

Riverina Oils and BioEnergy

Integrated Oilseed Processing Plant

Appendix I
Aboriginal Heritage
Impact Assessment



Prepared for:

Riverina Oils and Bio Energy Pty Ltd

19 Grey St

Balwyn Victoria 3103

Aboriginal Heritage Assessment: Integrated Oilseed Processing and Biodiesel Plant

Final

ENSR Australia Pty Limited (HLA ENSR)

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Aboriginal Heritage Assessment: Integrated Oilseed Processing and Biodiesel Plant Wagga Wagga

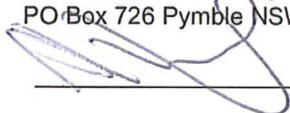
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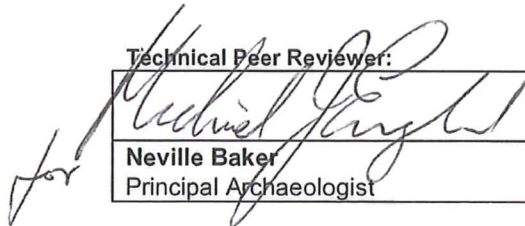
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Executive Summary

- This report is prepared for Riverina Oils and Bioenergy Pty Ltd (ROBE) by ENSR Australia Pty Limited (HLA ENSR) to identify Aboriginal heritage within the potential impact zones of a proposed Oilseed Processing and Biodiesel Plant located on the corner of Trahairs Road and Byrnes Road, north of Bomen, NSW;
- This report has been developed in consultation with the Wagga Wagga Local Aboriginal Land Council, and utilising the Department of Environment and Climate Change's (2005) *Guidelines For Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (with reference to Part 3A of the *Environmental Planning and Assessment Act, 1979*), and (2004) *Interim Community Consultation Requirements*;
- The report undertakes a review of existing archaeological information for the region, and a search of the AHIMS database. Specific findings include:
 - Several previous studies have been conducted in the local and regional area. Most notably studies by Witter, 1980, 1982; Witter and Hughes, 1983; Crew, 1988, Hiscock, 1983; and Williams, 1993 have all previously investigated the general region. Although no specific studies have occurred in the vicinity of the Study Area;
 - An AHIMS search identified 45 previously documented Aboriginal sites within a 50 x 50 km search around the Study Area, which was dominated by artefact scatters, isolated finds, and to a lesser extent scarred trees. None of these sites are located within or near the Study Area;
- A physical inspection of the Study Area identified the area as a heavily disturbed (through agricultural activities) series of gentle to flat slopes. Effective coverage was excellent due to the sparse wheat grasses permitting good visibility of the ground. .
- No Aboriginal sites were found within the Study Area as part of this investigation;
- Recommendations include the following:
 - Currently, there are no apparent constraints to development in relation to Aboriginal heritage (with the exception of those outlined below);
 - In the event that previously undiscovered Aboriginal objects (or potential Aboriginal objects) are discovered during construction, all works in the vicinity of the find would cease and the IOBP Environmental Representative would be informed to determine the subsequent course of action. The IOBP Environmental Representative would, if required, notify a heritage professional to obtain advice on how to proceed. Works would not recommence until any heritage requirements identified through this process have been met; and
 - Should suspected skeletal material be uncovered during the course of any site works or through subsidence landscape modification, all works must cease and the DECC, the NSW Police and the NSW Coroners office contacted immediately, regardless of any existing environmental approvals.
- All contractors who work within the confines of the Study Area should be made aware of these recommendations, and advised of the importance and protection of Aboriginal Objects/Sites by State legislation. All contractors should be advised of the need to stop work and contact the IOBP Environmental Representative should Aboriginal Objects/Sites be identified during construction.

1.0 Introduction

Riverina Oils and Bioenergy Pty Ltd (ROBE) is currently undertaking the necessary environment approvals for the construction and operation of an Integrated Oilseed Processing and Biodiesel Plant (IOPBP) at a site to the north of Wagga Wagga (the Study Area). ENSR Australia Pty Limited (HLA ENSR) was engaged by ROBE to undertake an assessment of Aboriginal heritage, including the identification of any heritage items/sites/places, outline any potential impacts to heritage and provide appropriate mitigation measures or constraints associated with the proposed activity.

This document has been undertaken in accordance with the Department of Environment and Climate Change (DECC) *Cultural Heritage Standards and Guidelines Kit* (1997), *Guidelines For Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (with reference to Part 3A of the *Environmental Planning and Assessment Act, 1979*) (2005), and *Interim Community Consultation Requirements for Applicants* (2004).

1.1 Aims, Objectives and Timing

The main aims of the study are to identify and record the extent and nature of any Aboriginal heritage issues by:

- validation of known sites and/or items within the Study Area through archaeological survey;
- archaeological survey of the Study Area to locate any additional sites and/or items;
- assessment of the Study Area to delineate any areas of high archaeological sensitivity or potential;
- consultation with the relevant local Aboriginal community groups;
- assessing the potential impacts of the proposed development on any known archaeological materials and areas of archaeological potential within the Study Area;
- assessing the significance of any archaeological material identified; and
- presenting recommendations for the management of and/or mitigation of construction impact on the archaeological resource identified.

1.2 Study Area

The study area consists of approximately 17 ha, situated on the corner of Trahairs Road and Byrnes Road within the Wagga Wagga Local Government Area (LGA), and is known as 299 Trahairs Road. Wagga Wagga LGA is located approximately 470 km (by road) south west of Sydney. The Study Area comprises a cleared paddock with some isolated trees. **Figure 1** shows the regional context of the Study Area.

1.3 Project Team

The Project Team consists of archaeologists and specialists from HLA ENSR. Alan Williams and Toni Massey carried out the site inspection with the relevant Aboriginal communities. Alan Williams prepared this report assisted by Toni Massey. Michael England undertook QA review. Zina Doueih and Tim Osborne provided administrative and drafting support.

1.4 Report Structure

This report is structured as follows:

- **Section 2.0** provides information on the project and proposed development;
- **Section 3.0** provides information on the applicable heritage legislation;
- **Section 4.0** outlines the methods adopted, including Aboriginal community consultation and involvement;
- **Section 5.0** provides discussion on the existing environment, including soils, geology, Aboriginal and archaeological site history, physical inspection and an assessment of the significance of Aboriginal sites;
- **Section 6.0** describes the results of the field investigation;
- **Section 7.0** provides a significance assessment;
- **Section 8.0** provides an impact assessment;
- **Section 9.0** discusses mitigation measures and a summary of recommendations;
- **Appendix A** provides the Aboriginal Heritage Information Management System (AHIMS) site search data as received from DECC;
- **Appendix B** provides an Aboriginal Community Consultation Log; and
- **Appendix C** provides a glossary of terms.

1.5 Limitations

This assessment is based on the existing environmental and archaeological knowledge of the Study Area. If previously recorded surface archaeological materials are found within the immediate locality, they are identified and discussed.

Predictions have been made about the probability of subsurface archaeological materials occurring within the Study Area. It is possible that materials may occur in any landscape context, and the assessment of subsurface materials refers to the likelihood of occurrence based on surface indications and environmental context.

HLA ENSR has undertaken a search of the AHIMS held by the DECC. The search results are provided in **Appendix A**.

As stated in the qualifying letter from the Acting AHIMS Administrator, register searches are constrained by the amount of data in the register and the quality of that data (for example grid references can be inaccurate). Large areas of NSW may not have been systematically searched and may contain Aboriginal objects and other heritage values not recorded on AHIMS.

Additionally, the AHIMS reports database can only be searched by the title of the report, which may not indicate the geographical location of the area covered. This means that it is possible that some known sites and some reports may have been omitted from this study. Sites and report information may vary in the AHIMS database and therefore the accuracy of information provided from AHIMS is only valid on the day the register is searched - while sites presented by AHIMS are unlikely to change, additional information may be provided after the dates of the search.

A summary of the statutory requirements regarding Aboriginal heritage is provided in **Section 3**. This is provided based on experience with the heritage system in NSW and does not purport to be legal advice.

It should be noted that legislation, regulations and guidelines change over time, and users of the report should satisfy themselves that the statutory requirements have not changed since the report was written.

2.0 Project Description

ROBE is seeking Project Approval to construct and operate an IOPBP. The plant would use canola and safflower seed as raw material to produce vegetable oil, from which bio-diesel is manufactured through a process known as trans-esterification. It is envisaged that the integrated plant would produce up to 75ML of bio-diesel per annum using 165 000 tonnes of oilseed.

The IOPBP comprises a number of buildings to house the crushing, extraction and refining processes as well as a number of storage facilities. The majority of the buildings would be constructed of steel with concrete flooring and include the following:

- an oilseed crushing plant;
- a solvent extraction plant;
- a meal blending shed;
- a vegetable oil refinery;
- a biodiesel plant; and
- a weighbridge.

The storage facilities would comprise six steel silos and a number of day bins and tanks. A layout of the proposed facilities is provided in **Figure 2**.

ola and safflower oil seeds would be delivered to the plant in trucks where it would be unloaded and stored in separate silos. The different types of seed would be processed using the same equipment; however, this would be done at separate times to avoid product contamination. There are a number of stages to the process, each yielding one or more products which are either sold or undergo further processing.

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3.0 Applicable Policy and Legislation

3.1 Commonwealth Legislation

3.1.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Heritage Protection Act) is the principal Commonwealth legislation protecting Aboriginal heritage. The Act complements state/territory legislation and is intended to support state/territory laws and processes.

Under the Heritage Protection Act the responsible Minister can make temporary or long-term declarations to protect areas and objects of significance under threat of injury or desecration. The Heritage Protection Act also encourages heritage protection through mediated negotiation and agreement between land users, developers and Aboriginal people.

Since the passage of this legislation:

- Around 200 applications have been lodged under the Act;
- Eight declarations have been made protecting objects of significance to Aboriginal people;
- Emergency (i.e. temporary) declarations have protected five significant places; and
- Two long-term declarations remain in place, one protecting women's sites under threat from a dam near Alice Springs and the other (with effect from July 2000) protecting Boobera Lagoon in northern NSW.

On 17 December 1998 responsibility for administration of the Heritage Protection Act was transferred by Administrative Arrangement Orders from ATSIC to the Environment and Heritage portfolio and the Heritage Protection Act is now administered by the Department of Environment and Water Resources (DEW).

3.2 State Legislation

3.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act requires that consideration be given to environmental impacts as part of the land use planning process. In NSW environmental impacts are interpreted as including cultural heritage impact. Three parts of the EP&A Act are most relevant to Heritage. Part 3 relates to planning instruments including those at local and regional levels, Part 4 controls development assessment processes and Part 5 refers to approvals by determining authorities.

Importantly for this project, the NSW planning reforms have seen Part 3A introduced to the EP&A Act which provides a new approvals regime applying to all major projects. Major projects are defined under State Environmental Planning Policy (Major Projects) 2005 (SEPP 2005). It also applies to those projects which the Minister believes are required to deliver particular government plans or programs, known as critical infrastructure projects.

The new Part 3A applies to all projects where the Minister has the approval role. Under Part 3A, the Minister can issue a project approval or a concept approval. Both maintain the requirement for consultation with the community and relevant State Government agencies, however the requirement for certain other permits and licences is removed under Part 3A.

Section 75B(2) of the EP&A Act makes provision for 'major projects' to be identified through various means, including by way of declaration as a listed project in SEPP 2005, or by notice in the Gazette.

The proposed project is classified as a 'major project' under SEPP 2005 and the Minister for Planning is the approval authority.

Importantly for this study, under Section 75U (1) (d) of Part 3A, the proponent is not required to obtain certain permits under the NPW Act, specifically:

The following authorisations are not required for an approved project (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply):

(d) a permit under section 87 or a consent under section 90 of the National Parks and Wildlife Act 1974

Instead of obtaining permits under the NPW Act, the proponent is required to prepare a **Statement of Commitments**, in accordance with the Director General's Environmental Assessment Requirements (EARs). Commitments of this report should be inserted into this Statement of Commitments.

3.2.2 National Parks and Wildlife Act 1974

The NPW Act and some of the terms relating to Aboriginal archaeology have changed and the provisions have been tightened.

Under the provisions of the NPW Act, Aboriginal archaeological sites are defined as Aboriginal "objects". Aboriginal object "means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains".

The most relevant section of the legislation is Section 90, which deals with the destruction of Aboriginal objects and is reproduced below.

Section 90 Destruction etc of Aboriginal objects or Aboriginal places

A person who, without first obtaining the consent of the Director-General [of DECC], knowingly destroys, defaces or damages, or knowingly causes or permits the destruction or defacement of or damage to, an Aboriginal object or Aboriginal place is guilty of an offence against this Act.

Importantly for this study, the project is being undertaken under Part 3A of the EP&A Act, and as such does not require section 87 or section 90 permits (see **Section 3.2.1**). However, should Aboriginal objects or sites be located and require investigation or impact, a similar process should be outlined in the Statement of Commitments developed under this Act.

While consultation with the Aboriginal Communities is not required under the legislation, it is an integral part of the process and is outlined in more detail in **Section 4**.

3.2.3 Wagga Wagga Rural Local Environmental Plan 1991

The Wagga Wagga Rural Local Environmental Plan 1991 (LEP) was prepared and gazetted under the provisions of Part 3 of the EP&A Act. The LEP requires that a development consent is required should any proposed impact to *environmental heritage* be required (Clause 24). Should impact to archaeological sites be required, the Wagga Wagga council may grant consent following the lodgement of an (Clause 25).

4.0 Methods

4.1 General

This archaeological assessment employed the following methods:

- review of DECC's AHIMS and Reports databases for the study area to identify Aboriginal archaeological sites / places that may be in the vicinity of the proposed development activities;
- review of the Register of National Estate and National Heritage Register for the study area and surrounding region to identify Aboriginal sites / places that may be in the vicinity of the proposed development;
- a literature review of the Aboriginal heritage of the area using primary and secondary sources identified through the AHIMS and other searches, including previous investigations;
- consultation with the relevant Aboriginal organisations for the area; and
- a site visit to identify known Aboriginal sites and any other heritage items that may be present within the proposed impact zone.

All archaeological sites identified during the field investigation would be recorded using a hand held GPS, digital photography, sketches and a written description. Archaeological sites would be subsequently marked with brightly coloured stakes (at each corner of a centroid point dependent on site type) for detailed spatial recording.

4.2 Aboriginal Community Consultation

DECC developed the *Interim Community Consultation Requirements* (2004) in response to a number of Land and Environment Court (LEC) rulings. These guidelines establish a series of steps and timeframes for identifying Aboriginal parties, providing them with project information and consulting with them on methodology, assessment and recommendations.

In response to these guidelines HLA ENSR undertook the following steps with regard to this project:

- contacted the DECC's Executive Director Operations to seek advice on the relevant Aboriginal stakeholders;
- contacted the Wagga Wagga Local Aboriginal Land Council (LALC) to identify their interest in the project;
- searched the Native Title Tribunal to identify possible Native Title holders;
- searched the Office or Registrar of Aboriginal Corporations; and
- advertised the project in the *Daily Advertiser* on 6 and 7 October 2007 for a period of ten working days.

Responses from the Native Title Tribunal and Office of Registrar identified no relevant Aboriginal stakeholders in relation to the Study Area. No response from DECC was received within the timeframes of the project, although discussions were had with Mr. Dean Freeman (DECC) who advised us of the Wagga Wagga LALC and a Wagga Traditional Owner Elders group. The Wagga Wagga LALC was also contacted to seek their interest and advise of other Aboriginal individuals and/or groups who may be interested in the project.

Further, an advert was placed in the local media, specifically the *Daily Advertiser*, on the 6 and 7 October 2007 seeking an interest in the project.

Following the end of the registration process, only the Wagga Wagga LALC expressed an interest in the project. Attempts were made to contact the Elders Group, but no details or communication could be established with the group – discussions with Shane Little of the Wagga Wagga LALC suggest that the Elders Group are affiliated with the LALC, hence they were consulted.

A methodology, seeking to investigate the entire Study Area, was sent to the Wagga Wagga LALC for comment between 11 October and 13 November 2007. Following the end of the methodology comment period, the Wagga Wagga LALC was invited to attend the physical inspection of the Study Area. HLA ENSR personnel and Shane Little of the Wagga Wagga LALC undertook a site investigation on 14 November 2007.

A consultation log and all correspondence received from the Aboriginal communities is included in **Appendix B** of this document.

4.3 Review of Existing Information

As required in the DECC guidelines, this report includes a desktop review of available information in respect of the existing environment, including a review of aerial photography and previous reports prepared for the area. In addition, a search of the DECC's AHIMS database for the area in question was undertaken.

4.4 Field Investigation

The aim of the field survey was to ascertain whether the proposed development would impact upon either previously identified or unrecorded Aboriginal heritage sites. The survey encompassed the entire Study Area and consisted of six pedestrian transects running north – south across the Study Area. Each transect consisted of three people walking in straight lines, some 500 m long x 30 m wide.

All landform features, areas of interest and archaeological sites identified during the field investigation were recorded using a hand held GPS, digital photography, sketches and a written description.

4.5 Assessment of Archaeological Potential

An assessment of archaeological potential is a way of gauging, from available evidence, which sectors within a Study Area are more archaeologically "valuable" than others (where "value" is measured as the relative potential to provide information on past Aboriginal occupation or land use of an area).

Assessment of sensitivity is made on the basis of:

- 1 the presence of known surface archaeological materials;
- 2 the probability of undetected surface archaeological materials;
- 3 the probability of subsurface archaeological materials; and
- 4 terrain nature and integrity. Information on pre-recorded sites and sites identified in this assessment is used in combination with observations of terrain nature and integrity to assess archaeological potential. Potential can be rated in terms of low, moderate or high, as shown in **Table 1**:

Table 1: Archaeological Potential

Rate of Archaeological Potential	Description of Area
Low	Archaeological material is unlikely to occur. This can be due to the landscape being unsuitable for human occupation, or to the landscape being heavily modified in recent history by European activity.
Moderate	Areas where archaeological materials may occur. Some indication of the natural soil profile or natural terrain remains, but where high site or artefact density is unlikely to occur.
High	as known or likely to contain archaeological materials. The terrain remains largely undisturbed, and sites are known to occur in this context in high concentrations or as a wide range of types.

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5.0 Existing Environment

5.1 Environmental Context

Investigations of the distribution of Aboriginal objects and places include an analysis of information on the natural resources available in a region to gain an understanding of the range of cultural remains that can be expected. Resources are linked to the hydrology, geology and soil types in a region.

Water availability is a major influence on the intensity of Aboriginal occupation and evidence, usually in the form of flaked stone artefacts, is often associated with permanent or semi-permanent water sources.

The availability of stone sources for artefact manufacture also influences the types and density of sites that may be encountered. Areas in which suitable stone raw materials are available often contain higher concentrations of flaked stone artefacts than regions where stone for artefact manufacture is scarce.

Soil types are influential as accumulating sediments can cover cultural remains while areas of sediment removal through erosion can either uncover buried archaeological material or transport small items away from the original depositional context. Soil analysis has important ramifications for archaeological research through the potential impact of different soils on human activity (such as agricultural exploitation) and the impact of the soils on archaeological evidence (such as post-depositional movement). The soils known to occur throughout the Study Area are identified here in order to delineate their nature and impact on the survival and location of archaeological material.

A detailed section on the archaeological and historical evidence of Wagga Wagga is also presented below to further interpret and analyse the spatial distribution and likelihood of archaeological material within the proposed Study Area.

Information on the geology and soil landscapes and topography in the region of the Study Area is presented below. This data was used in the development of the fieldwork methodology and discussion on the results of the field inspection at the end of this report.

5.1.1 Climate

There are four distinct seasons in Wagga Wagga with cool to cold winters and warm summers. Maximum summer temperatures range between 29°C and 32°C and the relative humidity is low with an average of approximately 30%. The average overnight minimum temperature in winter is 3°C and the daily maximum ranges between 12°C and 14°C. Frost and fog are common in winter and on rare occasions, snow has been recorded. The relative humidity in winter averages over 60% at 3 pm and approximately 90% at 9 pm (Bureau of Meteorology, 2007).

5.1.2 Topography and Hydrology

The Study Area is gently undulating with an elevation ranging between 225 – 245 m. The proposed location for the IOPBP is approximately 7 km north of the Murrumbidgee River. A number of minor drainage lines are located in the vicinity of the proposed IOPBP.

The Wagga Wagga catchment area comprises heavy clay soils, with only a small catchment discharge point. The combination of geographical and geological features prevents groundwater from easily migrating away from the area, resulting in waterlogging and increased salinity, affecting both urban and agricultural environments (Wagga Wagga City Council, 2007). The hydrology of the Murrumbidgee has been altered considerably since European settlement due construction of dams (AASC, 1997).

5.1.3 Geology

The geology underlying the site is dominated by Silurian granites, predominantly Wantabadgery Granodiorite and Collingullie Granite, with small parts of Burrandana Granite. Thick clay sequences are present, with significant aeolian clay additions deposited on sideslopes and in drainage depressions.

There are three regional hydrogeological units of the Wagga Wagga area, including the Ordovician metasediments, the Silurian granites and Tertiary and Quaternary alluvium (CSIRO, 2001).

5.1.4 Soils

The Soil Landscapes of the Wagga Wagga 1:100,000 Sheet (Chen and McKane, 1996) indicates that the proposed location of the IOPBP is situated in an area characteristic of the East Bomen soil landscape. The East Bomen soil landscape is dominated by shallow to moderately deep loam and clay soils. The shallow nature of this soil landscape results in limitations and difficulties for excavation and urban development, slight to moderate limitations for cultivation and low limitations for grazing.

5.1.5 Vegetation

Based on the physical inspection undertaken by HLA ENSR personnel, the Study Area was characterised by sparse wheat grasses (*Triticum* sp.) and Patterson's Curse (*Echium plantagineum*), and by sporadic trees (<20) largely in the north of the Study Area. The trees were composed of White Cypress Pines (*Callitris columellaris*), Blakely Redgums (*Eucalyptus blakelyi*) and one Kurrajong Tree (*Brachychiton* sp.).

5.1.6 Summary of Environmental Conditions

While the climatic records indicate that the general vicinity of Wagga Wagga provided numerous resources for Aboriginal people in the past, most notably water from the Snowy Mountains, the specific location of the Study Area is unlikely to be particularly conducive to settlement or use based on the information above. It seems likely that Aboriginal people would have predominantly utilised and settled adjacent both main creek lines, and more often, smaller adjoining tributaries nearby. Currently, the Study Area is 7 km from the Murrumbidgee River, and some distance from any minor creek lines or tributaries. While there are several dams near the Study Area, investigation of these suggest that they are completely artificial and do not relate to any form of historic waterway.

The removal of the vegetation and modification of the soils through agricultural practises also reduces the potential for any archaeological remains to survive. The undulating slopes of the Study Area further permit erosion and removal of the soil profile where farming has not completely intermixed it with the subsoils below. Based on aerial photograph, the potential for scarred/carved trees is also low due to the historic removal of most of the trees in this area.

Although, it should be noted that the geology of the Study Area does retain both quartz and (based on visual inspection) fine sand stone or quartzite, both of which are necessary raw materials for artefact production. These raw materials are, however, also located across much of this region, and therefore do not highlight this area as of particular importance in relation to these materials.

5.2 History of the Study Area

5.2.1 Regional History

The study area falls within the area that was occupied by the Narrungdera people, one of the subgroups of the southern Wiradjuri who occupied the Murrumbidgee River from Jugiong to Hay (Tindale 1974). Between 4000 – 1500 BP, an estimated 2000 – 3000 Aboriginal people were living in the semi-permanent camps throughout the Wagga Wagga LGA. The impacts of European settlement were first apparent amongst the Wiradjuri in the 1790s when small pox was inadvertently introduced by Eora traders, devastating the population. Contact gradually increased as European settlers arrived in the

area. Conflict and the negative attitudes of some settlers resulted in a great reduction of the Wiradjuri population to less than 20 by 1900 (Go Green Services, 2002).

5.2.2 European History

Reports from explorers and early travellers in the region, such as Charles Sturt and Thomas Mitchell, suggest that Europeans had settled in the region by 1836. The area was reported to have good pasture, particularly along the floodplains of the Murrumbidgee River. It was also reported that Aboriginal occupation was sparse. The village of Wagga Wagga was established on 30 April 1847. Although the early settlements were illegal as they were outside the limits of settlement, settlers took up the lands surrounding Wagga Wagga for pastoral activities (Navin Officer, 2002).

5.3 Archaeological Context

5.3.1 Regional Archaeological Studies

A number of archaeological studies have been conducted in the region, largely in relation to linear infrastructure environmental impact assessments and provide an insight into the archaeology of the Study Area and surrounding regions (Hale and Tindale 1930; Bickford 1966; Allen 1968; Clark 1977). More recent archaeological investigations have been carried out within the vicinity of Wagga Wagga.

In 1980 Witter undertook a survey of a proposed pipeline route between Wagga Wagga and Young. Witter located 13 open artefact scatters, 5 scarred trees of possible Aboriginal origin, and one possible Aboriginal rock well. Witter noted a general trend in site location where large sites tended to be located on alluvial flats, in undulating hill country or in creek valleys. Smaller sites tended to be located on ridge tops or in mountainous settings.

Hiscock (1983) surveyed the proposed 330 kV transmission line between Wagga Wagga and Darlington Point. A total of 18 scarred trees and 13 isolated artefacts were recorded during survey. Hiscock considered that the absence of open artefact scatters within the survey area correlated with the absence of permanent water sources.

Crew (1988) surveyed the proposed route of the 132 kV transmission line at Wagga Wagga. No archaeological material was located during this survey. Crew considers it unlikely that any Aboriginal sites would have survived the impact of changing land use in this area.

Williams (1993) undertook a survey of the proposed Optus Communications fibre optic cable route between Albury and Wagga Wagga. Three open artefact scatters were located along the immediate margins of creek lines.

The majority of studies found that archaeological material in the region was sparse. It is certainly the case that the region has undergone extensive disturbance in the form of clearing and ploughing for pastoral activities.

The studies commonly found that quartz is the dominant component of the stone assemblage, forming at least 85% of the raw material (Witter, 1980, Kelly, 1980 and Silcox, 1987). Other materials include chert, silcrete and quartzite. The most commonly found items were artefact scatters and isolated finds with campsites and scarred trees also found. Archaeological sites generally occur in association with a water source such as near channels or flood hollows and throughout the region artefacts were relatively rare (Klaver, 1987 and Witter, 1982). Based on this information and other information from studies that had been conducted in the region, Witter developed a site distribution pattern as follows:

- the major flood channels may produce mounds, occupation debris of worked stone, scarred eucalypts and on the sand features where there are cypress pines, torch bark scars;

- minor flood channels and temporary swamps may produce scarred eucalypts, fired clay hearths and occupation debris of worked stone, particularly where sand features are present; and
- rare isolated artefacts of flaked or abraded stone and scarred eucalypts are found scattered throughout the plains.

Another factor influencing the location of sites was the presence of vegetative diversity, which was more likely to have occurred on valley flanks than on plateaus. A diverse vegetation assemblage would have provided a source of food and materials for making tools such as nets (Witter and Hughes, 1983).

5.3.2 Previously Recorded Sites (AHIMS)

HLA ENSR undertook a site search of the Study Area and its surrounds (50 x 50 km), using the DECC AHIMS on 2 October 2007. The search investigated and identified 45 previously documented sites (Figure 3).

Of the 45 sites overall, they can be broken down as follows:

- isolated finds = 6;
- scarred tree = 2;
- midden = 1;
- open camp site (artefact scatters) = 14;
- quarry = 1; and
- Undefined site = 21 (while the site types were omitted in relation to these sites, the specific AHIMS codes suggest they were dominated by a mixture of scarred/carved trees and/or artefactual in nature).

Several points of similarity of most sites around the Wagga Wagga region include the high percentage of quartz, the small (1-3cm) size range of most artefacts and the general low artefact density. Based on the cleared status of the Study Area and the likely agricultural practices which have occurred since European settlement, it is highly unlikely that sites such as bora rings, stone arrangements and carved trees would have survived to the present day (all of which are uncommon in the existing sites outlined above anyway).

5.3.3 Archaeological Synthesis

Based on previous studies within the area and the AHIMS search of a 50 km² grid surrounding the Study Area, a number of factors can be identified when considering archaeological site distribution, specifically:

- the archaeological record in this area is dominated by artefact scatters and isolated finds, and to a lesser extent scarred trees. Raw materials within this sites are usually dominated by quartz with lesser components of chert, silcrete and quartzite;
- large sites tend to be located on alluvial flats or creek valleys, while smaller sites occur on ridge tops or mountainous settings;
- several studies note that site distribution is dominated by the presence of extensive and/or permanent water resources. Hence, areas surrounding the Murrumbidgee are considered likely locations for archaeological site occurrence;
- several studies have found that existing activities, specifically agriculture, can have a large negative effect in site identification of preservation; and
- no AHIMS sites are in the vicinity of the Study Area.

6.0 Results of Field Investigation

This section presents information on the transects investigated as part of this study (**Figure 4**), and any archaeological sites identified.

As outlined in **Section 4.4**, the investigation was carried out in six transects (**Plates 1 to 8** inclusive), which encompassed the entire Study Area. The investigation revealed that the Study Area generally consisted of two fields used for wheat growing, and a field retaining an extensive dam.

Descriptions of each of the six transects investigated and their effective coverage are presented in **Table 2**. However, in general the Study Area consists of a wide hill top adjacent Byrnes Road and a long gentle slope leading from the hill top to the east. Through physical inspection and historical photographs, the Study Area is characterised by extensive agricultural activities and revealed a heavily modified landscape. Specifically, vegetation consisted of sparse low lying wheat fields (allowing excellent visibility) and occasional trees, while the soil profile was a mixture (through ploughing) of truncated orange clay – indicative of an eroding soil profile, where all that remains is the upper and partially removed B horizon normally composed of an orange clay - (of geological origin) and a brown clayey loam. Geology located within the Study Area included evidence of granite, slate, fine sandstone and quartz.

Further, the Study Area is located some distance from any water sources or areas of obvious Aboriginal occupation or use. This fact, in combination with the existing disturbance, led to the conclusion that no Aboriginal sites or potential sites were identified as part of this investigation. Discussions with the Wagga Wagga LALC representative led to similar conclusions, Shane Little identifying no specific concerns or requirements following the physical inspection.

In relation to coverage, overall the study investigated over 90 000 m² (>9 ha) for the proposed development, with an average exposure (i.e. clear ground) of 85% and an average visibility of these areas of 72.5%, which provides an overall effective coverage of 67% - an excellent value for this type of investigation.

However, while the effective coverage of the Study Area was excellent due to the sparse vegetation cover, the investigation revealed complete disturbance through agricultural practises and dam creation. No areas of the Study Area were considered to have escaped some form of disturbance from human activities in this area. Hence, landscape integrity and archaeological potential is considered very low.

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Table 2: Transect Summary

Transect Number	Easting *	Northing*	Description	Transect area (m ²)	Visibility (%)	Exposure (%)	Effective Coverage % (m ²)
1	From: 539495 To: 539724	6121608 6122454	This transect is located within the centre of the Study Area between transects 2 and 4 and runs in a north – south direction (Plate 1). The transect encompasses a long gentle slope running from west to east and was characterised by truncated orange (geological) clays intermixed with brown clayey loams. Vegetation was dominated by spare wheat grasses and occasional well established trees, composed of predominantly White Cypress Pines and Blakely Redgums. Due to the sparse vegetation, exposure and visibility was excellent. Given the lack of a soil profile and the disturbed nature of the Study Area, no archaeological sites were identified or are considered to be present within this transect.	15 000	80	55	44 (6 600)
2	From: 539589 To: 539292	6122370 6121631	This transect is located between transects 1 and 3, and runs in a north -south orientation (Plates 2 and 3). This transect is retains similar landform elements, features and integrity of transect 1.	15 000	90	90	81 (12 150)
3	From: 539258 To: 539532	6121640 6122574	This transect was located in the westernmost field and is located between transect 2 and 4 (Plates 3, 4 and 5). The transect runs along a flat to very gently sloped hill top in a north –south orientation. The transect is dominated by truncated and intermixed orange clay and clayey loam and is encompassed by sparse wheat grass. The nature of the vegetation permitted excellent coverage of the transect. Given the lack of a soil profile and the disturbed nature of the Study Area, no archaeological sites were identified or are considered to be present within this transect.	15 000	90	90	81 (12 150)

Transect Number	Easting *	Northing*	Description	Transect area (m ²)	Visibility (%)	Exposure (%)	Effective Coverage % (m ²)
4	From: 539441 To: 539159	6122583 6121663	This transect is located adjacent Byrne's Road on the western edge of the Study Area (Plates 4 and 5). The transect has a north – south orientation. This transect is retains similar landform elements, features and integrity of transect 3, although the wheat grass is slightly denser in areas lowering visibility somewhat.	15 000	80	55	44 (6 600)
5	From: 539557 To: 539872	6121580 6122289	This transect is located in the eastern section of the Study Area to the west of the large dam in this area (Plate 7). While the transect had excellent visibility due to the construction of the dam, and subsequent removal of vegetation, the transect was completely disturbed. Activities in this transect include levees, dams, excavation, grading and spoil dumping. The area is relatively flat with mounds of dirt towards the far north, most probably caused from the creation of the dam. The soil profile is completely truncated or artificial – the former revealing a truncated orange clay, while the latter revealing fill material over the truncated clay. Vegetation was a sparse to moderate covering of low grass and weed species, specifically Patterson's Curse, and as such effective coverage was high. Due to the existing disturbance, no archaeological sites were found within this transect or considered likely. .	15 000	80	55	44 (6 600)
6	From: 539983 To: 539699	6122333 6121555	This transect is located east of transect 5 and to the east of the large dam in this area (Plate 8). This transect is retains similar landform elements, features and integrity of transect 5, although visibility is higher due to numerous exposures and graded roads within this transect. Due to the existing infrastructure in this transect, there were no archaeological sites found, nor any potential archaeological sites considered likely.	15 000	90	90	81 (12 150)
Average				15 000	85	72.5	67 (9 375)
Total				90 000			56 250

* All co-ordinates are presented as MGA 55 employing the GDA 94 datum.

6.1 Sites Identified

No Aboriginal sites or potential sites were identified within the Study Area as part of this investigation.

6.2 Sensitivity Rating

Zones of archaeological sensitivity can be delineated on the basis of this assessment of the probability of additional archaeological material occurring in the Study Area. This assessment relates to the probability of material occurring and does not address scientific significance or the cultural significance of the material to Aboriginal community members.

Based on the existing environment and the physical inspection, there are unlikely to be any archaeological sites within the Study Area. This conclusion has been reached through two main reasons, 1) the extensive agricultural practises within the Study Area have completely destroyed the natural landscape, including the removal or intermixing of the soil profile, and the clearing of most of the trees from the Study Area; and 2) the location of the Study Area is not in the vicinity of any likely Aboriginal resources (such as water), and is therefore unlikely to have been conducive for settlement or use historically.

Based on the evidence provided here, it seems likely that the Study Area can be considered as of low archaeological sensitivity.

6.3 Summary

- The Aboriginal history and archaeological record all reveal that Aboriginal people occupied and used the resources of the Wagga Wagga area. Site types are dominated by open camp sites (artefact scatters), isolated finds and scarred tree sites with lesser examples of hearths, quarries and middens;
- Sites are typically located in close proximity to permanent water resources, such as the Murrumbidgee River or surrounding tributaries;
- A physical inspection of the Study Area revealed it to be a heavily modified area from historical and recent farming/agricultural activities;
- No sites were identified within the Study Area during the physical inspection, despite the high exposure and visibility of the site.
- At this stage, the Study Area is considered to retain low archaeological sensitivity.

7.0 Significance Assessment

7.1 Principles of Assessment

Heritage sites, objects and places hold value for communities in many different ways. The nature of those heritage values is an important consideration when deciding how to manage a heritage site, object or place and balance competing land-use options. The many heritage values are summed up in an assessment of "Cultural Significance".

The primary guide to management of heritage places is the Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter) 1999. The Burra Charter defines cultural significance as follows:

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations.

Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.

Places may have a range of values for different individuals or groups.

This assessment has sought to identify heritage objects and sites within the study area and obtain enough information to allow the values of those objects and sites to be determined.

7.2 Social Value to the Aboriginal Community

Aboriginal sites with archaeological evidence are all of value to the Aboriginal community because they represent a tangible connection with pre-European Aboriginal life. For this reason, it is inappropriate for HLA ENSR archaeologists to provide social or cultural significance values for the Aboriginal sites identified in this project. HLA ENSR has provided this report to the Aboriginal communities involved in the project and will be seeking their values, both social and cultural, prior to its finalisation.

All comments from the Aboriginal community are included in the text of the report where appropriate, and attached in **Appendix B**.

7.3 Scientific Value

Scientific value is assessed according to the research potential of a site. Rarity and representativeness are also related concepts taken into account. Research potential or demonstrated research importance is considered according to the contribution that a heritage site can make to present understanding of human society and the human past. Heritage sites, objects or places of high scientific significance are those which provide an uncommon opportunity to inform us about the specific age of people in an area, or provide a rare glimpse of artistic endeavour or provide a rare chronological record of changing life through deep archaeological stratigraphy.

The comparative rarity of a site is a consideration in assessing scientific significance. A certain site type may be "one of a kind" in one region, but very common in another. Artefacts of a particular type may be common in one region, but outside the known distribution in another.

The integrity of a site is also a consideration in determining scientific significance. While disturbance of a topsoil deposit with artefacts does not entirely diminish research value, it may limit the types of questions that may be addressed. A heavily cultivated paddock may be unsuited to addressing research questions of small-scale site structure, but it may still be suitable for answering more general questions of implement distribution in a region and raw material logistics.

The capacity of a site to address research questions is predicated on a definition of what the key research issues are for a region. In the region the key research issues revolve around the chronology of Aboriginal occupation and variability in stone artefact manufacturing technology. Sites with certain backed implements from the Holocene are very common, but sites with definite Pleistocene evidence are extremely rare, and hence of extremely high significance if found.

7.4 Assessment

In relation to the Study Area, the lack of any visible archaeological remains in conjunction with the known archaeological distribution of the region suggests that there is low scientific significance attached to this area. There are no obvious values in relation to rarity or research opportunity.

This assessment has been made while considering the location of known archaeological material in the region, (namely adjacent large creek lines and any adjoining tributaries, in contrast to the Study Area, which is a large gentle hill some distance from any form of creek line), several previous studies undertaken in the immediate vicinity (Williams, 1993; Witter, 1980; Hiscock, 1983; and Crew, 1988), and the physical inspection.

This assessment presently is on scientific values. The value of a cultural heritage and Aboriginal sites to the Aboriginal community is acknowledged here, with all comments from the Aboriginal communities presented in **Appendix B**.

8.0 Impact Assessment

This section provides consideration of the potential impacts to archaeological material of the proposed augmentation within the Study Area. The purpose of this report is to identify the location and significance (heritage values) of sites so that planning can proceed in a manner that minimises impact. Furthermore, this section provides guidance as to the definition and management of “impacts”.

An “impact” is defined here as an action or activity that results in the disturbance, damage or destruction of an Aboriginal object or Aboriginal site. Not all actions or activities disturb, damage or destroy Aboriginal sites and therefore not all actions or activities may be considered as “impacts”.

For the purposes of this discussion an activity on, under or in the vicinity of an Aboriginal object or Aboriginal site may be classified as having no impact, low impact, moderate impact or high impact. These classes are described in **Table 3** below.

Table 3: Impact Ranking in relation to Aboriginal Objects and/or Sites.

Impact Rank	Definition	Management Action
No Impact	No change in heritage value e.g. no displacement of Aboriginal objects.	No action required
Low Impact	Negligible displacement of individual objects, no disruption of archaeological deposit or spatial distribution of artefact assemblage and no negative affect on heritage value e.g. change in elevation via subsidence without vertical displacement.	No action required
Moderate Impact	Partial loss of heritage value or potential for activating erosive effect which will degrade heritage values over time, e.g. activation of changed erosion regime through hydrological changes resulting in accelerated erosion of archaeological deposit. The Aboriginal site will remain after cessation of the impacting activity, but in a degraded state e.g. with an eroded and dispersed stone artefact assemblage instead of intact archaeological deposit.	Appropriate level of mitigation measures required to ensure the Aboriginal objects/sites are appropriately investigated and/or documented before impact, and potential monitoring to occur after impacts to ensure no further impact is occurring through environmental modification .
High Impact	Removal or displacement of an Aboriginal object or Aboriginal site resulting in the loss of Aboriginal heritage values	Detailed and comprehensive mitigation measures required to ensure the Aboriginal objects/sites are appropriately investigated and/or documented before impact, and potential monitoring to occur after impacts to ensure no further impact is occurring through environmental modification.

Based on discussions and information from Riverina Oils and Bioenergy in relation to the proposed development, the actions or activity which have the potential to result in an impact on Aboriginal objects or Aboriginal sites include the surface and subsurface impacts through the installation of the proposed plant and associated infrastructure.

These activities are likely to completely destroy the areas encompassed within transect 1 - 6, through the need for levelling and filling prior to the installation of the Biodiesel plant and associated infrastructure.

Currently, there are no known Aboriginal sites in the Study Area, and as such there are no potential impacts to Aboriginal heritage.

In summary:

- based on the current known heritage issues within the Study Area, there are unlikely to be any impacts from the proposed development.

9.0 Conclusions and Recommendations

This investigation based on previous archaeological research, both local and regional, and a field investigation, identified no Aboriginal sites within the Study Area. The likelihood of Aboriginal sites being present within the Study Area is low based on a number of factors most notably location of existing archaeological sites, previous studies and past impacts to the area.

Based on the physical inspection, the Study Area was characterised by two fields of flat to gentle slopes, which had been severely impacted by recent and historic agricultural practises, which had removed most of the natural vegetation and intermixed or removed the soil profile. The area to the east, encompassed within transect 5 and 6, consisted of a large dam, which again has removed much of the natural landscape in this area, including vegetation and soil profile. In addition, to the extensive disturbance within the Study Area, based on previous studies in the area, it is unlikely archaeological sites would be located within the Study Area, due to its distance from any notable water source.

In relation to the physical inspection, due to the extensive agricultural activities, exposure and visibility of the ground was excellent, and it seems unlikely any archaeological material may have been missed through coverage restrictions. As stated elsewhere, the effective coverage further identified the lack of an *in situ* soil profile across the Study Area, and hence the absence of any subsurface archaeological potential (which requires a soil profile).

While a number of general conditions in relation to Aboriginal heritage have been presented in **Section 9.1**, there are no specific Aboriginal heritage constraints upon the development due to the absence of any surface or subsurface archaeological materials being identified.

9.1 General Recommendations

- In the event that previously undiscovered Aboriginal objects (or potential Aboriginal objects) are discovered during construction, all works in the vicinity of the find would cease and the IOBP Environmental Representative would be informed to determine the subsequent course of action. The IOBP Environmental Representative would, if required, notify a heritage professional to obtain advice on how to proceed. Works would not recommence until any heritage requirements identified through this process have been met; and
- Should suspected skeletal material be uncovered during the course of any site works or through subsidence landscape modification, all works must cease and the DECC, the NSW Police and the NSW Coroners office contacted immediately, regardless of any existing environmental approvals.

9.2 Specific Recommendations

- Currently, there are no apparent constraints to development in relation to Aboriginal heritage; and
- All contractors who work within the confines of the Study Area should be made aware of the General Recommendations above, and advised of the importance and protection of Aboriginal Objects/Sites by State legislation. All contractors should be advised of the need to stop work and contact the IOBP Environmental Representative should Aboriginal Objects/Sites be identified during construction.

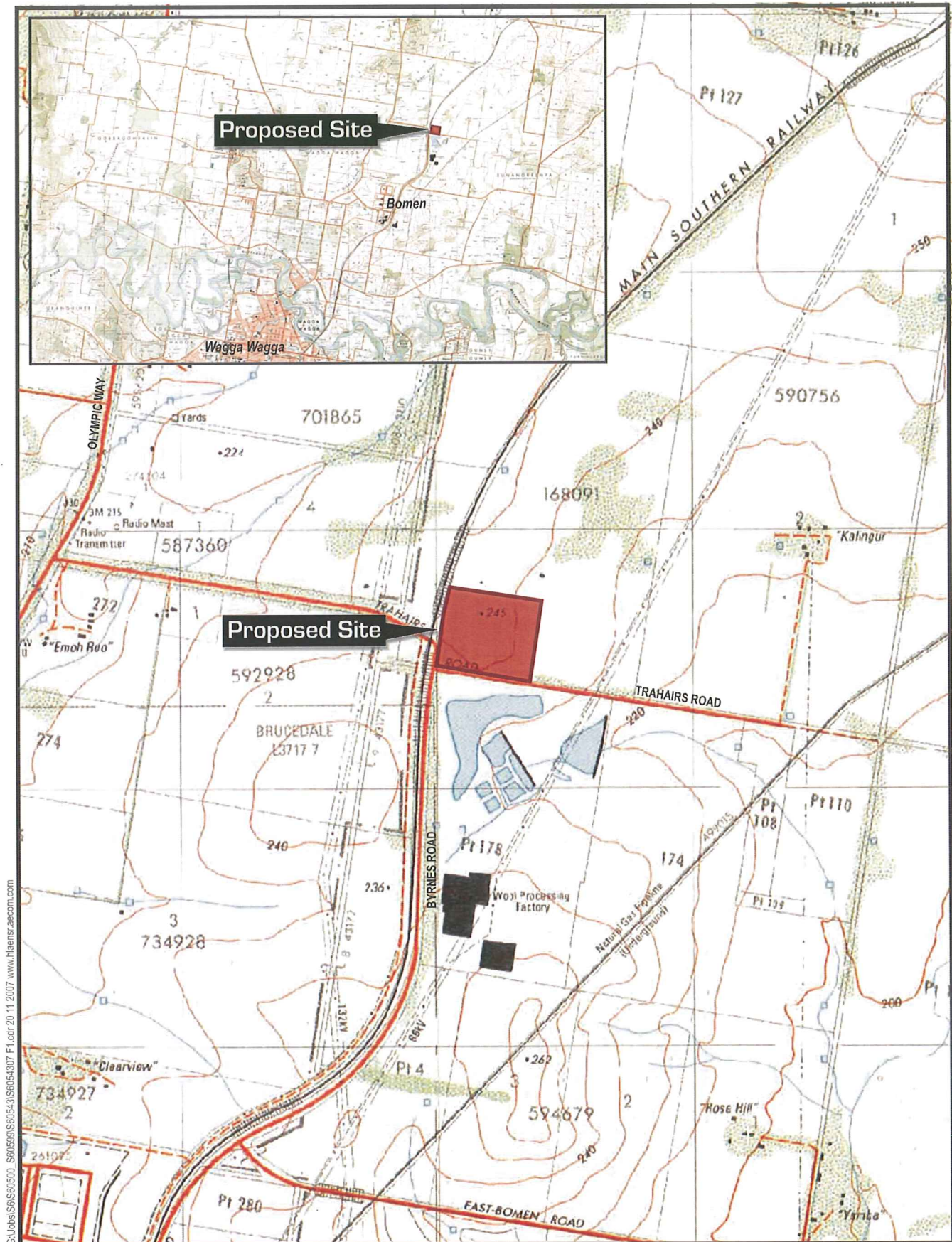
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10.0 References

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Figures



ENSR | AECOM



Figure 1 | Regional Context
 Riverina Oils and Bio Energy Pty Ltd
 Archaeology Assessment
 Integrated Oilseed Processing and
 Biodiesel Plant

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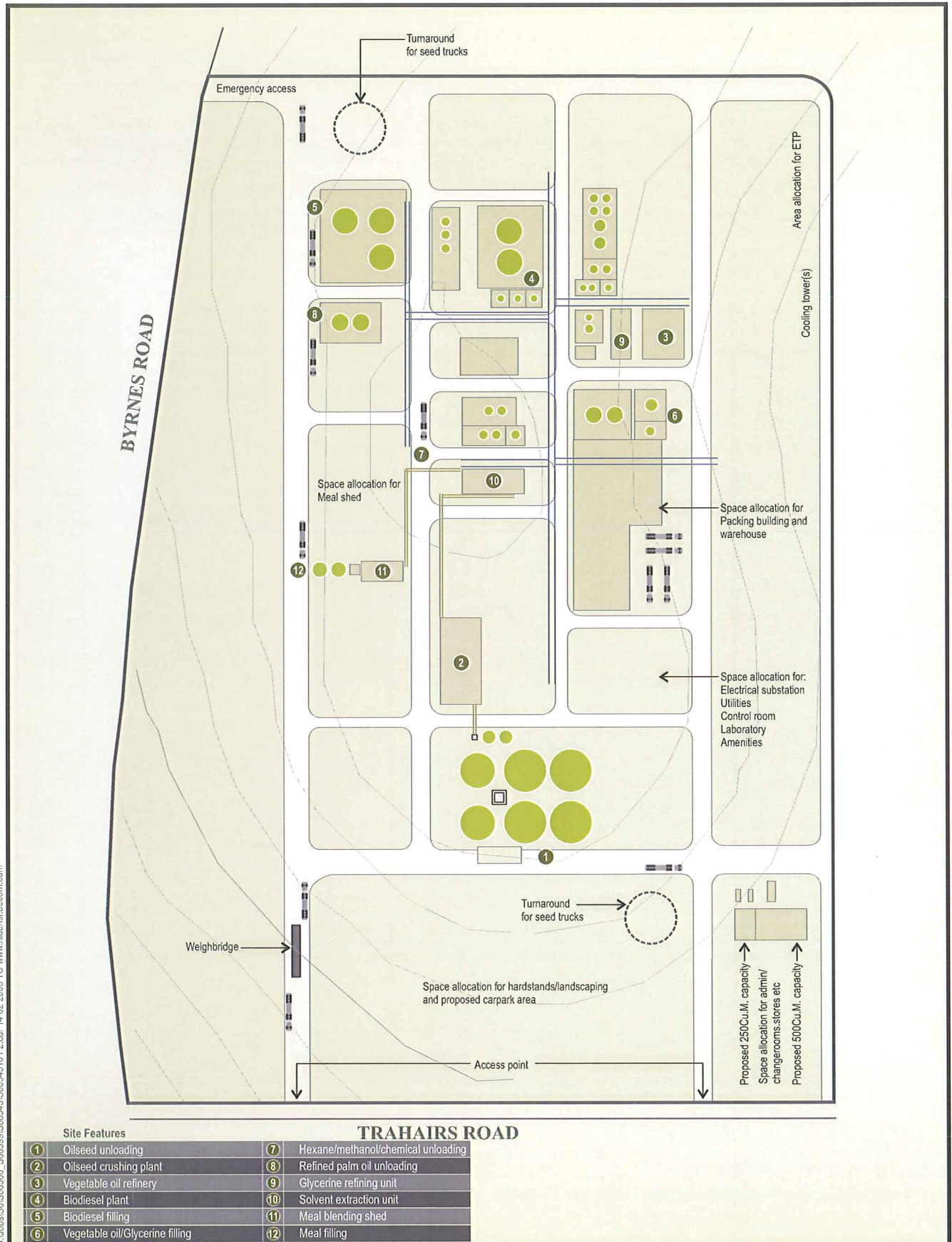


Figure 2 | Proposed IOPBP Footprint
Riverina Oils and Bio Energy Pty Ltd
 Archaeology Assessment
 Integrated Oilseed Processing and
 Biodiesel Plant



ENSR | AECOM

Approximate project footprint

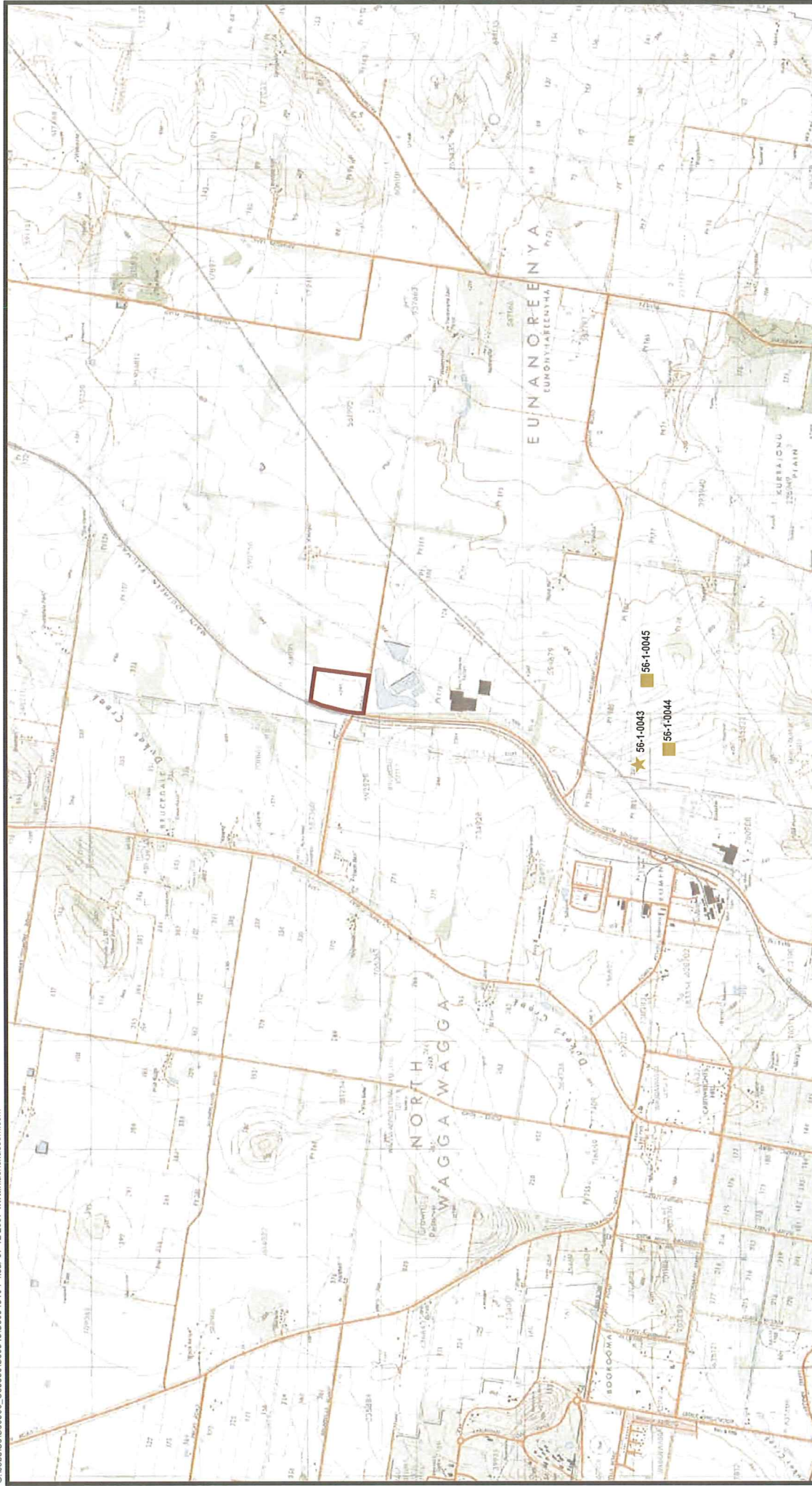
Property boundary

Figure 3 Transects Undertaken as Part of the Physical Inspection

Riverina Oils and Bio Energy Pty Ltd

Archaeology Assessment

Integrated Oilseed Processing and Biodiesel Plant



Approximate project footprint
Isolated find
Quarry



ENSR | AECOM

Figure 4 AHIMS Site Locations
Riverina Oils and Bio Energy Pty Ltd
Archaeology Assessment
Integrated Oilseed Processing and
Biodiesel Plant

Plates

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2



Plate P1: Transect 1, looking north



Plate P2: Transect 2, looking northeast across transect 1 to existing dam to the east of the Study Area



Plate P3: Transect 2, looking south



Plate P4: Transect 3, looking north. Note the good exposure and visibility.



Plate P5: Transect 3 and 4 looking west towards Byrnes Road



Plate P6: Transect 3, looking south across the westernmost field of the Study Area



Plate P7: Transect 5, looking northeast across the existing dam



Plate P8: Transect 6, looking southeast across a heavily modified landscape in this part of the Study Area

Appendix A

AHIMS Information



Department of
**Environment
and Conservation (NSW)**



S6054301

Your reference : Wagga Wagga
Our reference : AHIMS #20182

HLA Envirosiences Pty Ltd
PO Box 726
Pymble NSW 2073

Tuesday, 02 October 2007

Attention: Allan Williams

Dear Sir or Madam:

Re: AHIMS Search for the following area at Wagga Wagga; Zone: 55; E: 529127 - 549127; N: 6111517 - 6131517

I am writing in response to your recent inquiry in respect to Aboriginal objects and Aboriginal places registered with the NSW Department of Environment and Conservation (DEC) at the above location.

A search of the DEC Aboriginal Heritage Information Management System (AHIMS) has shown that 14 Aboriginal objects and Aboriginal places are recorded in or near the above location. Please refer to the attached report for details.

The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.

The following qualifications apply to an AHIMS search:

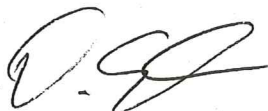
- AHIMS only includes information on Aboriginal objects and Aboriginal places that have been provided to DEC;
- Large areas of New South Wales have not been the subject of systematic survey or recording of Aboriginal history. These areas may contain Aboriginal objects and other heritage values which are not recorded on AHIMS;
- Recordings are provided from a variety of sources and may be variable in their accuracy. When an AHIMS search identifies Aboriginal objects in or near the area it is recommended that the exact location of the Aboriginal object be determined by re-location on the ground; and
- The criteria used to search AHIMS are derived from the information provided by the client and DEC assumes that this information is accurate.

All Aboriginal places and Aboriginal objects are protected under the *National Parks and Wildlife Act 1974* (NPW Act) and it is an offence to destroy, damage or deface them without the prior consent of the DEC Director-General. An Aboriginal object is considered to be known if:

- It is registered on AHIMS;
- It is known to the Aboriginal community; or
- It is located during an investigation of the area conducted for a development application.

If you considering undertaking a development activity in the area subject to the AHIMS search, DEC would recommend that an Aboriginal Heritage Assessment be undertaken. You should consult with the relevant consent authority to determine the necessary assessment to accompany your development application.

Yours Sincerely



Gordon, David
Administrator
Information Systems Section
Cultural Heritage Division
Phone: 02 9585 6513
Fax: 02 9585 6094



Department of
**Environment
& Conservation**

List of Sites (List - Short)

Wagga Wagga

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 55, Easting From = 529127, Easting to = 549127, Northing From = 6111517, Northing to = 6131517, Feature Search Type = AHIMS Features

Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
50-4-0001	Houliaghans Creek Harefield BY 1	AGD	55	540500	6130926	AFT	Open Camp Site	ASRSYS	738	NRS/17798/1/453
		Status Valid								
		Primary Contact								
50-5-0011	Harefield BY3 Reedy Creek	AGD	55	548840	6128542	AFT	Open Camp Site	ASRSYS	738	NRS/17798/1/453
		Status Valid								
		Primary Contact								
56-1-0009	GG1.	AGD	55	543350	6115150	AFT	Open Camp Site	Silcox	1277, 98475	NRS/17798/1/555
		Status Valid								
		Primary Contact								
56-1-0010	Gumly Bore No.6;GG 2:	AGD	55	544550	6115700	AFT, ETM, SHL	Midden, Open Camp Site	Silcox	98475	NRS/17798/1/555
		Status Valid								
		Primary Contact								
56-1-0033	BOM-1:	AGD	55	536400	6117200	AFT	Isolated Find	Permit(s) 505 Everett		NRS/17798/1/555
		Status Valid								
		Primary Contact								
56-1-0043	EAST BOMEN 1	AGD	55	538530	6118940	AFT, STQ	Quarry	Permit(s) Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact								
56-1-0044	EAST BOMEN IF2	AGD	55	538670	6118650	AFT	Isolated Find	Permit(s) Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact								
56-1-0045	EAST BOMEN IF1	AGD	55	539300	6118850	AFT	Isolated Find	Permit(s) Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact								



Department of
**Environment
& Conservation**

50 LN

List of Sites (List - Short)

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 55, Easting From = 500127, Easting to = 550127, Northing From = 6110517, Northing to = 6151517, Feature Search Type = AHIMS Features, Populate AHIMS Map? = Yes

Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
<u>50-4-0001</u>	<u>Houliaghans Creek Harefield BY 1</u>	AGD	55	540500	6130926	AFT	Open Camp Site	ASRSYS	738	NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-4-0003</u>	<u>Boggy Creek 5</u>	AGD	55	510730	6145880	AFT	Open Camp Site	Nicholson		NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s) 424		
<u>50-4-0004</u>	<u>Boggy Creek 4</u>	AGD	55	500870	6149100	AFT	Open Camp Site	Nicholson	2541	NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-4-0006</u>	<u>WW122</u>	AGD	55	502490	6129580	TRE	None	Green		NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-5-0011</u>	<u>Harefield BY3 Reedy Creek</u>	AGD	55	548840	6128542	AFT	Open Camp Site	ASRSYS	738	NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-5-0012</u>	<u>Harefield</u>	AGD	55	548077	6131733	TRE	Scarred Tree	ASRSYS	478	NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-5-0028</u>	<u>Haulaghans Creek</u>	AGD	55	546210	6138900	AFT	Open Camp Site	Nicholson		NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		
<u>50-5-0029</u>	<u>June Campsite</u>	AGD	55	549440	6139510	AFT	Open Camp Site	Nicholson		NRS/17798/1/453
		Status	Valid							
		Primary Contact						Permit(s)		

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Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types	Recording	Reports	State Archive Box
							(recorded prior to June 2001)	(Primary)	(Catalogue Number)	Number
56-1-0009	GG1:	AGD	55	543350	6115150	AFT	Open Camp Site	Silcox	1277, 98475	NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Silcox	98475	NRS/17798/1/555
56-1-0010	Gumly Bore No.6;GG 2:	AGD	55	544550	6115700	AFT, ETM, SHL	Midden, Open Camp Site			
		Status Valid						Permit(s) 505		
		Primary Contact						Giles Hamm Archaeology		NRS/17798/1/555
56-1-0011	Currawananna Lagoon:	AGD	55	509400	6124400	AFT	Open Camp Site			
		Status Valid						Permit(s)		
		Primary Contact						Permit(s)		
56-1-0012	WW15 Strathmore 1:	AGD	55	526550	6118770	AFT, TRE	Isolated Find, Scarred Tree	Navin, Officer	98637, 98639, 98640	NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Navin, Officer		NRS/17798/1/555
56-1-0013	PWW1F10	AGD	55	523130	6114620	AFT	Isolated Find	Navin, Officer		NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Navin, Officer		NRS/17798/1/555
56-1-0014	WW1F4:	AGD	55	527100	6118460	AFT	Isolated Find	Navin, Officer		NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Navin, Officer		NRS/17798/1/555
56-1-0015	WW14;West Pomingalarna 3:	AGD	55	522880	6114370	AFT	Open Camp Site	Navin, Officer	98639, 98640	NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Navin, Officer		NRS/17798/1/555
56-1-0016	WW13;West Pomingalarna 2:	AGD	55	523020	6114180	AFT	Open Camp Site	Navin, Officer	98639, 98640	NRS/17798/1/555
		Status Valid						Permit(s)		
		Primary Contact						Permit(s)		



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Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
56-1-0017	WW12:West Pomonalama 1:	AGD	55	523030	6114350	AFT	Open Camp Site	Navin, Officer	98639, 98640	NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0028	WW38 Bomen,Murrumbidgee River Floodplain:	AGD	55	522000	6111000	AFT	Open Camp Site	Officer	98638	
		Status Valid								
56-1-0033	BOM-1:	Primary Contact						Permit(s)		
		AGD	55	536400	6117200	AFT	Isolated Find	Everett		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0042	Jessie May	AGD	55	526800	6119500	TRE	Scarred Tree	Burns		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0043	EAST BOMEN 1	AGD	55	538530	6118940	AFT, STQ	Quarry	Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0044	EAST BOMEN IF2	AGD	55	538670	6118650	AFT	Isolated Find	Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0045	EAST BOMEN IF1	AGD	55	539300	6118850	AFT	Isolated Find	Navin, Officer		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
56-1-0049	LN3	AGD	55	528910	6111410	AFT	None	Navin Officer Heritage Consultants Pty Ltd		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		



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Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
<u>56-1-0050</u>	<u>LN4</u>	AGD	55	528770	6111700	AFT	None	Navin Officer Heritage Consultants Pty Ltd		NRS/17798/1/555
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0081</u>	<u>WW110</u>	AGD	55	536000	6116140	AFT	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0082</u>	<u>WW112</u>	AGD	55	519590	6115330	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0083</u>	<u>WW113</u>	AGD	55	514170	6116180	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0084</u>	<u>WW115</u>	AGD	55	509840	6124300	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0086</u>	<u>WW120</u>	AGD	55	526600	6118790	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0087</u>	<u>WW123</u>	AGD	55	506000	6114550	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		
<u>56-1-0088</u>	<u>WW129</u>	AGD	55	533120	6114600	TRE	None			NRS/17798/1/556
		Status Valid								
		Primary Contact						Permit(s)		



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Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
56-1-0090	Wollundry	AGD	55	532150	6114450	TRE	None	Wagga Wagga LALC		NRS/17798/1/556
		Status	Valid					Permit(s)		
		Primary Contact						Wagga Wagga LALC		NRS/17798/1/556
56-1-0091	River Road WW 121	AGD	55	525950	6119060	TRE	None	Wagga Wagga LALC		NRS/17798/1/556
		Status	Valid					Permit(s)		
		Primary Contact						Wagga Wagga LALC		NRS/17798/1/556
56-1-0092	WW 114	AGD	55	509770	6117980	TRE	None	Wagga Wagga LALC		NRS/17798/1/556
		Status	Valid					Permit(s)		
		Primary Contact						Wagga Wagga LALC		NRS/17798/1/556
56-1-0094	WW 111	AGD	55	521000	6114330	TRE	None	Wagga Wagga LALC		NRS/17798/1/556
		Status	Valid					Permit(s)		
		Primary Contact						Wagga Wagga LALC		NRS/17798/1/556
56-1-0095	WW 126	AGD	55	532650	6122100	TRE	None	Wagga Wagga LALC		NRS/17798/1/556
		Status	Valid					Permit(s)		
		Primary Contact						Wagga Wagga LALC		NRS/17798/1/556
56-1-0097	L-F-2	GDA	55	529440	6111060	AFT	None	Kelton		
		Status	Valid					Permit(s)		
		Primary Contact						Kelton		
56-1-0100	L-ST-3	AGD	55	529220	6110670	TRE	None	Kelton		
		Status	Valid					Permit(s)		
		Primary Contact						Kelton		
56-1-0101	L-ST-4	AGD	55	528940	6111190	TRE	None	Kelton		
		Status	Valid					Permit(s)		
		Primary Contact						Kelton		



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Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Archive Box Number
56-1-0102	L-ST-5	AGD	55	529300	6110950	TRE	None	Kelton		
		Status	Valid							
		Primary Contact						Permit(s)		
56-1-0103	L-ST-6	AGD	55	529360	6110790	TRE	None	Kelton		
		Status	Valid							
		Primary Contact						Permit(s)		
56-2-0001	Shepherd Sliding BY2:	AGD	55	546399	6125959	AFT	Open Camp Site	ASRSYS	738	NRS/17798/1/556
		Status	Valid							
		Primary Contact						Permit(s)		
56-2-0023	WW109	AGD	55	547660	6114850	TRE	None	Green		NRS/17798/1/556
		Status	Valid							
		Primary Contact						Permit(s)		
56-4-0036	WP4	AGD	55	522900	6113980	AFT	Open Camp Site	Oakley		NRS/17798/1/558
		Status	Valid							
		Primary Contact						Permit(s)		

Appendix B

Aboriginal Community Consultation Information

RIVERINA Classifieds

TENDERS

ENSR | AECOM

Proponent: Riverina Oils and Bioenergy Pty Limited

Project: Aboriginal Heritage Assessment - Proposed Integrated Oilseed Processing and Biodiesel Plant

Location: North of Bomen, NSW

If you are an Aboriginal individual or group and wish to be consulted during this project, please register your interest in writing by (19th October, 2007) to;

Alan Williams
HLA-Envirosciences Pty Limited
PO Box 726, PYMBLE NSW 2073
T: 02 8484 8999
F: 02 8484 8989
E: awilliams@hla-enviro.com.au

Following registration, each party will be consulted and will receive an information pack outlining the project in detail.

1166591X



Coolamon Shire Council

COOLAMON SHIRE COUNCIL

TENDERS - 2007/04

TENDERS FOR THE CONSTRUCTION OF

BUSINESSES FOR SALE

Electrical Contracting Business Upper Western District NSW

A great opportunity exists for an enthusiastic person to take over an existing electrical contracting business situated in the Upper Western region. Currently employing 4 electricians, 3 apprentices and 2 admin staff, the work consists of working with mines in the area, labour hire, rig maintenance, new installations, and maintenance work. Both industrial and domestic in all areas there is plenty of scope for expansion and plenty of work. The present owner is preparing to retire due to health but is prepared to stay on for a period to help with the continuity of business. There is a very good sized, well-equipped workshop which is leased. Plant includes 5 vehicles, all maintained, 1 designated for underground. Price \$400,000. Walk In, Walk Out. In addition to the business there is a 3 bedroom, brick veneer house and mobile home also available.

Genuine enquiries to Phone 0429 912 270

Club House Hotel



FOR SALE AS A LEASEHOLD BUSINESS

- Approx 13 lease years in total
- Strong bar & gaming income (10 gaming machines)
- 17 hotel rooms & large managers residence
- Central position backing onto Lachlan River
- Strong local agricultural industry
- Taking \$13,000 per week plus

Contact Patrick Connolly for further details
0417 598 624

visit our website for further tourism & leisure opportunities

www.crebrokers.com



crebrokers

GARAGE SALE

BOURKELANDS: 177 Wandoo Pl, start 8am - 1pm. Books, jewellery, toys and sundries.

BOURKELANDS: 4 Wilgoma St, Sat/Sun 6th and 7th, 8.00am start. 2 households, toys and kitchenware galore, aviary, furniture, auto parts and much more.

CENTRAL: 157 Forsyth St, 8am start. Old wares, furniture, junk and lots more.

CENTRAL: 126 Tompson St, Sat 6, 11am - 3pm.

CENTRAL: 8 Cullen Rd, 7.30am start. Saw blades, deceased bric-a-brac est.

CENTRAL: 22 Hammond Ave. Moving Sale. No reasonable offer refused. Sat from 8am.

CENTRAL: 3/32 Trail St, not before 8am. More treasures than trash, bargain prices, don't miss this one!

CENTRAL: 79 Kincaid St. 3 piece lounge, coffee-table, corner TV unit, coils, twin pram, english china, silver, snowboard.

GLENFIELD: Langi Cres, 8am start. Twin jogger, baby items, pool, HSV, boat, ykt and much more. Moving Sale.

HILLTOP: 11 Yanko Cres, 8.30am - 12pm. Furniture, tools, toys, clothing, computer goods, timber, ornaments, electricals, kitchenware, plants.

KOORINGAL: 12 Merinda Cres, 7.30am start. Huge sale, everything must go. Mig, air compressor, tools, fishing, spas, pool table, lockers and lots more.

KOORINGAL: 1 Barea Pl, 8am - noon. Bric-a-brac, furniture, china, garden tools, books, household utensils, lots of sundry items.

LAKE ALBERT: 10 Huron Cres, Sat finish at 12 Noon. Household, books, sporting gear, motorbikes, Honda CR50, Suzuki DR200, KX80, reg for 12 months SVW-22 plus lots more.

LAKE ALBERT: 7 Buchanan St. Moving sale.

LAKESIDE: 96 Dalkeith Ave. Sat only 8.00am - 4.00pm. Alum extension ladder, drill press, jack, welding/cutting outfit, washing machine, elec/computer connections.

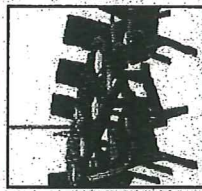
MOUNT AUSTIN: 95 Leavenworth Dr, Sat. Assort plants, ferris, some elks.

NORTH ASHMONT: 15 Mallory St, Saturday. Household items.

NORTH WAGGA: 44 William St, 7am - 12pm. Gas oven, hot water, cutlery, bricks.

FOR SALE

BARBECUES SAVE UP TO 50% OFF GALORE



On Superseded & Shop Soiled Outdoor Furniture

Hurry into Barbeques Galore

Phone: 6925 1186

TOURS AND TRAVEL





OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

Facsimile to: Allan Williams, HLA Enviro
Facsimile No: 02-84848989
From: Maurice Stewart
Subject: Property Search
Date: 15 October 2007
Pages: 1

Message:

Dear Alan

I refer to your request for a search of the Aboriginal Land Claims Register for land described as:

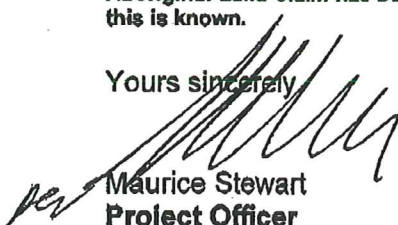
Lot: 1
DP: 1000675
County: Clarendon
Parish: North Wagga Wagga

I have searched the Register of Aboriginal Land Claims and as of today the subject land does not appear on the Register as affected by an Aboriginal Land Claim pursuant to ss. 36 or 37 of the *Aboriginal Land Rights Act 1983*.

Please be advised of our change of address and contact details as given above.

Please Note: Search Requests should not be made over privately owned land. Crown Land is the only land in NSW that is likely to be affected by an Aboriginal Land Claim under the *Aboriginal Land Rights Act*. It is not necessary to make a search over privately owned land- even if an Aboriginal Land Claim has been made over privately owned land it would be refused as soon as this is known.

Yours sincerely


Maurice Stewart
Project Officer
Aboriginal Land Rights Act 1983

Appendix C

Glossary of Terms

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Activity Area	A pattern of artefacts in a site indicating that a specific activity took place.
Adaptation	Adaptation means modifying a place to suit proposed compatible uses.
Adze	A chiselling or gouging tool used for shaping and trimming wooden artefacts.
Alluvial	Pertaining to the surface. A surface deposit.
Anvil	Object that supports a stone artefact that is being struck with a hammer.
Archaeological Potential	The likelihood of the presence of archaeological evidence ascertained through physical evaluation (survey, test excavations) and historical research.
Artefact Scatter	A collection of artefacts usually distributed across the surface of the ground.
Artefact	Any object which is physically modified by humans.
Assemblage	A collection of artefacts associated by a particular place or time and assumed generated by a single group of people. An assemblage can comprise different artefact types.
Assimilation	A 19th century idea that Indigenous people should be 'improved' by being 'civilised' and becoming Christians and learning how to work as Europeans did. From the 1930s assimilation became government policy.
Attribute	A well defined feature of an artefact that cannot be further subdivided. Archaeologists identify types of attributes, including form, style and technology, in order to classify and interpret artefacts.
Axe	A stone-headed axe characteristically containing two ground surfaces which meet at a bevel.
Backed Blade	A stone tool where one margin of a flake is retouched at a steep angle and that margin is opposite a sharp edge.
Background Scatter	A low density scatter of isolated finds that are distributed through the landscape without any obvious focal point.
Basalt	Igneous volcanic rock used to make stone artefacts. Basalt is common in eastern Australia where there has been recent volcanic activity.
Bifacial Flake	A chipped stone artefact which has flake scars on both surfaces. Such artefacts generally have lenticular cross-sections and platforms which are edges between the flaked surfaces.
Biome	Major biotic landscape in which distinctive plant and animal communities exist.
Bipolar Flake	A stone artefact made by striking into an anvil with a hammerstone. Bipolar flakes display crushing at either end.

Black Glass	A popular term for bottles of dark green or dark brown glass, the dark colour of which protected the contents. "Black" glass was first made in England in the mid-17th century.
Blade	A flake that is at least twice as long as it is wide.
Bondi Point	A small asymmetrical microlith with a point at one end and backing retouch.
Bottle glass	A common, naturally coloured, dark greenish or brownish glass. The colour is characteristic of glass that includes traces of iron found in the natural silica used as the major ingredient. Sometimes, additional iron, in the form of iron oxide (or other materials), is added to darken the colour.
Bottle Seal	Its many meanings include an emblem impressed on wax or some other plastic substance as evidence of ownership or authenticity. Since the 17th century, many bottles have borne stamped glass seals that identify the producer of the contents, the tavern in which they were used, or the individual for whom the contents were bottled.
Bowsing	Technique for detecting buried features by thumping the ground and sensing the differences between compacted and undisturbed earth.
Burin	A stone tool flaked on one or both ends to form a small chisel or grooving tool.
Burra Charter	The Burra Charter provides guidance for the conservation and management of places of cultural significance Australia. It sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians. The most recent version of the Burra Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) on 26 November 1999.
Ceramic	Object of fired clay. Ceramic may be glazed or unglazed.
Chert	A fine-grained silicious rock commonly used in the manufacture of stone artefacts.
Civic	A term used to describe historic structures or material culture relating to past government or public activity, i.e. town halls and public parklands.
Commonwealth Heritage List	A database of cultural heritage places situated on Commonwealth lands that have acknowledged national heritage value. The list is established under the Environment Protection and Biodiversity Conservation Act 1999.
Composite Flake	A stone tool made up of two or more parts joined together.
Conjoin	A physical link between artefacts broken in antiquity.
Conjoin Set	A number of artefacts refitted together.

Conservation	As defined in The Burra Charter, conservation means all the processes of looking after a place so as to retain its cultural significance.
Conservation Management Plan	A document that outlines the cultural heritage significance of an object or area and policies, guidelines, maintenance and other related strategies for the conservation of the object or area.
Contact Site	A site that displays an interaction between early colonialists and Aboriginal Australians.
Coprolite	Excrement preserved by desiccation or fossilisation.
Core	A piece of flaked stone which has one or more negative flake scars but no positive flake scars.
Cortex	Weathered outer surface of a rock, usually chemically altered.
Country	A term used by Aboriginal people to refer to the land to which they belong and their place of Dreaming. Aboriginal language usage of the word country is much broader than standard English.
Crop Mark	Differential growth in crops and vegetation cover that reveals the outlines of archaeological sites from the air.
Cross-dating	Dating of sites by means of objects or associated artefacts of known age.
Crown land	Crown land is a class of public land, provided for the enjoyment and benefit of the people. See also Reserves.
Cultural Landscape	An area of land that contains numerous objects and/or areas of cultural heritage value that, when considered as a whole, are of cultural heritage significance.
Cultural significance	Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations (Australia ICOMOS Burra Charter Article 1.2).
Datum	The datum point is the location from which all measurements on a site are made. The datum point is tied into local survey maps.
Desktop Survey	A study that does not involve any field-based activity and only involves background research and reporting, e.g. university assignments, desktop historical research projects.
Diffusion	The spread of a cultural trait from one area to another by means of contact between people.
Distal	The terminating end of a flake opposite the bulb.

Dreaming	The Dreaming has different meanings for different Aboriginal groups. The Dreaming can be seen as an embodiment of Aboriginal creation which gives meaning to everything. It establishes the rules governing relationships between the people, the land and all things for Aboriginal people.
Dry Stone Wall	A wall that has been constructed without any binding material.
Edge Damage	The removal of small flakes, or crushing, from the edge of an artefact.
Elouera	A type of backed blade, triangular sectioned and resembling an orange segment in shape.
Excavation	An archaeological field method that involves the disturbance of the earth to reveal previously buried archaeological materials.
Faience	Glazed terracotta pottery.
Feature	An artefact that cannot be normally removed from a site, e.g. foundations.
Fish Trap	A structure within a creek or river intended to guide fish or eels into a confined space for collected. Usually made with stone but may be formed from wood or reeds.
Flake	Any piece of stone struck off a core. It has a series of characteristics showing that it has been struck off. The most indicative of these features are ringcracks, showing where the hammer hit the core. Also the ventral surface may be deformed in characteristic fashion, for example having a bulb or errillure.
Flaked Piece/Waste Flake	An unmodified and unused flake, usually the by-product of tool manufacture or core preparation.
Flotation	Recovering plant remains by using water to separate seeds from their surrounding deposit.
Fluvial	Pertaining to rivers and streams. Deposits by flowing water.
Gilding	The process of decorating by the use of gold leaf, gold paint, or gold dust. The gilding may be applied with size, or amalgamated with mercury.
Greywacke	Hard fine-grained rock of variable composition containing some quartz and feldspar but mostly very fine particles of rock fragments.
Grinding Groove	A depression formed in rock from the use of a grinding stone.
Grinding Stone	The abrasive stone used to abrade another artefact or to processes food.

Ground Edge Axe	A stone axe that is oval or round in shape and has edges formed by grinding and sharpening. Ground edge axes were hafted to wooden handles using resin.
Ground Visibility	A term used to describe the area of the ground's surface that is visible during archaeological field surveys.
Hafting	The process of attaching a stone artefact onto a wooden handle.
Hammerstone	A stone that has been used to strike a core to create a flake, often causing pitting or other wear on the stone's surface.
Hearth	Fireplace often recognised archaeologically through the presence of charcoal or burnt ground. Historical hearths are usually associated with a brick or stone structure.
Heritage	The word 'heritage' is commonly used to refer to our cultural inheritance from the past that is the evidence of human activity from Aboriginal peoples through successive periods of later migration, up to the present day. Heritage can be used to cover natural environment as well, for example the Natural Heritage Charter. In this document, cultural heritage refers to all Indigenous and non-Indigenous places and objects, and associated values, traditions, knowledge and cultures.
Historical Archaeology	Historical archaeology is a term to describe non-Indigenous or post-contact heritage.
Holocene	The geological period covering the last 10,000 years.
ICOMOS	ICOMOS (International Council on Monuments and Sites) is linked to UNESCO, with national committees in some 100 countries with the headquarters in France. ICOMOS promotes expertise in the conservation of cultural heritage. Australia ICOMOS was formed in 1976. Its fifteen member executive committee is responsible for carrying out national programs and participating in decisions of ICOMOS.
In Situ	In the natural or original position. Applied to a rock, soil, or fossil when occurring in the situation in which it was originally formed or deposited.
In situ conservation	Strategies and initiatives designed for the preservation and conservation of historical archaeological materials without the need to collect or excavate materials from their archaeological context.
Interpretation	A way of communicating meaning and relationships using original artefacts, by first-hand experience and by illustrations.
Isolated Find	A single artefact not located with any other.
Knapping	The process of striking rocks and causing them to fracture.
Koori	Koori is an Aboriginal term used to describe Indigenous people from south-eastern Australia.
Lacustrine	Pertaining to lakes. Deposits from a lake system.

Lithics	Of, or pertaining to, rock and stone.
Makers Mark	A mark that has been etched engraved or printed onto the surface of mass manufactured goods, including glassware and ceramics.
Manuport	An object that is unmodified but has been transported to its location by humans.
Maritime Archaeology	Maritime archaeology is often thought to be restricted to shipwrecks. The term applies to places and objects relating to industries such as sealing and whaling, and also includes structures such as jetties and piers, and ports infrastructure.
Megafauna	Large mammal animals that once lived in Australia.
Microlith	Very small stone artefacts often used in spears.
Midden	A deposit of occupation debris, rubbish, or other by-products of human activity.
Murri	Murri is an Aboriginal term used to describe Indigenous people from north-eastern Australia.
Natural Transformation	Change in the archaeological record as a result of natural processes.
Object	An object means a moveable article, artefact or relic, and may include furniture, ornaments, cutlery, glass, crockery, works of art, honour boards, jewellery, and vehicles. Groups of objects are commonly referred to as a collection if there is a shared theme that links the objects.
Obsidian	A volcanic mineral that was the first form of natural glass used by humans. It is usually black, but it can also be very dark red or green; its splinters are often transparent or translucent.
Opalised Glass	Glass that resembles an opal, being translucent and white, with a greyish or bluish tint. This appearance is often caused by exposure to sunlight.
Palynology	The study of pollen.
Pleistocene	The geological period equivalent to the last ice age and preceding the Holocene from ca 2 million years to 10,000 years ago. The Late Pleistocene generally refers to the period of time from 40,000 – 10,000 years ago.
Post-depositional	After deposition. A term commonly used with reference to factors affecting the preservation of artefacts and archaeological features.
Posthole	A hole that has been dug into the ground to house a post.
Potsherd	A fragment of a clay vessel.
Quartz	A hard transparent mineral commonly used in the manufacture of stone artefacts.

Quartzite	A large-grained silicious rock commonly used in the manufacture of stone artefacts.
Relief Cutting	A type of cut glass with decoration in high relief, made by removing the background.
Retouched Flake	A flake that has had secondary modification such as trimming or modification.
Reverse painting	The term applied to a number of decorative techniques, all of which involve painting on the back side of the glass a design that is viewed from the front (that is, through the glass). Because of this, the painter must apply the pigments in the reverse of the normal order, beginning with the highlights and ending with the background.
Rock Well/Ngamma Hole	A natural depression that may have been augmented through the removal of rock and from which water is collected.
Ruin	The remains of a former historic structure.
Salvage Excavation	The systematic documentation and recovery of an archaeological site immediately prior to its destruction.
Scarred Tree	A tree whose bark has been removed for the use for canoes, roofing, and trail blazes for example.
Scraper	A stone tool made on a flake or core with steep retouch along one or more edges.
Seam mark	A slight, narrow ridge on a glass object, which indicates that it has been made by moulding. The seams appear where gaps in the joints between parts of the mould have permitted molten glass to seep during formation. On well-made pieces, the seam marks are usually smoothed away by grinding or fire polishing.
Seasonality	Seasonal occupation of a site.
Seriation	Method used to place artefacts in chronological order. Similar artefacts are placed more closely together.
Settlement Pattern	Distribution of human settlement on the landscape.
Shell Midden	A mound or deposit containing shells, animal bones, and other refuse that indicates a site of a human settlement.
Significance	Significance is a term used to describe an item's heritage value. Values might include natural, Indigenous, aesthetic, historic, scientific or social importance.
Silcrete	A medium-grained silicious rock commonly used in the manufacture of stone artefacts.
Site	An area of particular focus of past human activity, usually (but not exclusively) characterised by physical evidence of this activity.

Slip	A fine, wet finish applied to the surface of a clay vessel prior to its firing and decoration.
Stela	A column or stone slab, often with an inscribed or sculptured surface.
Stone Arrangement	An arrangement of stones into a shape or pattern. Often used for ceremonial purposes of place markers.
Surface Site	A site where artefacts are found on the ground surface.
Sustainability	Sustainability is the ability to maintain the qualities that are valued in the built and natural environment. Sustainability can be measured in terms of economic, environmental and social factors.
Temper	Coarse material such as sand or shell added to fine pot clay to make it bond during firing.
Test Excavation	Excavation of small sections of an area to determine the archaeological remains and/or potential of an area.
Toe-Hold	Small scar on the trunk and branches of a tree originally to facilitate climbing.
Tuff	Solidified volcanic ash.
Tula	A flake with a prominent bulb, large platform and platform/ventral surface angle of about 130o, which is retouched at the distal end. Not to be confused with a tula adze.
Tula Adze	A composite tool observed ethnographically, consisting of a stone artefact (often a Tula), a wooden handle and resin.
UNESCO	UNESCO is the United Nations Educational, Scientific and Cultural Organization, founded on 16 November 1945. UNESCO promotes international co-operation among its Member States and Associate Members in the fields of education, science, culture and communication.
Unifacial Flake	Stone tool flaked on only one side.
Usewear	The wear displayed on an artefact as a result of its use.
Watching Brief	The monitoring of works in progress at a known or potential archaeological site.