Commitments* for the project.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 Potential Impact of the Development

Construction of the alternative gas pipeline routes for the Marulan gas turbine facilities project will necessitate disturbance to the ground surface and deposits within the footprint of the proposed easements. This disturbance will result from excavation and backfilling of the pipeline trench, and from vehicle track construction.

Two Aboriginal heritage recordings, BH1 and MGPS4 and three historical recordings, MGPHS1, MGPHS2 and MGPHS3 may potentially be impacted by such works. Recordings MGPHS1and MGPHS2 may be impacted by alternate pipeline route 1. Sites BH1, MGPS4 and MGPHS3 may be impacted by alternative route 2.

If the BH1 isolated find is located in close proximity to an existing transmission line tower, then it is unlikely that this find will be impacted by the works, given the requirement for an adequate construction buffer around such structures. The exact location of this isolated find could not be confirmed during the present investigation.

In order to avoid impact to archaeological site and PAD MGPS4, a deviation of the currently proposed pipeline alternative route 2 would be required. A feasible amendment to the route may be a deflection to the north west, to connect with the Marulan to Canyonleigh road west of the tributary crossing. If avoiding impact to this site is not feasible, then the conduct of an archaeological test excavation would be required within that part of the site and PAD subject to direct impact. This would test the indicative significance assessment made in this report and determine the management requirements of the deposit.

Recording MGPHS3 consists of a collection of movable heritage items which do not need to be maintained in their current location to effectively manage their heritage values. Consequently, impact to these items could be effectively avoided by temporarily or permanently moving them to a new or interim location.

10.2 Recommended Management Strategies

It is recommended that the following strategies be included in the Statement of Commitments for the project:

Aboriginal Heritage

1. Where feasible, disturbance to Aboriginal heritage recordings BH1 and MGPS4 will be avoided. This could be realised by avoiding the area of the existing transmission line tower at BH1, and amending the alignment of alternative route 2 so that the valley floor area of MGPS4 is avoided.

2. If impact to Aboriginal site BH1, cannot be avoided then any surface Aboriginal artefacts within the construction footprint will be recovered and re-positioned in a nearby position away from the area of impact.

3. If impact to Aboriginal site MGPS4 cannot be avoided then an archaeological test excavation program will be conducted within the construction footprint. The objectives of the program will be to determine the nature, extent and integrity of any archaeological deposits present, and to determine management requirements in the context of the pending construction disturbance. Should the testing program determine the presence of significant archaeological deposits, then a further program of salvage excavation may be required. The curation of any recovered Aboriginal objects will be the subject of consultation with the Department of Environment and Climate Change and the Aboriginal stakeholders

Historical (European) Heritage

4. No further cultural heritage management actions are required in relation to historical recordings MGPHS1 and MGPHS2. Unnecessary direct impact to these recordings will be avoided where feasible.

5. If it is anticipated that direct impact will occur to the movable heritage items in recording MGPHS3, then these items will be moved, in consultation with the owners of the items, to a location where there is no potential for construction impact

Report Distribution

6. Three copies of this report should be forwarded to the NSW DECC for their information at the following address:

    Cultural Heritage Officer
    Conservation Planning Unit
    Southern Branch
    PO Box 2115
    QUEANBEYAN NSW 2620

7. One copy of this report should be forwarded to each of the Aboriginal stakeholder groups for their consideration and comment.

    Gundungurra Aboriginal Heritage Association
    PO Box 31
    LAWSON NSW 2783

    Pejar Local Aboriginal Land Council
    80 Combermere St
    GOULBURN NSW 2580

11. REFERENCES

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APPENDIX 1

ABORIGINAL FIELD PARTICIPATION FORMS

Record of Aboriginal Representative Participation*

Project Name: Marulan Gas Pipeline

Name(s) of Aboriginal Representative: Sharyn Halls

Name of Aboriginal Organisation: Gundungurra Aboriginal Heritage Association Inc.

Archaeologist: Kelvin Officer

address: Navin Officer Heritage Consultants Pty Ltd.
4/71 Leichhardt Street, KINGSTON, ACT 2604
ph: (02) 6282 9415; fax: 62829416

Client name: GHD
address: Att: Mr Tim Renshaw
10 Bond Street
SYDNEY NSW 2000
(please send your invoice to this address)

Type of participation:

- ☐ Guided inspection of study area and sites
- ☑ Accompanied/participated in archaeological survey/~~salvage~~
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Date(s)	Start	Finish
31/10/08	10:00am	5:30 pm.

Comments: Try to conserve old growth trees

Signed *(archaeologist)*:

Signed *(Aboriginal representative(s))*:

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

Record of Aboriginal Representative Participation*

Project Name: Marulan Gas Pipeline

Name(s) of Aboriginal Representative: Justin Boney.

Name of Aboriginal Organisation: Pejar Local Aboriginal Land Council.

Archaeologist: Kelvin Officer

address: Navin Officer Heritage Consultants Pty Ltd.
4/71 Leichhardt Street, KINGSTON, ACT 2604.
ph: (02) 6282 9415; fax: 62829416.

Client name: GHD.
address: Att: Mr Tim Renshaw.
10 Bond Street.
SYDNEY NSW 2000.
(please send your invoice to this address)

Type of participation:

- ☐ Guided inspection of study area and sites
- ☐ Accompanied/participated in archaeological survey/salvage
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Date(s)	Start	Finish
31/10/08	9:30am.	5:30 pm.

Comments:

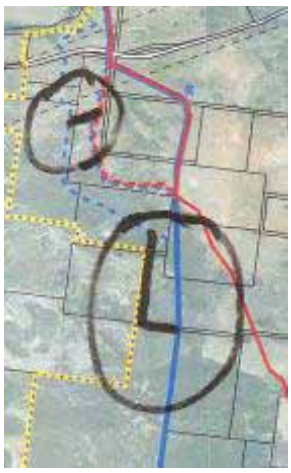
Signed *(archaeologist)*: Kelvin Officer

Signed *(Aboriginal representative(s))*:

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

Appendix E

Cultural heritage assessment – western route - addendum



Marulan Gas Turbine Facilities Project

Cultural Heritage Assessment of Alternative Gas Pipeline Routes

Addendum Report No. 1

February 2009

A Report to GHD

Navin Officer

heritage consultants Pty Ltd

acn: 092 901 605

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EXECUTIVE SUMMARY

EnergyAustralia and Delta Electricity propose to develop two gas turbine power generating facilities on a site located approximately 12 km north of Marulan on the NSW southern tablelands. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation.

On 8 October 2007, the Director-General of the NSW Department of Planning declared the Marulan Gas Turbine Facilities Project to be a Major Project which would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. A cultural heritage assessment is required to support the Part 3A Environmental Assessment.

This report documents the results of a cultural heritage assessment of two sections of an alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project. The total length of the two sections is approximately 0.75 km.

Findings

No Aboriginal or historical objects, sites or places were identified within the two sections of the alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project that were the subject of this investigation.

Recommendations

No further cultural management actions are required for either the Aboriginal or Historical (European) heritage within the two sections of the alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project that were the subject of this investigation.

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TABLE OF CONTENTS

1. INTRODUCTION

1.1 The Proposal

EnergyAustralia and Delta Electricity propose to develop two gas turbine power generating facilities on a site located approximately 12 km north of Marulan on the NSW southern tablelands. A six kilometre gas pipeline and other shared infrastructure servicing both facilities would also be constructed along with high voltage transmission lines connecting each facility to the nearby TransGrid 330 kV Marulan Substation.

The facilities are designed to generate electricity to help meet peaks in demand which occur on hot and cold days. Gas turbine plants are able to fire up and shut down quickly to cater for these demand peaks.

The following infrastructure would be required to serve both facilities:

- A gas pipeline lateral from the main Moomba to Sydney Pipeline, but excluding respective gas receiving delivery stations at the respective facilities;
- A high voltage transmission lines and connection to TransGrid;
- Back-up electrical supply arrangements;
- External telecommunications connections; and
- A common access road to each facility for construction and operational purposes.

Natural gas would be supplied from the existing Moomba to Sydney gas pipeline. The operating pressure of the existing mainline is typically in the range of 4,400 to 5,000 kPA. The pipeline will be located to the south of the site.

On 8 October 2007, the Director-General of the NSW Department of Planning declared the Marulan Gas Turbine Facilities Project to be a Major Project which would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. A cultural heritage assessment is required to support the Part 3A Environmental Assessment.

This report documents the results of a cultural heritage assessment of two sections of an alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project (Figures 1.1 and 1.2). The total length of the two sections is approximately 0.75 km. The report was commissioned by GHD Pty Ltd.

1.2 Report Outline

This report:

- Outlines the study methodology;
- Provides a summary of previous cultural heritage studies and heritage listed items within the proposed Marulan Gas Pipeline routes;
- Documents the results of a field survey of the study area;
- Defines statutory requirements relevant to the cultural heritage of the area; and
- Provides recommendations relating to the cultural heritage resource of the study area.

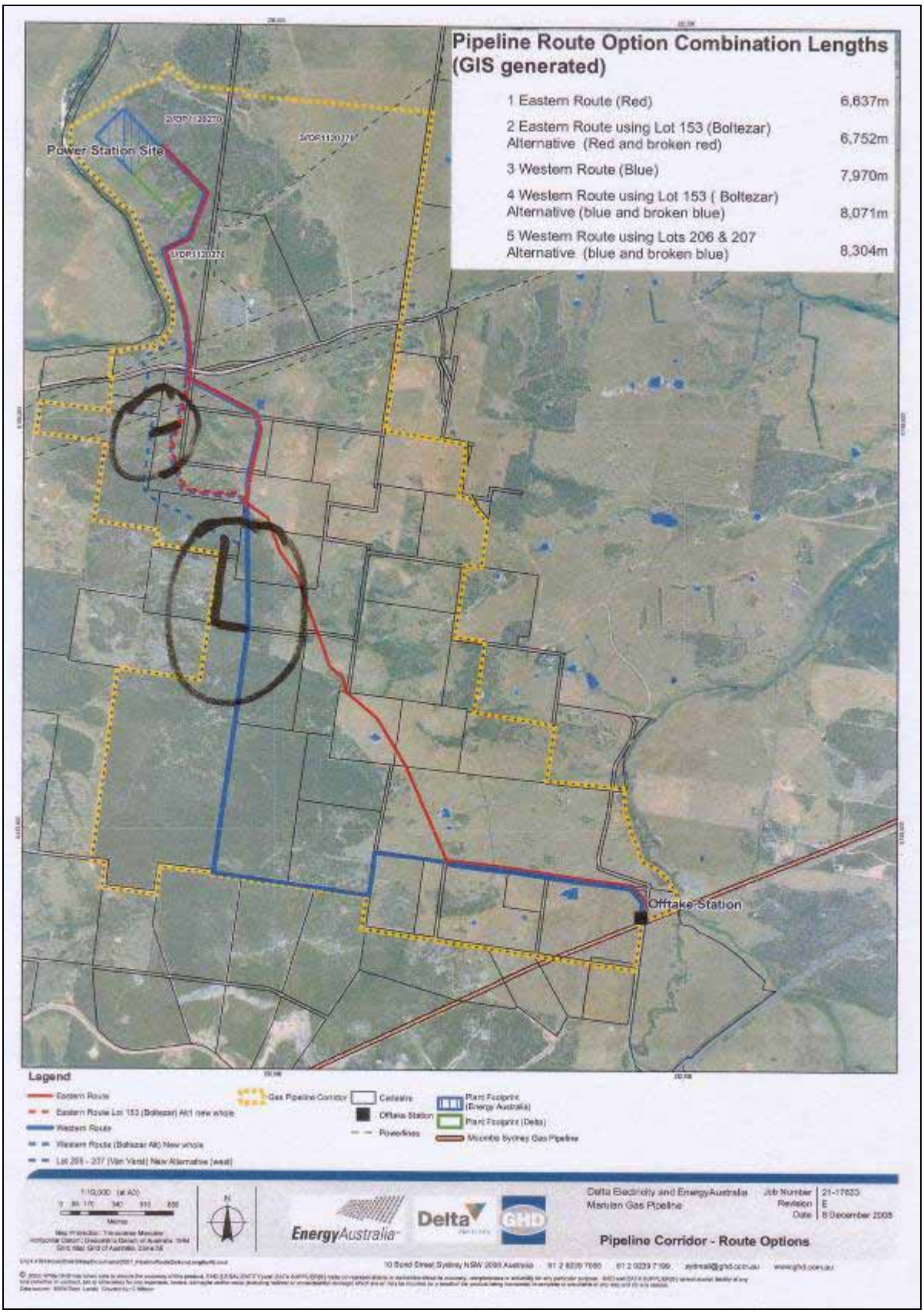

Figure 1.1 Location of proposed alternative gas pipeline route sections (black straight lines) (map supplied by GHD)

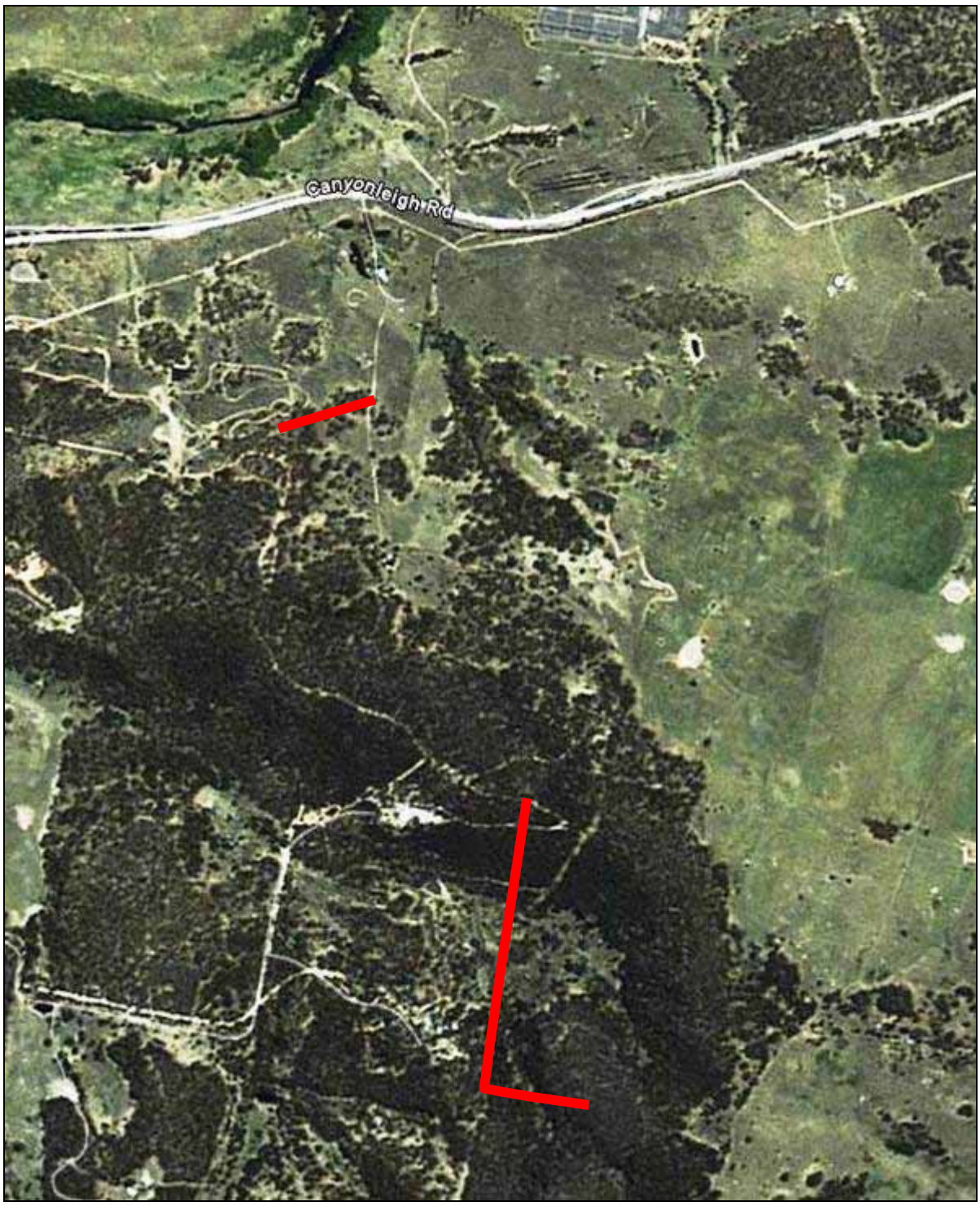

Figure 1.2 Location of proposed alternative gas pipeline route sections (red straight lines) (Base map Google Earth 2008)

2. STUDY METHODOLOGY

2.1 Literature and Database Review

A range of archaeological and historical documentation was reviewed for the Marulan Gas Pipeline study area and its surrounds. This literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Department of Environment and Climate Change (DECC) and associated files and catalogue of archaeological reports. Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Statutory Listings
    - Aboriginal Heritage Information Management System (AHIMS) (NSW DECC);
    - The National Heritage List (Australian Heritage Council);
    - The Commonwealth Heritage List (Australian Heritage Council);
    - The Register of the National Estate (Australian Heritage Council);
    - The State Heritage Register (NSW Heritage Office); and
    - Heritage Schedule(s) from the Goulburn Mulwaree Local Environmental Plan 2007.
- Non-Statutory Listings
    - The State Heritage Inventory (NSW Heritage Office); and
    - Register of the National Trust of Australia (NSW);

2.2 Field Survey and Project Personnel

The field survey was undertaken over one day in February 2009 by archaeologists Lindsay Smith and Tom Taverner. The survey was conducted on foot and involved field personnel walking straight line and opportunistic traverses along and across the assessment area.

The total length of the two sections of the proposed alternative pipeline alignments was approximately 0.75 km. The width of the area subject to archaeological survey varied from 30-100 m.

Straight line traverses involved inspecting the ground while walking transects along the length of the proposed pipeline easement. Opportunistic transects were undertaken to inspect old growth trees, rock outcrops and areas of ground surface visibility within the assessment area. A high proportion of all bare ground within the assessment area was inspected and, in areas of limited exposure, an assessment was made of the potential for that area to include Aboriginal sites below the ground. All old growth trees within or near the study area were inspected for potential human origin scarring.

This addendum report was prepared by Lindsay Smith.

3. ABORIGINAL CONTEXT

3.1 Heritage Listed Items

A search of the AHIMS database indicated that no Aboriginal sites have been previously recorded in the vicinity of the proposed Marulan Gas Pipeline.

3.2 Previous Research in the Marulan Gas Pipeline Study Area

In April 2008, Biosis Research conducted a cultural heritage assessment of the site proposed for the development of the two gas turbine facilities and associated infrastructure, to the north of the current study area. No Aboriginal sites had been previously recorded within that area. Ten Aboriginal archaeological sites (stone artefact scatters and isolated finds) were recorded during the field survey of that area. A number of landforms within that proposed development area were also identified as having potential to contain further Aboriginal archaeological sites.

Four Aboriginal sites comprising two artefact scatters with associated potential archaeological deposits (MGPS1 & PAD and MGPS4 & PAD) and two isolated finds (MGPS2 and MGPS3) were identified within part of a proposed Marulan Gas Pipeline route during field surveys undertaken by Navin Officer in 2008 (Navin Officer 2008a, b). A potential archaeological deposit (MGP1) was also identified in the study area during the former survey.

4. HISTORICAL CONTEXT

4.1 Heritage Listed Items

There are no heritage listed historic items within the vicinity of the proposed Marulan Gas Pipeline.

4.2 Previous Cultural Heritage Studies

In April 2008, Biosis Research conducted a cultural heritage assessment of the proposed site for the development of two gas turbine facilities and associated infrastructure, situated at the northern end of the current study area. No historical sites had been previously recorded within that area and no sites were recorded during the Biosis Research survey.

No historical heritage sites were identified during a survey of part of a proposed Marulan Gas Pipeline route in July 2008 (Navin Officer 2008a).

Three historical (European) heritage recordings were made within part of a proposed Marulan Gas Pipeline route in November 2008, being: a remnant two rail wooden fence line (MGPHS1); a boundary marking stone arrangement (MGPHS2); and a collection of four items of forestry and/ or farm machinery (MGPHS3) (Navin Officer 2008b).

5. RESULTS

5.1 Summary

No Aboriginal or historical objects, sites or places were identified within the two sections of the alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project that were the subject of this investigation.

5.2 Survey Coverage and Visibility Variables

Table 5.1 summarises estimates for the degree to which separate landforms within the study area were examined and also indicates the exposure incidence and average ground visibility present in each case. A total of 90% of the ground area in the study area was inspected during the survey.

All areas within both sections of the proposed alternative route were surveyed.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the effective survey coverage (ESC) was 7.0% of the total survey area. The ESC attempts to provide an estimate of the proportion of the total study area that provided a net 100% level of ground surface visibility to archaeological surveyors.

The ESC calculation is defined and required by the DECC and stated to be of use in assessing and cross comparing the adequacy of archaeological surface surveys. The actual utility of the ESC calculation however is challenged by many archaeologists. The limitations of the ESC calculation are emphasised by differences in the subjective assessment of exposure and visibility levels, variations in how survey units are defined and measured, and differences in how and which variables are estimated and combined. In reality, ESC results tend only to be meaningful when compared across surveys conducted by the same surveyors and ESC measurers.

Table 7.1: Survey Coverage Data

Survey division	Survey unit	Landform	Survey mode	Main exposure types	Estimated Survey Unit area (ha)	Proportion of unit surveyed %	Area of unit surveyed (ha)	Exposure incidence %	Average exposure visibility %	Net effective exposure (ha)	Effective survey coverage of survey unit %	Aboriginal Archaeological recordings
A	1	open valley floor	Foot	vehicle tracks	0.1	95	0.10	10	60	0.01	5.7	Nil
	2	ridge and spur slopes	Foot	vehicle tracks, animal digging and tracks, erosion scalds and gullying	1.25	95	1.19	15	40	0.07	5.7	Nil
	3	ridge and spur crests	Foot	vehicle tracks, animal digging and tracks,	0.75	95	0.71	15	70	0.07	10.0	Nil
	4	drainage lines	Foot	creek banks and gully scarps	0.15	95	0.14	10	40	0.01	3.8	Nil
Total					*2.25*		*2.14*			*0.16*	*7.0*	*Nil*

6. STATUTORY AND POLICY CONTEXT[1]

6.1 Environmental Planning and Assessment Act 1979

This Act (the EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the *Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act 2005*.

There are four main areas of protection under the Act:

- Planning instruments allow particular uses for land and specify constraints. Part 3 governs the preparation of planning instruments. Both Aboriginal and Historical (Non-Indigenous) cultural heritage values should be assessed when determining land use;

- A separate streamlined and integrated development assessment and approvals regime for major infrastructure and other projects of significance to the State is defined by Part 3A;

- Section 90 lists impacts which must be considered before development approval is granted. Part 4 relates to the development assessment process for local government authorities. Impact to both Aboriginal and Historical (Non-Indigenous) cultural heritage values are included; and

- State Government agencies which act as the determining authority on the environmental impacts of proposed activities must consider a variety of community and cultural factors in their decisions, including Aboriginal and Historical (Non-Indigenous) cultural heritage values. Part 5 relates to activities which do not require consent but still require an environmental evaluation, such as proposals by government authorities.

Part 3A of the EP&A Act

Part 3A of the Act is an amendment which establishes a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, development that was previously classified as State Significant development, and other projects, plans or programs declared by the Minister for Planning.

Part 3A removes the stop-the-clock provisions and the need for single-issue approvals under eight other Acts, including the NP&W Act and the Heritage Act 1977. Environmental planning instruments such as the heritage provisions within REP and LEPs, (other than State environmental planning policies) do not apply to projects approved under Part 3A.

Where warranted the Minister may declare any project subject to Part 3A to be a critical infrastructure project. These projects only require a concept approval in contrast to other Part 3A projects which require project approval. In most circumstances, a concept approval will be obtained to establish the environmental performance requirements and consultation requirements for the implementation of the subsequent stages of the project.

Under the provisions of Part 3A, proponents of major and infrastructure projects must make a project application seeking approval of the Minister. The application is to include a preliminary assessment of the project. Application may be for concept plan approval or full approval. Following input from relevant agencies and council(s), DoP will issue the proponent with requirements for the preparation of an Environmental Assessment and a Statement of Commitments. The Statement of Commitments will include how the project will be managed in an environmentally sustainable manner, and consultation requirements.

[1] The following information is provided as a guide only and is accurate to the best knowledge of Navin Officer Heritage Consultants. Readers are advised that this information is subject to confirmation from qualified legal opinion.

Following submission of an Environmental Assessment and draft Statement of Commitments to DoP, these documents are variously evaluated, reviewed, circulated and exhibited. The proponent may modify the proposal to minimise impacts in response to submissions received during this process. The proponent then provides a Statement of Commitments and, following any project changes, a Preferred Project Report. An assessment report is then drafted by the Director-General and following consultation with relevant agencies, a final report with recommendations for approval conditions or application refusal is submitted to the Minister. The Minister may refuse the project, or approve it with any conditions considered appropriate.

Section 75U of the EP&A Act (as amended) establishes exemptions to the requirement for permits and consents under the *National Parks & Wildlife Act 1974*. to disturb, move, impact or destroy Aboriginal objects, and for an excavation permit under s139 of the NSW *Heritage Act 1977* to disturb subsurface relics. This section states that such permits are not required for an approved project subject to the provisions of Part 3A of the EP&A Act. Section 75U also extends this exemption to include 'any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this Part in connection with an application for approval to carry out the project or of a concept plan for the project' (s75(U)4 EP&A Act 1979 (as amended)).

6.2 Implications for the Marulan Gas Pipeline Development

As construction of the project would be conducted subject to an approval under Part 3A of the *Environmental Planning and Assessment Act 1979,* the statutory provisions within the *National Parks and Wildlife Act 1974* and the *Heritage Act 1977* that require the receipt of permits and or consents prior to impacting relics and Aboriginal objects do not apply.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

As no Aboriginal or historical objects, sites or places were identified within the two sections of the alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project that were the subject of this investigation, the proposed development in those areas will have no heritage impact within those two sections.

7.2 Recommendations

No further cultural management actions are required for either the Aboriginal or Historical (European) heritage within the two sections of the alternative route for the proposed gas pipeline for the Marulan Gas Turbine Facilities Project that were the subject of this investigation.

Report Distribution

Three copies of this report should be forwarded to the NSW DECC for their information at the following address:

Cultural Heritage Officer
Conservation Planning Unit
Southern Branch
PO Box 2115
QUEANBEYAN NSW 2620.

8. REFERENCES

Biosis Research 2008 Cultural Heritage Assessment of the Proposed Marulan Gas Turbine Facilities, NSW. Report for URS Australia Pty Ltd.

Navin Officer Heritage Consultants 2008a Marulan Gas Turbine Facilities Project: Cultural Heritage Assessment of Gas Pipeline. Report to GHD Pty Limited (July 2008).

Navin Officer Heritage Consultants 2008b Marulan Gas Turbine Facilities Project: Cultural Heritage Assessment of Alternative Gas Pipeline Routes. Report to GHD Pty Limited (November 2008).

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Document Status

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