

Aboriginal Cultural Heritage Report

Appendix J



Appendix J — Aboriginal Cultural Heritage Report

J

Bourke small stock abattoir

SSD 7268

Aboriginal cultural heritage assessment

Prepared for CAPRA Developments Pty Ltd | 3 March 2016



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Bourke small stock abattoir

Final

Report H15101RP1 | Prepared for CAPRA Developments Pty Ltd | 3 March 2016

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Date 3 March 2016

Date 3 March 2016

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Document Control

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Executive Summary

CAPRA Developments Pty Ltd (CAPRA) is seeking development consent for the construction and operation of the Bourke Small Stock Abattoir (the project). The site of the project is approximately 14 km north of Bourke in the far north west of New South Wales, approximately 760 km north-west of Sydney (Figure 1.1). The abattoir will process up to 6000 head per day and create an estimated 200 full time equivalent positions when operating at full capacity. The development will include livestock holding yards, staff amenities, water treatment infrastructure, roads and the abattoir buildings. The project is a State significant development (SSD) under *State Environmental Planning Policy (State and Regional Development) 2011* and therefore approval for the project is required under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Aboriginal cultural heritage assessment (ACHA) has been prepared for the development application and accompanying environmental impact statement (EIS). It addresses specific requirements provided in the Secretary's environmental assessment requirements (SEARs) issued by the Department of Planning and Environment (DP&E) on 29 October 2015. The aim of the ACHA is to assess the Aboriginal cultural heritage values within the study area in accordance with the SEARs. The ACHA method involved:

- Aboriginal consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010);
- background environmental, historic and archaeological research; and
- a survey of the study area by archaeologists and registered Aboriginal parties (RAPs).

The study area is located on a flat stony plain landform. The study area has been historically cleared of its native vegetation and used for grazing. It is characterised by regrowth native vegetation. The study area has recently been used for grazing sheep.

Survey transects were walked back and forth across this landform, covering the footprint of the proposed facility. Effective ground coverage (an assessment to calculate the effectiveness of the survey in identifying Aboriginal objects) was high due to extensive areas of exposure, and low density vegetative ground cover.

The survey identified 25 Aboriginal sites. All of the sites were comprised of stone artefacts, made up of 20 open artefact sites and 5 isolated finds. However, it should be noted that artefact distribution was continuous across the study area and that the identified sites were categorised by assigning an arbitrary buffer of 50 m and there is a case for categorising them as a single site.

The Aboriginal sites identified were assessed as having low to moderate archaeological significance. They are widespread surface artefact scatters on an eroding landform with skeletal soil. It was concluded that the surface artefact distribution offers a good representation of the archaeological record and that significant subsurface deposits are unlikely in the study area. Artefacts identified were mostly silcrete and are representative examples of common artefact types and raw materials.

18 of the Aboriginal sites will be impacted by the project; 12 of these are completely within the project footprint and therefore will experience total loss and six are partially within the project footprint and therefore will be subject to partial loss (Figure 9.1). It is recommended that the impacted sites be salvaged by surface artefact collection and recording. This will retrieve an adequate sample of the archaeological material in the study area.

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1 Introduction

1.1 Overview

CAPRA Developments Pty Ltd (CAPRA) is seeking development consent for the construction and operation of the Bourke Small Stock Abattoir (the project). The site of the project is approximately 14 km north of Bourke in the far north west of New South Wales, approximately 760 km north-west of Sydney (Figure 1.1). The abattoir will process up to 6000 head per day and create an estimated 200 full time equivalent positions when operating at full capacity. The development will include livestock holding yards, staff amenities, water treatment infrastructure, roads and the abattoir buildings.

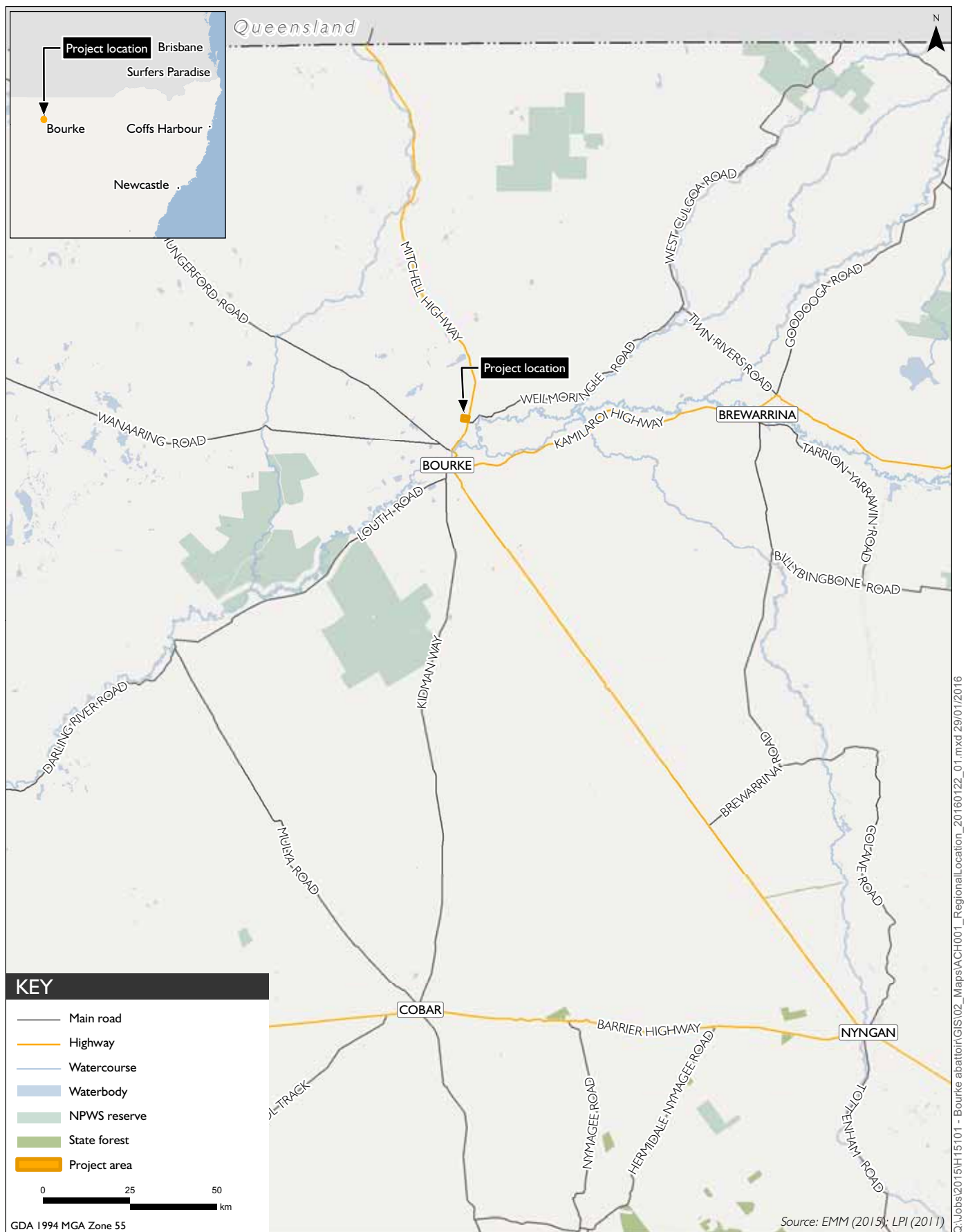
1.2 Approval process

This Aboriginal cultural heritage assessment (ACHA) has been prepared for the development application and accompanying environmental impact statement (EIS) for the project.

The project is a State significant development (SSD) under the *State Environmental Planning Policy (State and Regional Development) 2011* and therefore an application will be lodged under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act* (EP&A Act).

1.3 Secretary's environmental assessment requirements

This ACHA has been prepared to address specific requirements provided in the Secretary's environmental assessment requirements (SEARs) issued by the Department of Planning and Environment (DP&E) on 29 October 2015. Relevant agency requirements from the Office of Environment and Heritage (OEH) which have also informed the SEARs are also addressed in the ACHA. The relevant SEARS and EMM's responsive approach are presented in Table 1.1.



Regional setting

Bourke Small Stock Abattoir
Aboriginal Cultural Heritage Assessment

Figure I.1

Table 1.1 Relevant SEARs

Aboriginal heritage	Relevant section and comment
SEARs requirements	
The EIS must address the following specific matters:	Whole report.
Heritage – including	This report only includes matters relating to Aboriginal cultural heritage and not historic heritage.
Aboriginal and non-Aboriginal heritage items and values of the site and surrounding area, taking into account <i>the NSW Heritage Manual and Assessment Heritage Significant Guidelines</i>	
OEH requirements	
1. The EIS must identify and describe the tangible and intangible Aboriginal cultural heritage values that exist across the whole area that will be affected by the Small Stock Abattoir development and document these in the EIS. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the <i>Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW</i> (DECCW 2011) and consultation with OEH regional officers.	Chapter 3-8
2. Where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the <i>Aboriginal Cultural Heritage consultation requirements for proponents 2010</i> (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS.	Chapter 2 and 9
3. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must: demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment will be documented and notified to OEH.	Chapter 10

1.4 Project description

The project involves the following:

- construction of an abattoir with the capacity to process up to 6,000 head per day, comprising goat, sheep and lambs;
- construction and provision of ancillary infrastructure to support the abattoir, including reticulation of power, water and telecommunication services, vehicular access off the Mitchell Highway, heavy vehicle manoeuvring and turning areas, livestock holding yards, car parking, administration office, staff amenities and a wastewater treatment system;
- livestock will be principally sourced from the surrounding region and trucked to the development site;
- meat products from the abattoir will be chilled to less than 7 degrees Celsius (°C) or frozen for transport;

- four water treatment ponds will be constructed where wastewater will be treated via an anaerobic and aerobic ponding process, and then utilised for irrigation;
- 38 hectares (ha) of land within the project site will be set aside for irrigating crops from treated effluent from the abattoir. This will involve vegetation clearance and ploughing within the 38 ha footprint;
- employment of approximately 200 FTE personnel when operational; and
- operation 24 hours per day, 7 days per week.

Figure 1.2 shows the footprint of the project.

1.5 Project area and study area

The *project area* where the proposed abattoir will be constructed comprises 246 ha of rural land, approximately 14 km north of Bourke. It is positioned off the Mitchell Highway and is identified as Lot 17 in Deposited Plan (DP) 753546 within the local government area (LGA) of Bourke. Figure 1.1 shows the regional location of the project area.

The *study area* within the ACHA project area is defined as the footprint of the facility and the irrigation area. This encompasses the land within the fence line of the main abattoir facility and the wastewater treatment ponds, the access road between the Mitchell Highway and the abattoir, and the irrigation area, as illustrated on Figure 1.2. The disturbance footprint associated the abattoir and ancillary infrastructure is approximately 17.3 ha, and an irrigation area of 38 ha, totalling 55.3 ha.

1.6 Objectives of this assessment

The aim of this ACHA is to assess the Aboriginal cultural heritage values within the study area in accordance with the SEARS, and will be appended to the EIS for the project.

The objectives of the assessment will be to:

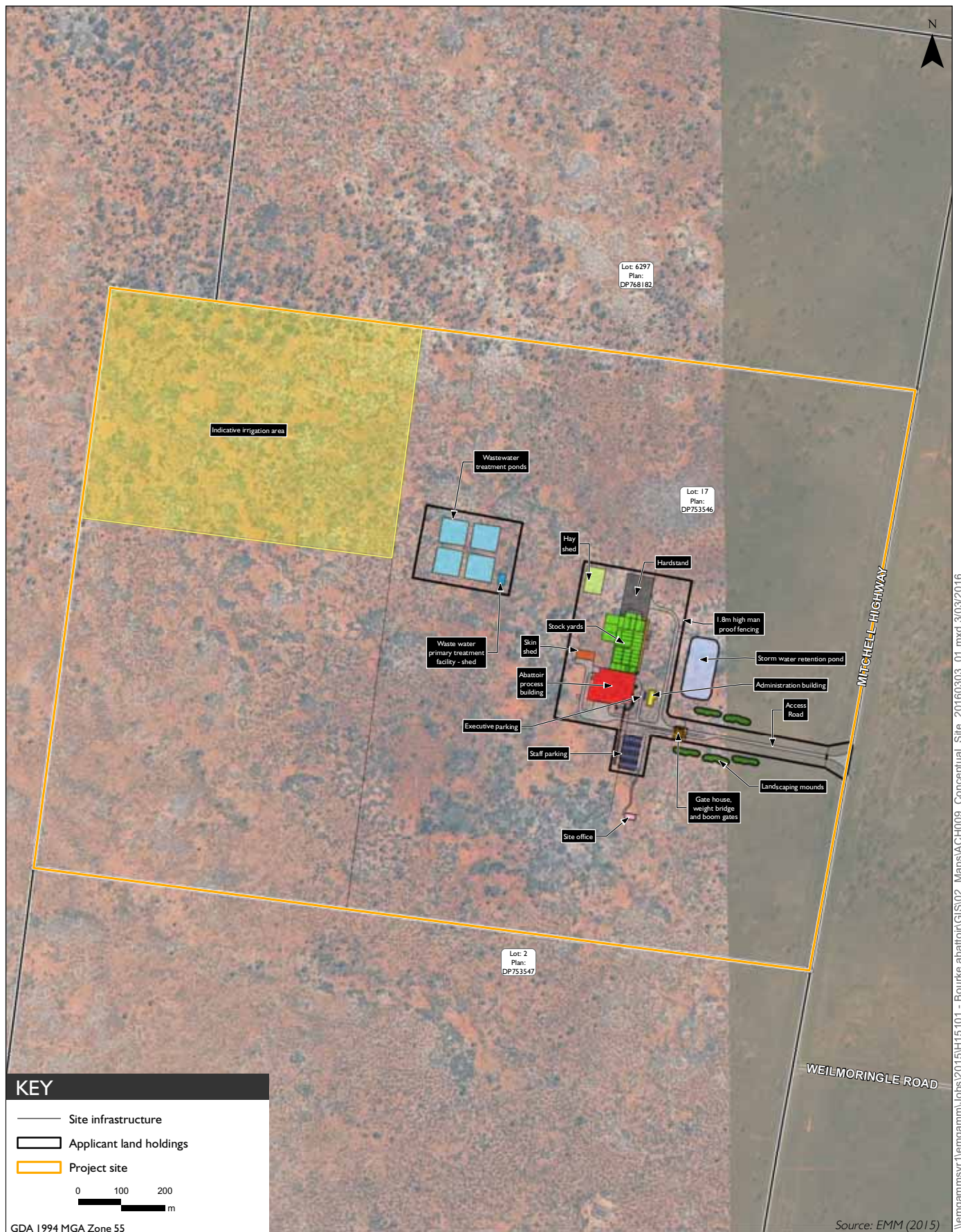
- identify Aboriginal cultural heritage values relevant to the study area which may entail:
 - Aboriginal objects and sites;
 - Aboriginal socio-cultural values which might not be related to Aboriginal objects;
 - areas of archaeological sensitivity;
- assess the significance of Aboriginal objects, sites and places identified in the course of archaeological investigations and through Aboriginal community consultation;
- assess the impact of the project on the identified Aboriginal heritage values; and
- identify appropriate management measures for potentially impacted Aboriginal heritage values in response to the assessed significance of those values and potential impacts.

1.7 Authorship

This report was written by Pamela Chauvel BA (Archaeology), Archaeologist, EMM and reviewed by Ryan Desic (BA (hons) Archaeology), Senior Archaeologist, EMM, and Nicole Armit, Services Manager, Environment Assessment and Management, EMM.

1.8 Acknowledgments

EMM would like to thank all Aboriginal community members involved in the project for their participation in correspondence and fieldwork.



Abattoir conceptual layout

Bourke Small Stock Abattoir
Aboriginal Cultural Heritage Assessment

Figure 1.2

2 Aboriginal consultation

2.1 Consultation process

The SEARS stipulate the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010) and the *Draft Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC 2005) as the guiding consultation documents for the Project. It is noted that the DECCW 2010 guidelines supersede the DEC 2005 guidelines and while both have been considered, the more stringent requirements of the DECCW 2010 guidelines have taken precedence in this assessment. As such consultation has been conducted in accordance with DECCW 2010.

In accordance with the DECCW 2010 guidelines, each private Aboriginal organisation or individual who responded with a written request to be registered for consultation is referred to as a *registered Aboriginal party* (RAP).

Details of consultation are provided in Appendix A.

2.2 Stage 1 – identification of registered Aboriginal parties

2.2.1 Agency contact

A letter requesting advice on which Aboriginal parties to invite for consultation, and all known heritage matters to be taken into consideration, was posted to the following groups on 4 November 2015:

- The Office of Environment and Heritage (OEH) North West Region;
- Nulla Nulla Local Aboriginal Land Council (NNLALC);
- Goulburn Mulwaree Shire Council;
- Western Local Land Service (replacing the Catchment Management Authority);
- National Native Title Tribunal;
- the office of the Registrar of Aboriginal Owners; and
- NTSCorp.

Responses that were received from these agencies are included in Appendix A.

2.2.2 Press advertisement

A public notice was placed in the *Bourke Western Herald* on 5 November 2015 seeking registrations of interest from Aboriginal parties. A copy of the notice is in Appendix A. No responses to the public notice were received.

2.2.3 Aboriginal groups invitation to register

Letters via post and email to the parties listed by the government agencies, inviting written registration were sent on 26 November 2015. The closing date for registration was 10 December 2015. Those letters which did not receive a response were followed up with a phone call and email where these details were provided.

2.3 Registered Aboriginal parties

Table 2.1 provides information on the Aboriginal parties who registered an interest in being consulted for the project. A total of 5 groups registered for the project.

Table 2.1 List of RAPs for the Project

Organisation	Contact name	Date of registration
Muda Aboriginal Corporation	Dot Martin	9 December 2015
Bourke Aboriginal Health Service (BAHS)	Phil Naden	9 December 2015
Murdi Paaki Regional Enterprise Corporation	Rene Wykes	4 December 2015
Bourke Aboriginal Community Working Party	Alistair Ferguson	6 January 2016
Murrawarri Traditional Council State	Fred Hooper	11 January 2016

2.4 Stage 2 – presentation of project and method information

2.4.1 Presentation of information and request for cultural information

A letter was issued to RAPs on 26 November 2015 presenting information about the project and describing the proposed ACHA method, including the proposed survey strategy and a request for cultural information. No comments were received in relation to the proposed assessment method.

2.4.2 Response as the result of a site survey

Comments were received regarding the cultural significance of the study area (excluding the irrigation area) following a separate visit on 4 February 2016 by Murrawarri elder Fred Hooper and Bourke Aboriginal Community Working Party representative Phillip Sullivan. The site visit was undertaken on a separate occasion because Fred Hooper and Phillip Sullivan were unable to attend the archaeological survey with the EMM archaeologist. Fred and Phillip were provided with figures of the Aboriginal site results for the study area.

Fred Hooper provided a report describing the results of their cultural survey on 14 February 2016 which is provided in Appendix A. The report noted that a number of artefacts were identified which confirmed and supported the results of the survey conducted by EMM. Furthermore, a small Gurri (or known as a wild orange tree – *Capparis mitchellii*) was identified in the access road footprint. The tree species was identified to have been an Aboriginal food resource and was considered to have cultural significance to Fred Hooper and Phillip Sullivan. The tree showed no signs of Aboriginal modification and is therefore not defined as an Aboriginal object.

The recommendations provided by Fred as a result of the site inspection are presented and addressed in Table 2.2.

Table 2.2 Recommendations made based on

Recommendation	Response
The access road be moved south slightly to avoid the Gurri tree.	The access road was surveyed with a 10 m buffer so that adjustments could be made. The Gurri tree will be avoided.
That once the study area is fenced and demarcated, at least three Murrawarri descendants clear the site (collect) all artefacts that are in the disturbance footprint.	All known sites and additional artefacts identified during the salvage collection fieldwork will be collected by RAPs and recorded by archaeologists (refer Section 10.2.3). The number of RAP site officers present on fieldwork will be discussed during the preparation of the Aboriginal Heritage Management Plan (AHMP).
All artefacts collected be kept and presented on display in the project site office with an interpretation display board.	Refer to Section 10.2.4. Noted; however, depending on the number of artefacts collected, a representative sample may be more appropriate for display with the remaining artefacts kept in a secure storage facility.

2.4.3 Project update: addition of irrigation area

The irrigation area was not surveyed by EMM or RAPs because initially no ground disturbance activities were proposed in this area. However, during detailed project design the opportunity to re-use treated effluent from the abattoir to irrigate crops within the project site was identified, which would require vegetation clearance and ploughing to support cultivation. Subsequently, RAPs were sent a letter on 18 February 2016 providing information of the additional ground disturbance, the potential impacts to unknown Aboriginal objects in the irrigation area and appropriate management recommendations that were consistent with those presented in the draft ACHA issued to RAPs on 29 January 2016. The recommendations provided in the letter were incorporated into Section 10.2.5 of this report.

Each RAP was also called on 18 February 2016 and 2 March 2016 to inform them of the irrigation area and seek any comments they wished to provide. No issues were raised regarding the proposed management recommendations.

2.5 Stage 3 – review of draft Aboriginal cultural heritage assessment

A draft report and summary cover letter was issued to RAPs by email on 29 January 2016. A four-week time frame for review was issued with the draft assessment report. EMM sent emails to RAPs towards the end of the review period to request a response, answer questions and offer more time if required.

At the end of the four week period (on Friday 26 February 2016) telephone and email contact was made between EMM and all registered groups. A small number of concerns were raised by Phillip Sullivan of Bourke Aboriginal Community Working Party and are address below in Table 2.3. No further comments were received from any of the remaining groups.

The issues raised in response to the draft report are provided in the RAP letters and in response letters from EMM in Appendix A. Requests or concerns raised in response correspondence from RAPs and the manner in which those concerns are addressed are summarised in Table 2.3.

Table 2.3 **Summary of RAP responses to the draft report**

Issue raised	Response
Avoid Gurri trees where possible.	The access road was surveyed with a 10 m buffer so that adjustments could be made. The Gurri tree will be avoided.
Concern was expressed regarding installation of water pipes within the study area. A monitoring program was suggested while the pipes are being installed with any artefacts found placed on display on site.	All known sites and additional artefacts identified during the salvage collection fieldwork will be collected by RAPs and recorded by archaeologists (refer Section 10.2.3). It has been assessed that the likelihood of subsurface deposits to be low due to the nature of the soil landscape within the study area. The eroded skeletal soil profile when combined with the high surface visibility has created an environment in which the ability to gather a comprehensive and meaningful artefact assemblage highly achievable. Following this program of salvage collection within the study area it is recommended that monitoring is not required.

3 Environmental background

3.1 Landscape overview

The project site is located 14 km north of Bourke, at the western edge of the Darling Riverine Plains bioregion in northern NSW. It is situated beside the alluvial plains of the mid Darling valley. On the floodplains, discharge from past and present streams control patterns of sediment deposition, soils, landscapes and vegetation (OEH 2011).

the entire bioregion is an important example of an inland drainage system where the streams flow into an arid region; the catchment has a long geological history and contains numerous sites that have the potential to yield information about past climates, past environments and human pre-history; (OEH, 2011).

The project site is characterised by flat stony terrain with sparse vegetation and red brown silty clay soil (Photograph 3.1).



Photograph 3.1 View across the study area, facing west

3.2 Geology

Near Bourke, the confined Darling River channel landscape consists of channels, floodplains, billabongs and slightly-raised, red soil terraces. Geomorphology and surface sediment distribution reflect past climates and different river discharge events (OEH 2011) which has led to the accumulation or removal of sediment over tens to thousands of years. “While arid regions may present the appearance of an unchanging landscape, the opposite is often the case” (Holdaway & Fanning 2008:172). The archaeological implication of this is it is often difficult to determine exactly the patterns of prehistoric land use both temporally and spatially.

The study area is located on red-brown scalded quaternary alluvium plains (OEH Cartlands Land System, nd; refer to Figure 3.1). Reddish-brown cobbles, around 4-8 cm in length, were scattered across the study area and were particularly abundant in highly eroded, scalded areas. These ‘gibbers’ are left when wind blows away desert sand. This polishes and smooths the stones, covering them with a desert varnish or veneer of iron oxide. Split gibber cobbles on site revealed different qualities of original stone, including silcrete, which could be used for stone tool manufacture (Photograph 3.2).



Photograph 3.2 Scald area showing prevalence of the reddish brown cobbles (‘gibbers’) that were present in varying densities on the study area

3.3 Soils

Generally soils in the Darling Riverine Plains bioregion consist of vertisols; grey brown clay with some stony plains of older brown clay covered with small boulders of sandstone, quartzite and fine quartz gravel. The area is characterised by grey cracking heavy clays (associated with lake beds), and floodplains with relatively fine red soils, vulnerable to erosion and patchy sands probably representing alluvial terraces. The drainage lines are narrow, with areas of depressed swamps also present.

The study area is located on open stony plains near the Darling River. Soils are deep red acid to calcareous, loamy to sandy soil forming an undulating plain with abundant small internal drainage areas and vegetated hummocks (Bourke 1:250,000 Metallogenic map SH/55-10 1993).

3.4 Topography and drainage

The topography of the study area consists of a flat stony plain, with frequent scald surfaces. It is slightly elevated (approximately 1 m) above the Darling River floodplains with a gradient slope to 1%, and sparse vegetation. The closest permanent water source is the Darling River, located approximately 3 km to the east of the study area. In the study area itself there are small depressions with grey cracked clay, evidence of ephemeral waterholes after rain. These can be seen in Photograph 3.3, outlined by vegetation.



Photograph 3.3 Small ephemeral waterholes. Facing east

3.5 Vegetation



Photograph 3.4 **Whitewood (*atalaya hemiglauca*) trees in the study area**

The region would originally have been heavily timbered, and provided abundant resources for the prehistoric Aboriginal inhabitants. Today vegetation in the study area is in a very disturbed condition, with evidence of clearing and livestock grazing. Vegetation consists of shrubby woodland on red sandy-loam soils. It is characterised by:

- a sparse canopy comprising Bimblebox (*Eucalyptus populnea* subsp. *bimbil*) and Whitewood (*Atalaya hemiglauca*) (Photograph 3.4);
- a sparse shrub layer characterised by Spiny Saltbush (*Rhagodia spinescens*), False Sandalwood (*Eremophila mitchelli*); and
- groundcover characterised by various *Sclerolaena* species, such as Saltbush (*Atriplex muelleri*), and Bluebush (*Maireana* sp).

3.6 Climate

Bourke lies within a semi-arid climate zone which is hot and persistently dry (Stern H., de Hoedt, G. and Ernst, J. 2000). Bourke Airport Weather Station records January as the hottest month in Bourke with a mean maximum temperature of 37.1°C, while July is the coldest month with a mean maximum temperature of 18.4°C (mean minimum temperature of 4.1°C). Mean annual rainfall is 327.9 mm with the highest rainfall in March, November and December. August is the driest month (average 11.9 mm) (Bureau of Meteorology, 2015).

At the start of the Holocene approximately 11,500 years ago, climate conditions changed substantially. The melting of Pleistocene ice sheets caused a rise in sea levels and an associated rise in temperature and rainfall. The changes reached their peak approximately 6,000 years ago. At around 1,000 years ago temperatures stabilised to temperatures similar to today. Thus, the climate of the project site for the past 1,000 years would probably have been much the same as present day conditions, providing a habitable environment.

3.7 Land use and disturbance

The region has undergone significant modification since European occupation. Extensive areas have been cleared. Droughts, overstocking of properties, the spread of weed species and changes to fire regimes have contributed to widespread land degradation (OEH 2014). The study area has been historically cleared of its native vegetation though a long history of agricultural land use, and is characterised by regrowth native vegetation. The study area has recently been used for grazing sheep.

3.8 Environmental implications for archaeology in the study area

Factors which typically inform the archaeological potential of a landform include the presence or absence of water, access to food and resources including stone, the nature of the terrain and the cultural meaning associated with a place (Dibden 2008, p.8). Climatic conditions would also have influenced the occupation of the area by past Aboriginal people. Climate not only influenced living conditions, it dictated the sustenance and cultural resources available. Apart from the Darling River, 3 km away, local water availability was ephemeral. However, after heavy rain, small waterholes form on the plain, evidence of which can be seen where there are slight depressions, a change in soil type and a slight increase in vegetation (Photograph 3.3).

Given that much of the area has been cleared over the past century, mature trees which might carry carving or scarring (also known as modified trees) are predicted to be rare in the study area.

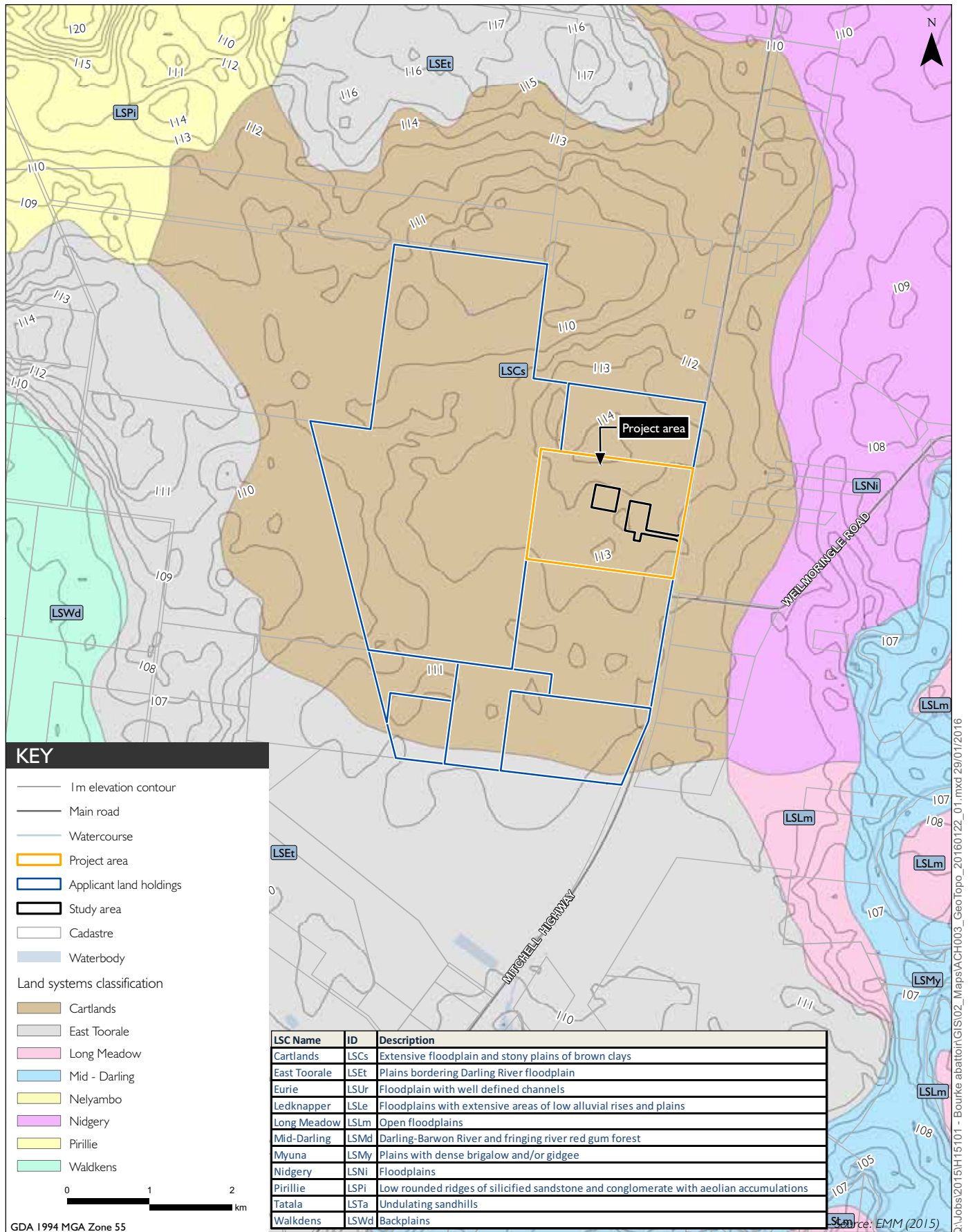
While the gradient of the landscape is very low and therefore little movement of the archaeological resource is likely to have occurred due to water movement (for example sheetwash or rilling):

“On low-gradient land surfaces ... archaeologists can largely ignore the effects of post discard movement of artefacts by geomorphic processes such as inter-rill flow, a result that challenges the perception that the surface archaeological record is fundamentally disturbed and, therefore, of little use in reconstructing past behaviour” (Fanning and Holdaway, 2001, p671).

There has also been very little aggradation of the landscape. Instead, soils throughout the study area are likely to be skeletal due to erosion from land clearing, wind, and stock animals. These activities may have displaced any Aboriginal artefacts without fully diminishing their archaeological and cultural value. Therefore, while there is a potential for surface artefacts, overall the potential for the accumulation of subsurface archaeological deposits is anticipated to be low.

The main environmental features that indicate archaeological sensitivity in the study area are the considerable distance from the Darling River (approximately 3km), evidence of ephemeral waterholes, and the abundance of raw material. The ephemeral nature of the water resource would only accommodate seasonal occupation of the study area, dependant on periods of significant rainfall.

The main limitation to identifying Aboriginal sites through survey is variable ground surface exposure and visibility conditions. Scald areas with high levels of erosion and little vegetative cover revealed the highest artefact densities on the surface without necessarily being indicative of subsurface artefact density, due to the skeletal nature of the soil.



Topography and geology

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Figure 3.1

4 Aboriginal heritage background

4.1 Ethno-history

4.1.1 Historic overview

By the end of the Pleistocene, Australia's arid zone had become more hospitable to humans, mainly due to the increase in access to water. This led to more widespread occupation of the arid regions during the Holocene period (Mulvaney & Kamminga 1999, p.309). By 35,000 years BP, all major environmental zones in Australia were occupied (Mulvaney & Kamminga 1999, p.114). Evidence of early occupation from the Pleistocene and Holocene periods is found in regions to the south-west of the study area such as Willandra and Menindee Lakes where excavations of shell middens on the lunettes, and hearths on the margins of dry lake beds have been undertaken. In the Bourke region, Aboriginal sites have been recorded close to the Darling River yet very little study has been done on archaeological deposits in flat stony plain landforms like the study area.

Journals of European explorers provide the earliest descriptions of Aboriginal people in the region. However, their primary aim was exploration and the search for pastoral land rather than recording descriptions of Aboriginal people. By the time that many of the 'homestead accounts' were being written, massive dislocation and disruptions to Aboriginal culture had already occurred (Allen 1972, p.33).

One of these homestead accounts, written by Dunbar in 1943, records his memories of growing up on Yanda Station below Bourke on the Darling River, territory of the Ngemba people. He accompanied the boys and men on hunting trips, watched them make canoes and weapons and learned some of their language. He makes observations about social life and customs (Dunbar, 1943).

The nearby town of Bourke was surveyed for a town in 1869 and named after the governor of NSW. However, the first European settlement began earlier when in 1835, following tensions with the local people, colonial surveyor and explorer Sir Thomas Livingstone Mitchell built Fort Bourke. The town became an important port on the Darling River. Wool, transported from western NSW and south western Queensland arrived in Bourke via bullock wagon and was then shipped down the river to South Australia. A rail line was built by 1885, although camels continued to be an important means of overland transport.

The Mitchell Highway which runs beside the study area was first declared State Highway No 7 in 1928, and was originally known as the North Western Highway. The name was changed in 1936 and the road was sealed in the 1960s.

4.1.2 Local population

Information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historic accounts made by Europeans. These accounts and observations were made after massive social disruption due to disease and displacement. As a result, this information is often contentious, particularly in relation to language area boundaries.

Western NSW, bisected by the Darling River, was traditionally home to around 15 major Aboriginal groups (OEH 2011b). The study area is located within Nulla Nulla Local Aboriginal Land Council boundaries. According to Tindale (1974) the study area is near the boundary of three Aboriginal groups:

- the Murrawari whose territory extended to the north west of the Darling River, north of Bourke;
- the Baranbinja who lived on the north bank of the Darling River near Bourke; and
- the Ualarai people who lived on the east bank of the Darling in the Mulga lands bioregion (OEH 2011b).

The Ngemba people occupied the east bank of the Darling River near Bourke and Brewarrina.

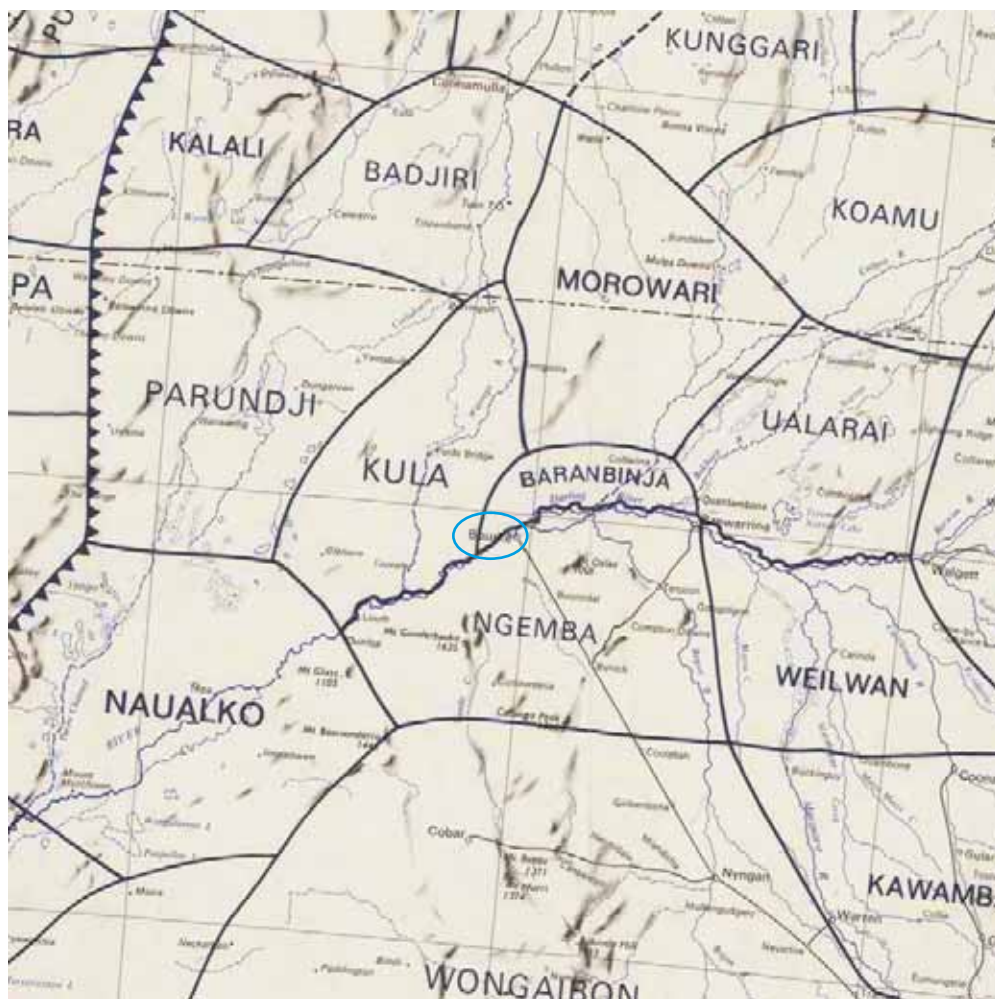


Figure 4.1 Aboriginal language group boundaries (Tindale 1974)

4.1.3 Living arrangements

Aboriginal people varied their time and place of settlement in relation to the seasons and the available resources. In arid regions, this seasonal fluctuation did not necessarily equate with the calendar year but with availability of water (Holdaway & Fanning 2008, p.169).

4.1.4 Burial customs

In discussing burial of the dead, Dunbar (1943) describes the deceased as being bound in the twice-bent sitting position and buried in a grave four or five feet deep facing east. Weapons and personal property were placed in the grave and the body covered in bark before the hole was filled in. Over the mound were placed grave markers which the women made from kopi. They were oval in shape, slightly concave on one side and convex on the other, eight inches long, four inches wide and one and half inches thick. Sometimes cylindrio-conical stones were used. Sometimes a piece of bark from a tree to the south of the grave was removed and incisions marked on the tree.

4.1.5 Tools and weapons

Stone tools used for making boomerangs are described by Dunbar (1946) as an adze flake used like a chisel and a scraper. He describes the use of “black basalt”, sharpened to a point and bound with string and gum. This would be kept sharp through further retouch. Quartz was also used as a carving tool. Dunbar also describes hafted tools such as axes and tomahawks. Stone blades attached to wooden shafts with kangaroo sinew and tree gum. By this time, shear blades (used for sheep shearing) had been appropriated by Aboriginal people as an alternative to stone tools.

Dunbar describes how marked trees were painted rather than cut. This was because the types of trees in that area were not large enough to have designs cut into the trunks. However, bark was removed from trees for making coolamon vessels and canoes, and the scars from this are evident on the trees.

4.1.6 Food

Food procurement for Aboriginal people in the semi-arid Darling River Basin region included collecting aquatic foods and wild cereals, and hunting. Seasonal variations in the productivity of their habitat meant that subsistence activities were adapted accordingly (Allen 1974). The Ngemba used fish traps in the Barwon River at Brewarrina, a complex of dry-stone walls and holding ponds (OEH 2014).

4.1.7 Summary

Much information on the practices of Aboriginal people has been lost due to settlement and interactions with European settlers but certain generalisations can be made from early colonial records and subsequent research. Aboriginal people moved in small family groups (Smith 1992), which belonged to clans, all of which were united by language and cultural affinities with ties to specific territories. They subsisted on plant foods, aquatic life from the Darling River and its subsidiaries, and ate a variety of fauna. Aboriginal groups had a wide range of tools and equipment made of wood, bone, and stone.

4.2 Aboriginal heritage information management system search

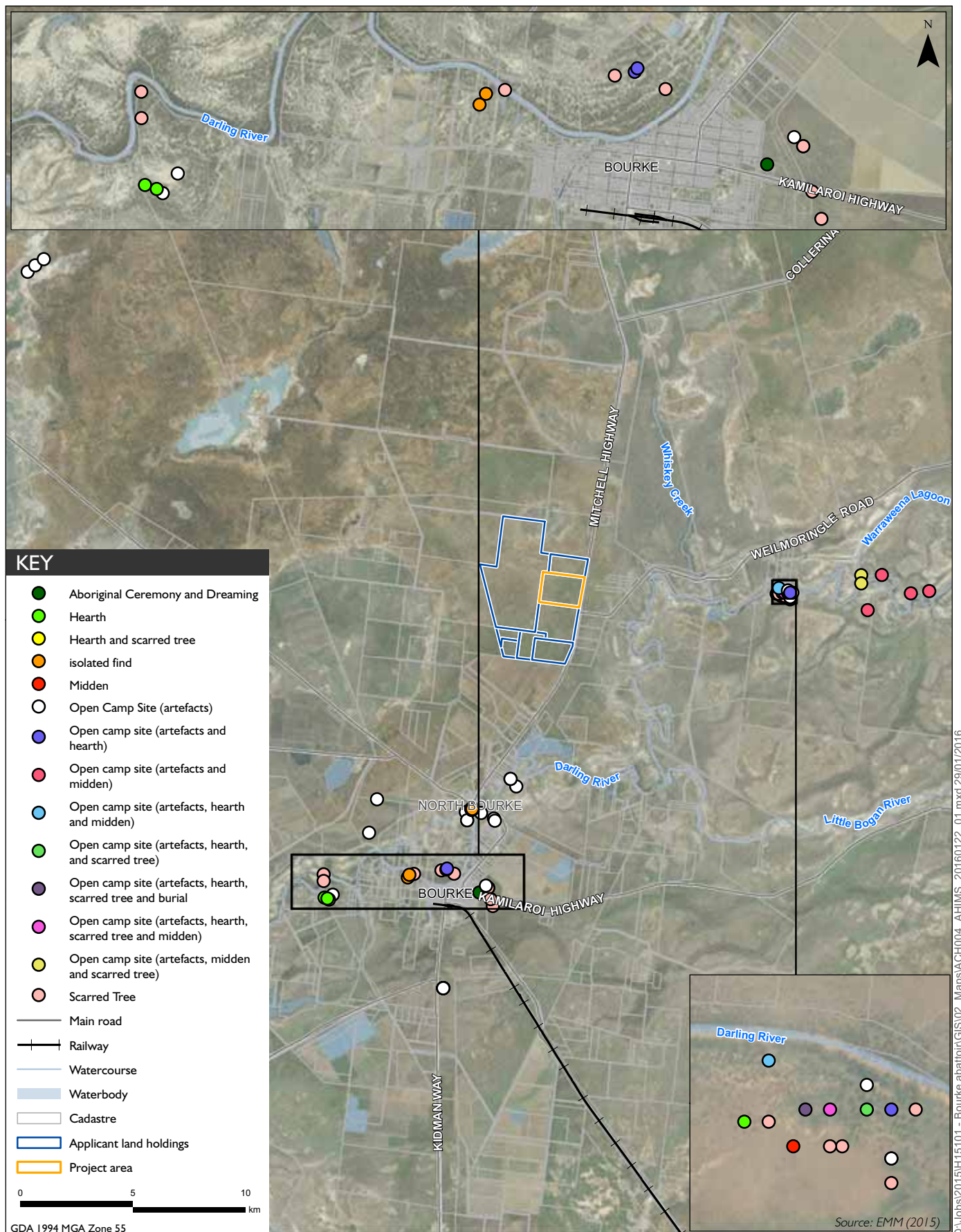
The Aboriginal Heritage Information Management System (AHIMS) only includes reported sites, usually as a result of targeted surveys prior to development and therefore does not represent an inventory of all Aboriginal sites, just those that have been recorded. An AHIMS search was completed on 10 November 2015 for an area within a 30 km radius of the study area (Table 4.1). The search covered a large enough area to adequately characterise the local archaeological record and a wide variety of Aboriginal site types were identified (Table 4.1). Sites were distributed across multiple landforms but clustered near watercourses. A total of 65 Aboriginal sites were identified within the search area. The AHIMS search results are contained in Appendix B.

The most common archaeological sites were open camp sites which comprised nearly half (48%) of the sites in the search area. Scar trees were present at 24 sites (35%), either alone or in conjunction with middens, artefacts, hearths and a burial. Open camp sites were characterised predominantly by artefacts, however seven open camp sites also contained middens, seven contained oven mounds or hearths and five had scar trees. One open camp site contained a burial.

All the sites are recorded as being in close proximity to the Darling River, except for three sites with artefacts located 27 km north-west of the study area. However, these too are located beside a watercourse.

Table 4.1 AHIMS registered sites in the search area

Site type	Number of sites	Percentage
Isolated find	9	14
Open camp site (artefacts)	18	28
Open camp site (artefacts and hearth)	3	5
Open camp site (artefacts, hearth and midden)	1	1.5
Open camp site (artefacts, hearth, and scarred tree)	1	1.5
Open camp site (artefacts, hearth, scarred tree and burial)	1	1.5
Open camp site (artefacts, hearth, scarred tree and midden)	1	1.5
Open camp site (artefacts and midden)	4	6
Open camp site (artefacts, midden and scarred tree)	2	3
Hearth	4	6
Hearth and scarred tree	1	1.5
Midden	1	1.5
Scarred tree	18	28
Aboriginal ceremony and Dreaming	1	1



AHIMS results and previous surveys near the project area

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Figure 4.2

4.3 Regional archaeological context

Two predictive models for Aboriginal occupation were developed in the 1980s and have relevance to this project. Although Pearson's PhD (1981) examined regions within the Macquarie River system (approximately 130 km east of the study area), similarities in topography between the two regions enable comparisons to be made. Pearson found a correlation between the location of open artefact scatters and their distance from water, with most sites occurring within 10-500 m of water sources. He established the following predictive model for camp site location:

- Access to water;
- Level ground with good drainage;
- Elevation above cold air and frost prone valleys;
- Shelter from cold winter winds and cooling summer breezes; and
- Most sites would originally have been in open woodland with adequate fuel supplies.

He suggested that sites with extensive archaeological deposits in the area represent multiple short visits over time (cited in Dibden 2012, p.12).

Balme (1986) conducted archaeological surveys of the north central rivers area, from the MacIntyre River in the north to the Bogan River in the South, and from Bourke to the Culgoa River. She found that the most common sites on active depositional floodplain landforms were as shown in Figure 4.3.

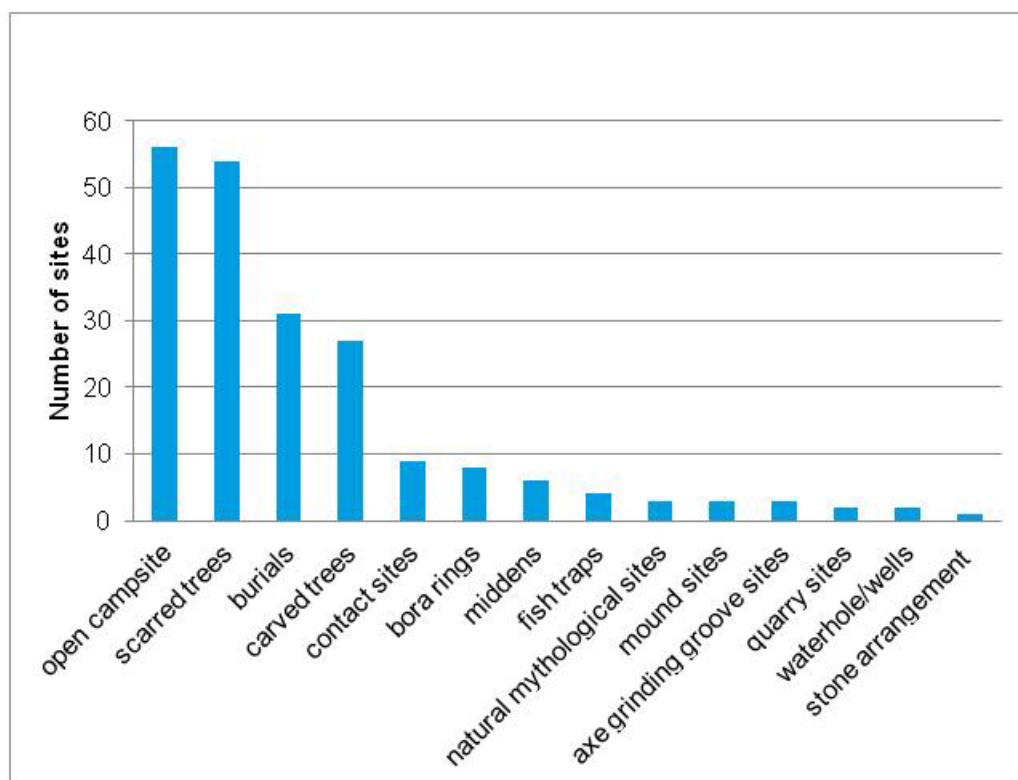


Figure 4.3 Results of Balme's survey (1986). Total number of sites = 209

The open campsites tended to occur on eroding river banks rather than on floodplains. They were generally highly disturbed artefact scatters with low integrity. It is worth noting that, as Balme points out, sites with high levels exposure were more likely to be identified during survey and the results recorded. She found that the Barwon/Darling River was the boundary for assemblages dominated by quartz artefacts and hypothesised that around the Bourke area, stone assemblages would be dominated by silcrete.

She noted that scarred tree sites tended to also occur in proximity to watercourses while carved trees were associated with the location of burial and ceremonial grounds. Most pre-contact burials were situated in small aeolian sand dune formations.

Allen's thesis (1972) examined a region south west of Bourke in the Darling Basin (between Broken Hill and Cobar). He compared historical descriptions of the Bagundji Aboriginal people with the archaeological evidence. Written accounts describe how they moved from the edge of the Darling River into the drier hinterland and back, in response to climate fluctuations. Archaeological sites in the Darling Basin cluster around lake shores that have not been filled with water for 15,000 years and Allen suggests that Aboriginal people traditionally used the Darling Basin in a similar manner to that described in ethnographic accounts. The evidence for this is that stone artefacts found at earlier sites are similar to those found at more recent sites nearby (eg Burke's Cave). Allen believes this to be indicative of a continuous cultural tradition from the late Pleistocene to the present in the Darling Basin.

Archaeological surveys which have been undertaken in the region are summarised below.

Kelton conducted a number of archaeological surveys in the area between 1994 and 1996. Prior to upgrade of East Bourke levee bank (1994) he recorded four scarred trees, an open campsite and five isolated finds including a flaked piece, millstone and "hearth stones". In 1995 during a survey 3 km south of Bourke on the Cobar Rd, he recorded some isolated finds and an artefact scatter of quartz, silcrete and quartzite, as well as hearth material. The artefact density was less than one artefact per meter squared. The same year he surveyed at North Bourke, prior to the realignment of the Mitchell Highway. He recorded 4 scarred trees, a hearth, artefact scatters and isolated artefacts of silcrete, chert, quartzite, fine grained black siliceous material, and sandstone millstone fragments. Reworked artefacts included backed blades of chert (yellow-brown, green-brown, brown) and silcrete (creamy white). A survey on "Beemery" property (1996), 50km east of Bourke near the junction of the Bogan and Barwon/Darling Rivers identified 13 sites, including 23 isolated finds, 50 modified trees, and 10 hearths (some in association with stone artefacts). Artefact materials were silcrete (37%), quartzite (20%), quartz (5%), chert (7%), sandstone (29%), and glass (2%). Scar trees were Coolabah (16), Black box (14), Eucalypts (18), and two other unidentified types. There were no artefacts or scarred trees on the floodplains, however, some hearths were found in the transitory zone between floodplain and raised areas, and some campsites and middens were found on the banks of the river.

In 1996 Keaton conducted a field survey prior to the construction of a levee bank beside the Alice Edward Village Aboriginal Reserve on the north-west outskirts of Bourke. The study area was located on a Darling River floodplain where the land was predominantly cleared, flat, open-grazing land and Aboriginal housing, with a high level of surface and sub-surface disturbance from road works, clearing and domestic waste dumps (Keaton 1996, p7). During the survey, two isolated finds were recorded, neither from secure contexts (one in a child's play area, the other in amongst non artefactual stones and brick fragments).

Gaynor also conducted a number of surveys in the area in the 1990s. During a survey at “Summerfield” near Croyon (1994) he found a large scatter of stone artefacts made of silcrete, chert, porcellanite, quartz, and sandstone (grindstone) on a slightly raised red claypan, Scarred Coolabah and Bimble Box trees were found near ephemeral waterholes. Three more Bimble Box scar trees were found in 1996 on a slightly raised, uncleared ridge during a survey at “Miloo”, 32 km west of Wee Waa. A survey at “Bellevue” (1997), 25 km east of Bourke found a single silcrete core and a grindstone fragment.

“Alambi” is a property located approximately 4 km north-west of Bourke, approximately 10 km from the project area. An archaeological survey was conducted there in 2000, prior to the construction of an irrigation storage dam and supply channel. The survey area was on a floodplain approximately 2 km from the Darling River, on land which has been cultivated and irrigated. The survey found two large scatters of stone artefacts containing mostly silcrete (60%) and, to a lesser extent, chert (21%) artefacts, fragments of grindstones and an axe resharpening fragment. This was identified as coming from the Aboriginal axe quarry near Tamworth (Gaynor 2000, p.19-20). A number of “adze slugs” suggested that this was an area where Aboriginal people replaced their worn out tools (Gaynor 2000, p.22). Grindstone fragments could have been for processing local plants such as *Panicum* and *Nardoo* into flour (Gaynor 2000, p.21). Both artefact scatters were found on gentle slopes of deflated reddish soil, none on grey alluvial soil.

An ACHA completed for the Balranald Mineral Sands Project (Niche 2015) in south-western NSW investigated the association between artefact densities and their relationship with different environmental contexts. This is important because environmental context affects how Aboriginal people used landscapes in the past and also how those remains are preserved. As part of their recommendations, Niche recommended surface salvage for sites directly disturbed as a result of the project and salvage excavation in targeted landscape formations. Landforms that were considered to have the potential to reveal subsurface archaeological information included relict lake beds, wetlands, dunes and lunettes.

Results of previous studies indicate that subsurface deposits are not likely to occur on stony, wind eroded plains located at a considerable distance from reliable water (as per the project site) such as in the study area. Instead they are likely to occur where soils have accumulated along floodplains by water or by Aeolian winds on dunes and lunettes.

5 Predictive model of site location

5.1 Overview

A predictive model of Aboriginal site location is based on:

- the type and distribution of Aboriginal archaeological sites described in previous reports and AHIMS;
- ethno-historical information about Aboriginal material culture; and
- the landscape features applicable to the study area and its surrounds.

5.2 Implications for Aboriginal occupation

In arid and semi-arid regions of Australia, surface archaeology is the norm. Landscapes tend to have sparse vegetation and extensive surface erosion which exposes stone artefacts. Unlike in more humid areas, these are not obscured by topsoil deposits (Holdaway & Fanning 2008: 167). Surface deposits are 'palimpsests', the result of multiple events over time which can make it difficult to draw conclusions about whether the site was used intensively over a short period of time, or more extensively over a longer period.

5.3 Site specific predictions

Table 5.1 Site type and distribution

Site type	Discussion for the study area
Culturally modified trees	Generally, modified trees are located in areas which contain trees of over 100 years old. Modified (carved or scarred) trees have been identified in the region, particularly in close proximity to waterways. In the study area, historic vegetation clearing has occurred and this may reduce the likelihood of modified trees being present. Mature trees, old stumps and fallen logs should be inspected.
Rock shelters	Rock shelters occur in areas with suitable geological formation processes and outcrops of rock. No rock shelters have been identified in the region and it is unlikely that any will be found in the study area as the landscape does not have suitable rock outcrops.
Grinding grooves	Grinding grooves are most likely to occur in areas with rock outcropping, usually near running water. No grinding grooves have been found in the region and it is unlikely that grinding grooves will be found as there are no suitable rock outcrops and the site is not adjacent to water. However, portable grindstones could be present.
Open artefact sites	The most common site type recorded in the region is open artefact sites. Sites are likely to be located near permanent water and on slightly raised red soil claypans (not on alluvial soils) See Gaynor 2000. The study area contains areas flat aggraded soil likely to contain archaeological deposits There is a high probability that open camp sites will be present in the study area.

Table 5.1 **Site type and distribution**

Site type	Discussion for the study area
Isolated finds	Isolated finds are indicative of the random loss, deliberate discard or abandonment of artefact and can also represent the remains of dispersed and disturbed artefact scatters. Isolated finds are found in all landform types and throughout the region. There is high potential that isolated finds will occur in the study area.
Hearths	A number of hearths have been found in the region, and commonly found in association with stone artefacts, and near water. However land clearance and use since European settlement has led to high levels of erosion in the study area and the probable loss of hearth remains.
Burials	Burials can occur anywhere in the landscape but their identification is very rare. Generally they would be identified by mounds of earth or stone markers. Archaeological evidence of burial sites is rare in the region and only one has been recorded.
Middens	Freshwater shell middens in the area have been recorded on the banks of the Darling River. It is unlikely that middens will be found in the study area because it is not near water.

5.4 Summary

Based on the landscape factors, AHIMS search and previous archaeological investigations detailed above the following predictions can be made about Aboriginal sites in this area:

- Aboriginal sites are likely to be located near reliable water sources;
- the predominant raw material used in the creation of stone artefacts is most likely to be silcrete, although quartz, quartzite, and chert could also be present;
- stone artefacts may be present as part of open camp sites or as isolated finds;
- rock shelters, art sites and grinding grooves are not likely to be present because of the geology of the study area;
- culturally modified trees are rare, but may be present where mature native trees remain in the study area;
- hearths may be present, however, the high degree of disturbance and erosion in the study area makes it less likely; and
- ceremonial grounds, mythological sites, and burials can occur anywhere in the landscape but their identification is very rare. Generally they would be identified by mounds of earth or stone markers arranged in a conspicuous layout.

6 Archaeological survey

6.1 Overview

On 12 January 2016, EMM archaeologists Ryan Desic and Pamela Chauvel were met by local Aboriginal representative Phil Sullivan, from Bourke Aboriginal Community Working Party (BACWP), who gave a brief, local perspective on the site. Each RAP was contacted, and invited to provide an Aboriginal site officer to participate in the one day survey on 12 January 2016. However, only one Aboriginal site officer, from Murdi Paaki Regional Enterprises, participated in the survey for part of the morning.

The aims of the survey were to:

- identify Aboriginal sites and places; and
- characterise the landscape to aid predictions of subsurface archaeological sensitivity.

Murrawarri elder Fred Hooper conducted a cultural evaluation of the site on 4 February 2016 as he was unavailable to attend the prior survey with EMM archaeologists. Information provided by Fred Hooper will be included in the final report.

6.2 Method

6.2.1 Survey approach

The survey method aimed to sample the land across the study area including the footprint of the facility, the ponds and the access road. This involved two people walking a series of survey transects, spaced between 10-20 m apart. This method was considered to be suitable as visibility and exposure were high across the site. It allowed for approximately 40% of the study area to be covered and provided enough evidence to characterise the archaeological record. As the entire study area consisted of a single landform element, a flat, red soil, stony plain that is slightly elevated beside the floodplains of the Darling River, the survey was divided into two transects based on the two areas of impact (Figure 6.1).

At the time of the survey the irrigation activity was not considered to require vegetation clearance and ploughing which was identified later in the detailed design phase. As a result, the irrigation area was not incorporated into the survey strategy. However, as the irrigation area shares the same landscape context as the surveyed areas, the survey results were considered adequate to extrapolate predictions for the unsurveyed area. Furthermore, management recommendations for the irrigation area are presented in Chapter 10.

The survey team targeted ground exposures such as erosion scalds, and animal tracks, which provided good ground surface visibility for the detection of Aboriginal objects, primarily stone artefacts. All mature trees were inspected for scars of Aboriginal origin.

6.2.2 Identification and recording of Aboriginal sites

i Definition of a site

Aboriginal sites identified during survey were defined by the presence of one or more Aboriginal objects on the ground surface. The boundaries of a site were limited to the extent of the observed Aboriginal objects.

The Aboriginal site types identified in this assessment were open stone artefact sites (more than one stone artefact in a specific location) and isolated artefacts referred to as 'isolated finds'. A general boundary definition employed by archaeologists is that artefacts more than 50 m apart are regarded as separate sites. The 50 m separation rule was used for this assessment. The 50 m rule is a common method used by archaeologists for consistency of results and comparison with the wider archaeological record.

The Aboriginal sites recorded during the survey can be seen in Figure 7.1. Aboriginal site areas are marked by polygons and labelled with their site name (eg. BA01). Concentrations within each site are indicated with a dot and labelled with a suffix (eg. BA03a).

ii Site recording

Site locations were recorded using a hand-held GPS unit with recorded data confirmed on GIS software and aerial imagery. Transects were accurately mapped by downloading tracks recorded on GPS. Aboriginal sites were recorded by marking each artefact location or each cluster of artefacts within a 5 m radius as a separate waypoint in the GPS. Site boundaries were allocated by drawing a line around the cluster waypoints for each site using ArcGIS computer software. Stone artefacts more than 50 m apart were recorded as separate sites.

Photographs identifying landscape context and representative samples of site artefact contents were taken for each site. Appendix B contains AHIMS site cards for all the sites recorded during the survey.

6.3 Results

6.3.1 Survey coverage data

i Rationale

The aim of recording and analysing survey coverage data is to determine the effectiveness of the survey for an evaluation of the distribution of Aboriginal objects across the landscape, taking into account archaeological potential. The percentage of the ground surface exposed in the landform and the visible ground surface within exposures (as ground exposures are often obscured by vegetation, gravels etc) influence the survey results. For example, an archaeologically sensitive landform surface that is highly exposed by erosion is likely to reveal Aboriginal artefacts during survey whereas a thickly grassed landform of the same sensitivity is unlikely to reveal any artefacts.

Overall, calculation of effective survey coverage is used to estimate not only how much area was physically surveyed but also how favourable the conditions were to identify Aboriginal sites. Therefore an assessment of effective survey coverage is important in determining further investigations measures such as the requirement for test excavation.

ii Results

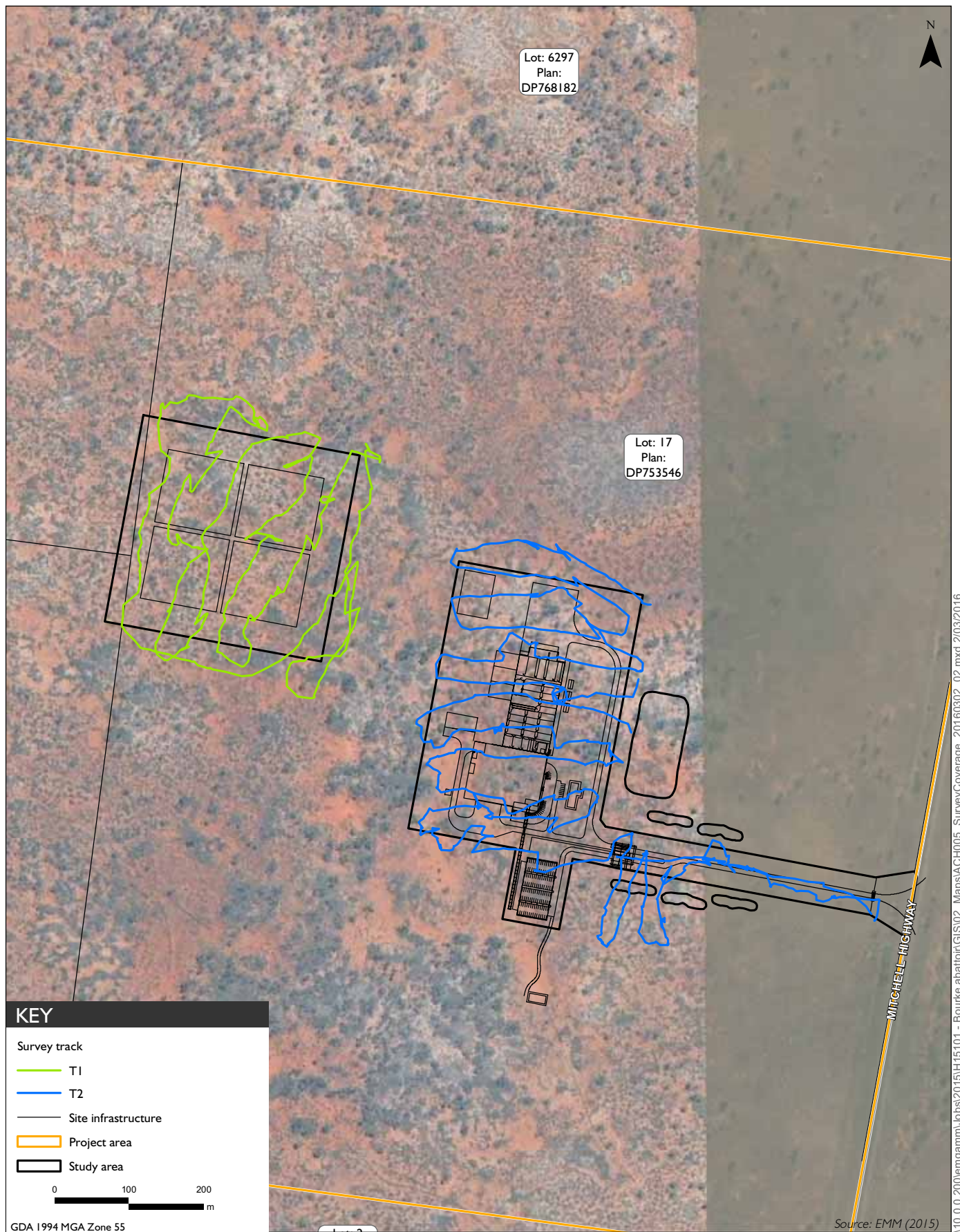
Two transects were undertaken in order to cover the footprint of the proposed facility and access road. In total, approximately 10km were walked. These survey transects can be seen in Figure 6.1 although they only show the path walked by the person holding the GPS. With two (and for approximately 3 hours, three) people walking, the transect widths were between 10 and 20 m.

Survey coverage details are provided in Table 6.1 along with a calculation of the effective coverage of the survey which is calculated by estimating the degree of surface exposure and visibility. Surface exposure refers to the amount of area with a likelihood of revealing archaeological evidence on the surface, as a result of wind or other erosive factors. Visibility refers to the degree of impediments on the surface which obstruct observation of surface archaeological material, such as vegetative cover, rock outcrops or other obstructions both natural and cultural.

Surface visibility over the study area during survey was enhanced by relatively sparse ground cover resulting from the removal of old growth native timber and subsequent stock grazing. Surface exposure was particularly high on scald exposures where the topsoil had eroded. Overall, effective coverage during the survey was high due to the high degree of exposure and visibility.

Table 6.1 **Survey coverage summary**

Transect	Landform Element	Length (m)	Width (m)	Area (m²)	Exposure	Visibility	Effective coverage (m²)	Effective coverage (%)	Disturbance
1	Flat plain	3926	15	58885	60%	80%	28265	48%	Wind, livestock
2	Flat plain	6102	15	91524	80%	70%	51254	56%	Wind, livestock



Survey coverage results

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Figure 6.1

7 Aboriginal site results

7.1 Overview

“Survey captures the archaeological record as it exists at a particular moment in time” (Wandsnider and Camilli 1996, cited in Holdaway and Fanning 2008:185). This archaeological record is the result of different cultural and natural activities over time.

The study area as a whole is characterised by continuous distribution of stone artefacts across the site. However, using a 50 m buffer as an arbitrary boundary, 25 individual Aboriginal sites were identified during the survey. The majority of sites were located on red aggraded soil that has been subject to reworking and disturbance from wind and the impact of grazing. For this reason it is predicted that the truncated soils will have poor integrity, and artefact distribution is most likely to be on, or very close to, the surface. It is unlikely that the surface distribution will be reflected in subsurface deposits.

All of the Aboriginal sites were comprised of stone artefacts, made up of 20 open stone artefact sites and 5 isolated finds. In total, 184 stone artefacts were identified across the study area. The Aboriginal site locations are shown in Figure 7.1 and detailed descriptions of each site are provided in tabulated form in Appendix D and in AHIMS cards in Appendix B.

i Artefact distribution

The scale and distribution of artefacts is consistent across the study area. Thus, while individual sites have been identified using the 50 m buffer zone as a guide, it could be argued that the area as a whole is one site and that it extends beyond the study area. What is less clear is the time scale for this accumulation of artefacts. However, the wide distribution of artefacts and the post depositional nature of the environment suggest a palimpsest, the result of multiple events over an extended period of use. Repeated occupation of the same location but not the same spot each time would lead to a wider site area of overlapping occupations (Dewar and McBride 1992 cited in Holdaway & Fanning 2008, p170). Therefore, “Artefacts found together cannot be treated as though they were used together, a prediction made all the more compelling when dealing with surface artefact scatters that lack simple stratigraphic means for differentiating artefacts belonging to different occupations” (Holdaway & Fanning, 2008, p.171).

During the survey, artefacts were identified primarily on scald areas that had been subject to aggrading through wind and livestock, as these areas provided the highest visibility.

ii Artefact frequency and density

During the survey, 184 artefacts were identified. Individual site artefact frequencies ranged from 1 to 48 artefacts. Site area ranged from 1 m² to 6000 m². Therefore the value of calculating artefact densities for surface Aboriginal sites is limited for this assessment as artefacts/m² decreases in the larger site areas, despite these being the sites with the highest artefact frequency. For example, site BA05 comprised three artefacts over four square metres while BA17 comprised a consistent scatter over 6000 m² resulting in the identification of 48 artefacts, a density of 0.8/100 m². Therefore, after removing results for sites smaller than 10 m x 10 m, artefact densities ranged from 0.4/100 m² to 2.5/100 m².

Table 7.1 **Site artefact frequencies**

Site name	Artefact frequency	Sit area (m ²)	Artefact density /100m ²
BA01	4	50	N/A
BA02	1	1	N/A
BA03	15	800	2
BA04	6	600	1
BA05	3	4	N/A
BA06	1	1	N/A
BA07	5	1400	0.4
BA08	6	300	2
BA09	5	200	2.5
BA10	15	2100	0.7
BA11	1	1	N/A
BA12	3	120	0.8
BA13	1	1	N/A
BA14	10	2000	0.5
BA15	1	1	N/A
BA16	9	800	1
BA17	48	6000	0.8
BA18	3	100	N/A
BA19	4	450	0.8
BA20	2	1	N/A
BA21	7	500	1.4
BA22	4	100	N/A
BA23	8	500	1.6
Ba24	20	2200	0.9
BA25	2	200	1

iii Artefact types and raw materials

The dominant artefact raw material observed during the survey was silcrete (95%), an indurated siliceous material, that forms as a result of low-temperature silicification of weathered bedrock. Silcrete is available over wide areas of Australia and this is reflected in its occurrence in archaeological lithic assemblages over much of Australia (Mulvaney & Kamminga, 1999). In the study area, wind polished stones of different qualities of original stone, including silcrete, were distributed across the site and would have provided the raw material for flaked artefact manufacture.

Fine grained silcrete was often used for sharp blade-like implements, the finer the crystalline structure the better it responded to retouch (Webb & Domanski 2008). Knapped silcrete in the study area tended to be quite fine grained although coarser grained silcrete was also present. It was predominantly light grey in colour although there were some examples of red and white silcrete. Other artefactual materials present were chert (4%) and quartzite (1%).

Artefact types identified during the survey were typical of Aboriginal open camp site assemblages and were comprised of flakes, broken fragments of flakes (proximal, medial and distal portions and indeterminate flaked pieces), cores, and retouched flakes. Complete flakes made up 60% (N=111) of the assemblage.

Retouched flakes were identified at five sites. All but one of these were on the southern boundaries of study area. It is likely that the study area contains a higher frequency of retouched flakes than recorded, as the survey covered a sample of the area.

The number of cores identified was relatively high (N=31 or 17%) but cores also tended to be larger than complete and broken flakes, making them more readily visible. Cores demonstrated evidence of both bidirectional and unidirectional working.

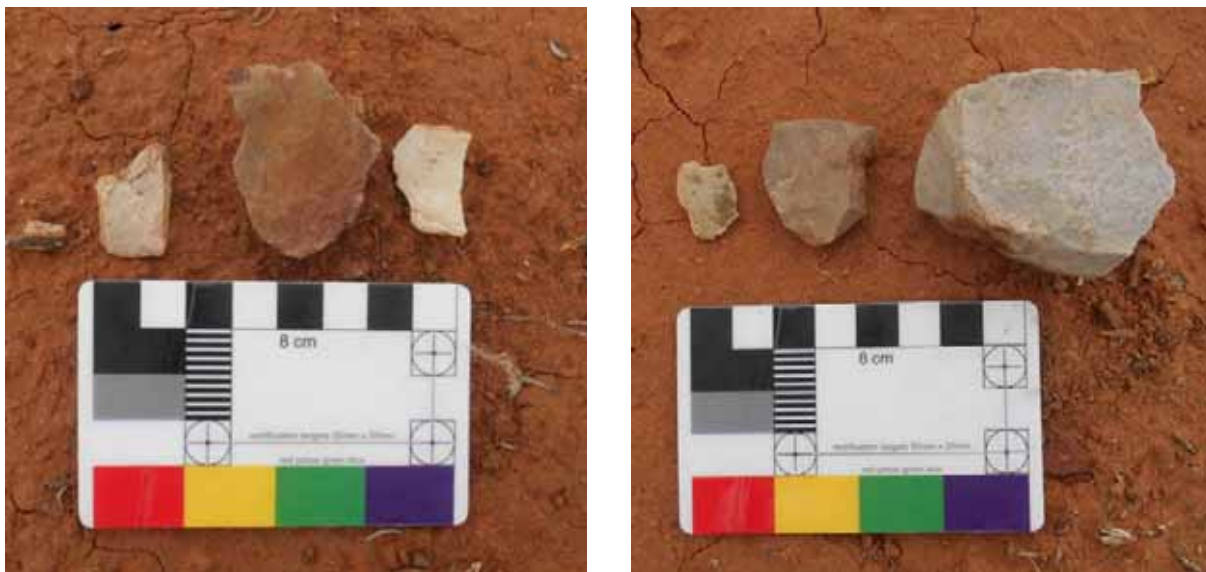
Very little cortex was observed on any of the artefacts which suggests extensive reduction was occurring at this site and that the majority of artefacts are the result of the later stages of reduction.



Photograph 7.1 A selection of flaked stone artefacts found within a 10x15 m area on a stony scald exposure (BA03c)



Photograph 7.2 Left: two bi-directional silcrete cores (BA24g). Right: a silcrete flake retouched on a single margin (BA04a)



Photograph 7.3 Left: a silcrete flake piece, reddish silcrete flake and white chert/mudstone flake (BA16b). Right: a silcrete flake, distal flake and core (BA18a)

7.2 Discussion

The study area is currently characterised by a continuous scatter of stone artefacts across the surface of the landscape. This indicates that the area experienced repeated occupation over an extended period of time, and is supported by the presence of ephemeral, seasonal waterholes and the availability of raw material (silcrete) for creating flaked stone tools. It is likely that the study area was used as a transitory occupation area between more resource rich areas of the large swamp (area = 3.2 km²) about 2 km north of the study area and the Darling River 2.5 km south-east. The study area would have been a reasonably direct route at the mid-point between these landmarks which lie approximately 6 km apart, and may have attracted periodic occupation, especially when featuring seasonal waterholes.

Although not surveyed, the irrigation area is likely to share a similar archaeological record. The landscape has no prominent features that would indicate otherwise.

Ground surface exposure was high, due to vegetation clearance and erosion, which made surface artefacts easier to locate. The distribution of artefacts, although present in concentrations (eg BA17), are less likely to represent definable activity areas, rather they follow the areas of most exposure. The ephemeral waterholes are reasonably shallow and are likely to change over time depending on erosional factors. Therefore, artefacts found adjacent to the current ephemeral depressions were not necessarily associated with them during deposition.

Subsurface testing is unlikely to yield positive results. As Holdaway and Fanning (2008) have pointed out, surface deposits are the most common type of archaeological deposit in arid landscapes. While studies of arid landscapes such as Balranald (Niche, 2015), have found evidence of subsurface potential, it has been in alluvial and aggrading landforms such as lunettes, old river beds and sand dunes. By contrast, in the flat stony plains of the study area, the soils are continually eroding and as such, artefacts are likely to be archaeological palimpsests that have accumulated on the surface over numerous occupation events.

The 25 recorded sites in the study area can be viewed as a single utilised landscape because of the continuous distribution of artefacts across the landscape; however, they remain labelled as individual sites for the consistency of recording methods and practicality for providing management measures. The study area is interesting because it differs from other archaeological sites previously recorded in the Bourke area. These have all been identified near reliable watercourses in less stony, exposed landscapes and are often in association with hearths and modified trees. Nonetheless, this site represents part of what is probably a much larger site.



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Aboriginal site results

Bourke Small Stock Abattoir
Aboriginal Cultural Heritage Assessment

Figure 7.1

8 Significance assessment

8.1 Defining heritage significance

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 Burra Charter 2013. 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 (ICOMOS 2013)."

The purpose of this assessment was to identify various aspects of Aboriginal heritage for the purpose of assessing possible development impacts. The aspect of Aboriginal heritage identified in this assessment pertains to physical Aboriginal objects and sites.

8.2 Socio-cultural value: significance to the Aboriginal community

"Non-archaeological Aboriginal heritage values" refers to places which have meaning in accordance with memory or tradition but not associated with cultural objects. These sorts of places are described as "intangible sites" and include any historic values related to historically important persons, events, phases or activities in the Aboriginal community. Aboriginal cultural knowledge is defined as:

...accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment, and the sustainable use of resources, and relationships between people, which are reflected in language, narratives, social organisations, values, beliefs, and cultural laws and customs... (DECC 2010).

Research and consultation with the Aboriginal community was conducted to determine whether any socio-cultural heritage value relates specifically to the study area regardless of archaeological evidence.

Aboriginal heritage sites with archaeological evidence are all of value to the Aboriginal community through the tangible connection that they represent with pre-European Aboriginal land use. EMM acknowledges that the registered Aboriginal parties consider Aboriginal objects as culturally significant items.

After comments received following both the survey and the review of the draft ACHA, Gurri (a wild orange tree) was identified by Fred Hooper and Phillip Sullivan within the study area as an item of socio-cultural significance. It is not culturally modified (scared tree) and is therefore not strictly Aboriginal objects, however, as is clear from the comments received the tree retains cultural value to contemporary Aboriginal groups and measures shall be taken to avoid impact to it. See Section 2.5 for recommended management measures to avoid impact to Gurri within the study area.

8.3 Scientific value

The study area is situated in a relatively under investigated landscape west of the Darling River and as such has potential to provide information about Aboriginal land use of this area.

Scientific value is assessed according to the research potential of a site. Rarity and representativeness are also related concepts that are taken into account. The following scientific values are identified as 'low', 'moderate' or 'high' for each identified Aboriginal site with an overall rating identified based on the results of each individual assessment. In the overall assessment of significance, research potential and rarity is generally be weighted higher.

8.3.1 Research potential

Research potential or demonstrated research importance is considered according to the contribution that a heritage site can make to present understanding of society and the human past. Those heritage sites, objects or places of high scientific significance are those which provide an uncommon opportunity to inform us about the people in an area, or provide a rare glimpse of artistic endeavour or provide a rare chronological record of changing life through archaeological investigation. That is, has the ability to provide information about the past that is not obtainable from any other source or it supplements written and oral sources.

8.3.2 Rarity

The comparative rarity of a site is a consideration in assessing scientific significance. A certain site or artefact type may be 'one of a kind' in one region, but very common in another. Rarity also applies to sites and objects that were once common, but have become uncommon through development and change.

8.3.3 Integrity

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 could 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 broader questions of regional stone tool distribution and raw material logistics.

8.3.4 Research themes

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 local region, the key research issues revolve around the chronology of Aboriginal occupation and variability in stone artefact manufacturing technology.

8.3.5 Educational value

Educational value relates to the capacity of a site to portray more easily recognisable archaeological features. While the educational potential of Aboriginal sites can only be effectively realised through interpretation, those sites with more obtrusive elements and suitable settings offer greater potential to illustrate the main features of past Aboriginal activity.

An educator selecting sites to demonstrate to students the physical evidence of Aboriginal occupation in an area is more likely to choose an extensive grinding groove site or a rock shelter with art. In contrast, an educator would avoid a small scatter of artefacts which, to the lay person, may not be readily differentiated from natural gravel. Therefore, aesthetic values play a major part in the educational value of an Aboriginal site.

8.3.6 Sites and significance

Artefact distribution was continuous across the study area and even though the identified sites were categorised by assigning an arbitrary buffer of 50 m, they could also be considered as a single site over a large area. It is also probable that the site continues well beyond the boundaries of the study area. Previous archaeological studies of Aboriginal sites in the region have not investigated stony, wind eroded plains located a considerable distance from reliable water. The frequency and wide distribution of stone artefacts across the study area suggest repeated use of the site possibly seasonally, and because it was a good source of natural resources. For this reason, the study area is considered to have moderate archaeological significance.

A summary of the significance of the Aboriginal sites identified during the survey is provided in Table 8.1.

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA01 (Open stone artefact scatter)	Low The site is a common type with a sparse assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types including a retouched flake	Low BA01 is a common low density open stone artefact scatter
BA02 (Isolated find)	Low The site is an isolated artefact (unretouched flake)	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low: The site does not contribute to questions of chronology or tool manufacture	Low The site comprises only one artefact	Low BA02 is common low density open stone artefact scatter
BA03 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate: The site contains easily identifiable artefact types	Moderate BA03 is a common low density open stone artefact scatter with good examples of artefact types and materials
BA04 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types including a retouched flake	Low BA04 is common low density open stone artefact scatter

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA05 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types.	Low BA05 is common low density open stone artefact scatter
BA06 (Isolated find)	Low The site is an isolated artefact (unretouched flake)	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises only one artefact	Low BA06 is a common low density open stone artefact scatter
BA07 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Moderate High artefact frequency is rare for the local area but common for similar landforms in the region	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types	Low BA07 is a common low density open stone artefact scatter
BA08 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types	Low BA08 is a common low density open stone artefact scatter

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA09 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types	Low BA09 is a common low density open stone artefact scatter
BA10 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types	Moderate BA10 is an extensive scatter on exposed plain with good examples of artefact types
BA11 (Isolated find)	Low The site is an isolated artefact (silcrete core))	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises only one artefact	Low BA11 is a common low density open stone artefact scatter
BA12 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types	Low BA12 is a common low density open stone artefact scatter

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA13 (Isolated find)	Low The site is an isolated artefact (unretouched flake)	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises only one small artefact	Low BA13 is a common low density open stone artefact scatter
BA14 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate: The site contains easily identifiable artefact types	Low BA14 is a common low density open stone artefact scatter
BA15 (Isolated find)	Low The site is an isolated artefact (unretouched flake)	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low: The site does not contribute to issues of chronology or tool manufacture	Low: The site comprises only one artefact	Low BA15 is a common low density open stone artefact scatter
BA16 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Moderate Moderately high artefact frequency with a mixture of artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains a diverse artefact scatter. Assemblage has diverse artefact types and raw materials. Easy to locate and observe material	Low BA16 is a common low density open stone artefact scatter

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA17 (Open stone artefact scatter)	Moderate The site is of a common type with a high frequency of artefacts	Moderate Moderately high artefact frequency with a mixture of artefact types, (including retouched flakes) and materials	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Moderate This site has the most diverse collection of artefact types and materials in the surveyed area	High The site contains a diverse artefact scatter. Assemblage has diverse artefact types and raw materials. Easy to locate and observe material	Moderate BA17 is an extensive scatter on exposed plain with good examples of artefact types and raw materials
BA18 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types	Low BA18 is a common low density open stone artefact scatter
BA19 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low: The site does not contribute to issues of chronology or tool manufacture	Low The site comprises a low number of artefacts of identifiable types	Low: BA01 is a common low density open stone artefact scatter
BA20 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types including a retouched flake	Low BA01 is a common low density open stone artefact scatter

Table 8.1 Statement of scientific significance for surface Aboriginal sites

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA21 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains small variety of easily identifiable artefact types	Low BA21 is a common low density open stone artefact scatter
BA22 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types including a retouched flake	Low BA22 is a common low density open stone artefact scatter
BA23 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types	Low BA23 is a common low density open stone artefact scatter
BA24 (Open stone artefact scatter)	Moderate The site is of a common type with a high frequency of artefacts	Moderate Moderately high artefact frequency with a mixture of artefact types, (including retouched flakes) and materials	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Moderate This site has a comparatively diverse collection of artefact types and materials for the surveyed area	Moderate The site contains a diverse artefact scatter. Assemblage has diverse artefact types and raw materials. Easy to locate and observe material	Moderate BA17 is an extensive scatter on exposed plain with good examples of artefact types and raw materials

Table 8.1 **Statement of scientific significance for surface Aboriginal sites**

Site name	Research potential	Rarity and representativeness	Integrity	Research themes	Educational value	Overall archaeological significance rating
BA25 (Open stone artefact scatter)	Low The site is a common type with a moderate assemblage of common types	Low The site comprises common materials and artefact types	Moderate The site is a flat plain, with minimal disturbance that retains horizontal spatial integrity but minimal potential for subsurface deposits	Low The site does not contribute to issues of chronology or tool manufacture	Moderate The site contains easily identifiable artefact types	Low BA25 is a common low density open stone artefact scatter

9 Impact assessment

9.1 Development impact

The project will result in impacts to Aboriginal objects. The following ground disturbance activities have the potential to impact known and unknown Aboriginal objects in the study area:

- the footprint of the abattoir facility and ancillary infrastructure, including:
 - the abattoir, offices and stockyard buildings;
 - wastewater treatment plant and ponds;
 - sheds; and
 - landscaping.
- the construction of an access road from the Mitchell Highway to the abattoir and parking areas; and
- ploughing and vegetation clearance within the boundary of the indicative irrigation area.

9.2 Definition of impact type

Project elements that will impact Aboriginal sites to varying degrees are defined here. *Disturbance*, where artefacts are moved locally from their original setting, is distinguished from *loss* where artefacts are removed or destroyed. Degrees of impact from lesser to greater are: partial disturbance, total disturbance, partial loss and total loss.

Aboriginal sites identified in the footprint of the facility, the ponds and the access road will be subject to varying degrees of loss. Total loss entails complete removal of an Aboriginal site's elements, such as during excavation (for example for footings) and construction of buildings and roads which cover over the sites. Partial loss describes the loss of part of a site. In the project area, this generally means that part of the Aboriginal site is located outside the study area (ie disturbance footprint of the project).

The modification of a landscape can constitute loss, even if artefacts are collected, because the context (an integral part of archaeological site value) is irretrievable.

If present, Aboriginal sites in the irrigation area have the potential to be subject to disturbance or loss depending on the site type. The potential types of impacts are described in Section 9.4 below.

9.3 Impacts to known sites

Of the 25 Aboriginal sites identified during the archaeological survey, 18 will be impacted to some degree. In total, 12 of these will experience total loss and six will be subject to partial loss. The remaining seven are outside the study area and will not be affected.

Table 9.1 **Impact assessment summary**

Site name	Site type	AHIMS number	Significance	Impact type	Level of impact	Consequence of impact
BA01	Open stone artefact scatter	TBC	Low	None	No impact	Nil
BA02	Isolated find	TBC	Low	Between the fence and wastewater treatment ponds	Total loss	Total loss of value
BA03	Open stone artefact scatter	TBC	Moderate	Between the fence and wastewater treatment ponds	Partial loss	Partial loss of value
BA04	Open stone artefact scatter	TBC	Low	None	No impact	Nil
BA05	Open stone artefact scatter	TBC	Low	Between the fence and wastewater treatment ponds	Total loss	Total loss of value
BA06	Isolated find	TBC	Low	Between the fence and wastewater treatment ponds	Total loss	Total loss of value
BA07	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Total loss	Total loss of value
BA08	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Total loss	Total loss of value
BA09	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Total loss	Total loss of value
BA10	Open stone artefact scatter	TBC	Moderate	Wastewater treatment ponds and area inside the fence	Partial loss	Partial loss of value
BA11	Isolated find	TBC	Low	None	No impact	Nil
BA12	Open stone artefact scatter	TBC	Low	Between the fence and wastewater treatment ponds	Partial loss	Partial loss of value
BA13	Isolated find	TBC	Low	None	No impact	Nil
BA14	Open stone artefact scatter	TBC	Low	Road and yard beside stockyards building	Partial loss	Partial loss of value
BA15	Isolated find	TBC	Low	None	No impact	Nil
BA16	Open stone artefact scatter	TBC	Low	Stockyard building and landscaped forecourt	Total loss	Total loss of value
BA17	Open stone artefact scatter	TBC	Moderate	Road, sheds and area inside the boundary fence	Partial loss	Partial loss of value
BA18	Open stone artefact scatter	TBC	Low	Boundary fence	Total loss	Total loss of value
BA19	Open stone artefact scatter	TBC	Low	Landscaped forecourt	Total loss	Total loss of value
BA20	Open stone artefact scatter	TBC	Low	Carpark	Total loss	Total loss of value
BA21	Open stone artefact scatter	TBC	Low	Road, gate house and car park	Total loss	Total loss of value
BA22	Open stone artefact scatter	TBC	Low	None	No impact	Nil

Table 9.1 **Impact assessment summary**

Site name	Site type	AHIMS number	Significance	Impact type	Level of impact	Consequence of impact
BA23	Open stone artefact scatter	TBC	Low	None	No impact	Nil
BA24	Open stone artefact scatter	TBC	Moderate	Road	Partial loss	Partial loss of value
BA25	Open stone artefact scatter	TBC	Low	Road and area between road and fence	Total loss	Total loss of value

9.4 Potential impacts to unknown sites

The extent of impact to Aboriginal sites within the irrigation area is currently undetermined as this area was not surveyed during the ACHA. However, given its close proximity to the surveyed area and that it shares the same landscape context, it is likely that sites will comprise open stone artefact sites and isolated finds distributed sporadically across the landscape. It is unlikely that modified trees will be impacted as the area has been historically cleared, but any remnant mature trees cannot be discounted until inspected. Rarer site types such as hearths and burials are unlikely to occur in the irrigation area. Land clearance and use since European settlement has led to high levels of erosion in the study area and the probable loss of hearth remains. Burials can occur anywhere in the landscape but their identification is very rare. Generally they would be identified by mounds of earth or stone markers. Archaeological evidence of burial sites is rare in the region and only one has been recorded.

The following potential impacts resulting from vegetation clearance and ploughing are outlined below:

- stone artefacts, if present on the ground surface, are likely to be disturbed by ploughing through horizontal and vertical displacement;
- Modified trees, if present, would be subject to loss by the removal through vegetation clearance; and
- Other rarer sites, such as hearths, stone arrangements and burials, if present, may be subject to disturbance or loss by ploughing. The extent of the impact would be dependent on the existing condition of these sites.

Similar to the predictions for the surveyed areas, significant subsurface archaeological deposits are unlikely to occur in the irrigation area as it shares the same stony plain landform that is best characterised by the surface representation of stone artefacts.

9.5 Measures to minimise harm and alternatives

The archaeological record in the study area is of low to moderate archaeological significance.

Moving the facility is unlikely to result in a lower impact on Aboriginal sites, given the scale and distribution of stone artefacts across the landscape. Therefore, it is likely that moving the project footprint within the project boundaries would result in a similar level of impacts to Aboriginal sites, as the landscape is largely unchanging within these boundaries.

9.6 Ecologically sustainable development

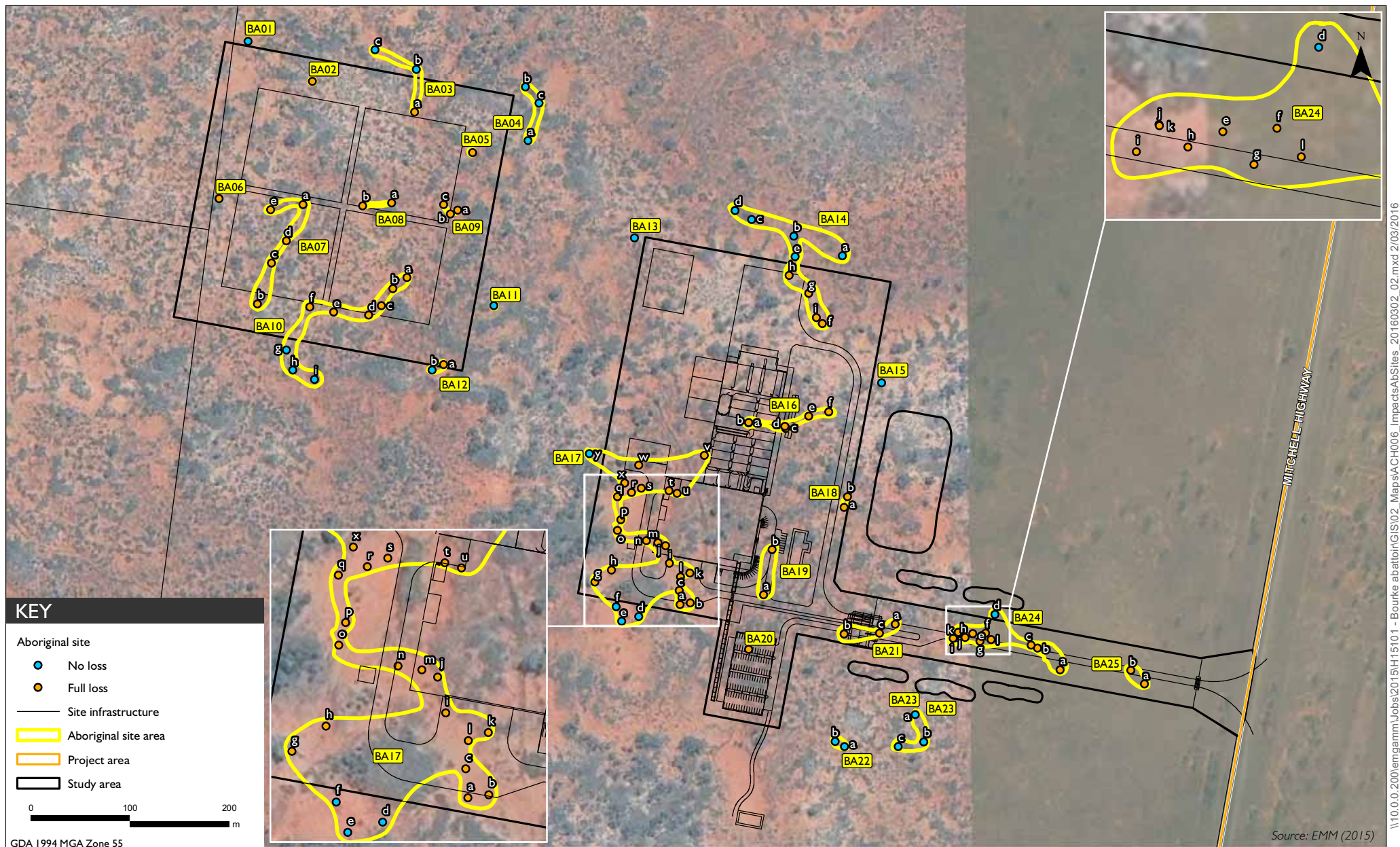
Aboriginal heritage management is based on the principle of *intergenerational equity* which has the intention to ensure present generations consider future generations when making management decisions. This principle is possibly the most relevant part of the notion of *ecologically sustainable development* (ESD) when considering Aboriginal heritage management.

While it is acknowledged that the project will result in impact to Aboriginal heritage, the proposed management measures are anticipated to provide detailed information about the Aboriginal heritage of the study area to ensure all information about the Aboriginal history of the area is not lost. This will help to achieve intergenerational equity by allowing retention of cultural materials for the enjoyment and education of future generations.

9.7 Cumulative impact within the region

No substantial cumulative impact is identified as a result of the project. The footprint of the facility relative to the landscape form is relatively small.

Taking into account the continuous distribution of artefacts across the area to be impacted, it is reasonable to assume that the archaeological resource in the surrounding area will be comparable. However the area as a whole is under investigated and sites which have been recorded in the area tend to be much closer to the Darling River and alluvial landforms. The management and mitigation of impacted sites through surface collection and consultation with the Aboriginal community will contribute to our understanding of the Aboriginal past in this region.



Impacts to Aboriginal sites
 Bourke Small Stock Abattoir
 Aboriginal Cultural Heritage Assessment
 Figure 9.1

10 Management recommendations

10.1 Aboriginal heritage management

This section describes the management measures for identified Aboriginal heritage values in the study area. The management measures proposed here respond to:

- the impacts identified in the preceding chapter;
- the assessed significance of the Aboriginal sites;
- the views of the Aboriginal community as represented by RAPs;
- the need to address intergenerational equity in the values of Aboriginal heritage;
- the need to protect sites not impacted by the Project but under the care of the proponent; and
- the need to mitigate the loss and disturbance of impacted Aboriginal sites and Aboriginal objects.

While Aboriginal sites cannot be replaced once lost, the salvage of Aboriginal objects that would be impacted by the project will provide a tangible link to these sites. Furthermore, with care in duration, those salvaged materials can be studied to help understand other Aboriginal sites present in the landscape and to add to the growing body of information about past Australian Aboriginal life.

10.2 Management measures

10.2.1 Aboriginal heritage management plan

An Aboriginal Heritage Management Plan (AHMP) will be prepared before commencement of project works that have the potential to impact the surface. The AHMP will need to be endorsed by DP&E. The AHMP will address project impacts and will provide details of:

- all Aboriginal sites identified for the project;
- management measures and their progress towards completion;
- continuing consultation and involvement of registered Aboriginal parties;
- protocols for newly identified sites;
- protocols for suspected human skeletal material; and
- provisions for review and updates of the AHMP.

10.2.2 Avoidance

Avoidance of Aboriginal sites is a preferred management option as it ensures Aboriginal sites and their landscape information will be preserved for future generations.

Seven Aboriginal sites; BA01, BA04, BA11, BA13, BA15, BA22 and BA23, will be avoided by the project as they occur outside the project disturbance boundaries.

10.2.3 Collection

Where archaeological sites cannot be avoided, all Aboriginal sites in the project disturbance footprint subject to impact will be collected by a qualified archaeologist and RAPs. This will involve surface collection of stone artefacts of the Aboriginal sites subject to total loss and partial loss. This includes the sites recorded during this assessment and any additional sites identified during the surface collection fieldwork. It is recommended that surface collection of the sites be conducted only within the boundary of the study area (even if the Aboriginal site extends beyond the study area). This is because artefacts are consistently scattered throughout the landscape and it is likely that Aboriginal site boundaries could extend well beyond the study area. It is preferable to avoid disturbance to Aboriginal sites where possible and for this reason, only artefacts within the study area should be collected.

During surface collection, each site will be collected into labelled bags recording the site name, location and collection date. The location of all collected artefacts will be recorded by GPS for distribution maps. Collected artefacts will be entered into a database with basic attributes recorded for each artefact. Basic assemblage analysis will be undertaken and integrated into a salvage report which will contribute to the overall interpretation of the area.

12 complete sites will be collected, comprising: BA02, BA05, BA06, BA07, BA08, BA09, BA16, BA18, BA19, BA20, BA21, BA25.

Six sites will be partially collected: BA03, BA10, BA12, BA14, BA17, BA24.

AHIMS records will be updated with a site impact recording form.

10.2.4 Special procedures

i Aboriginal ancestral remains

In the event that known or suspected human skeletal remains are encountered during the activity, the following procedure will be followed:

- all work in the immediate vicinity will cease and the find will be immediately reported to the work supervisor who will immediately advise the site supervisor or other nominated senior staff member;
- the site supervisor or other nominated senior staff member will promptly notify the police and the state coroner (as required for all human remains discoveries);
- the site supervisor or other nominated senior staff member will contact the OEH for advice on identification of the skeletal material as Aboriginal and management of the material; and
- if it is determined that the skeletal material is Aboriginal ancestral remains, the RAPs will be contacted and consultative arrangements will be made to discuss ongoing care of the remains.

ii Aboriginal keeping place

After the collected artefacts are recorded and analysed, there are a number of options about where they should then be kept. This needs to be decided in consultation with RAPs. Some proposed options are:

A keeping place is a designated secure area with the express purpose of storing and curating Aboriginal cultural materials and their associated documentation. With the agreement of the RAPs, a dedicated storage facility will be established within the on-site offices of the project as a keeping place. At present, Murrawarri Traditional Council State have supported the establishment of a keeping place and that a selection of the collected stone artefacts are put on display there (refer to Chapter 2 and Appendix A).

The facility will store all Aboriginal stone artefacts collected from the project. All associated reports and records in a bound hard copy and digital form will be stored in close proximity to the artefacts.

All materials are to be held in a locked cabinet (both regarding those objects on display and in storage) with access managed by the Environment Manager or other nominated senior staff member.

iii Discovery of new Aboriginal sites outside the study area

In the event of discovery of new Aboriginal sites which are outside study area (defined as the footprint of the facility and the irrigation area) but within the project area (comprised of 246 ha of rural land, approximately 14 km north of Bourke within which the study area is situated), all work should halt and an archaeologist and members of the RAPs must be contacted to determine the significance of the objects(s). Any new sites must also be registered in the AHIMS database. Objects will be managed in a manner consistent with the management measures outlined above, including appropriate forms of salvage collection.

10.2.5 Measures for unknown sites in the irrigation area

i Additional survey and collection for stone artefacts

The 38 ha irrigation area will be surveyed prior to vegetation clearance and ploughing. All stone artefacts within this footprint will be recorded and collected by a team of RAPs and qualified archaeologists. The collection method will follow that proposed for stone artefacts in the remainder of the study area as outlined in Section 10.2.3.

ii Avoidance of other Aboriginal site types or Aboriginal places

If Aboriginal objects other than stone artefacts, or Aboriginal places, are identified during in the irrigation area, the following procedure should be undertaken:

- the site will be left *in-situ* and will not be collected or moved;
- the site will be recorded by a qualified archaeologist, including marking their GPS coordinates;
- once recorded, the boundary of the site will be demarcated using temporary fencing equipment; and
- these sites will be actively managed through fencing and avoidance and the area within the demarcated boundary will not be subject to vegetation clearance or ploughing.

Although this will be the primary management measure, if impacts to certain sites cannot be avoided alternative management measures proportionate to the significance of the site will be developed in consultation with RAPs and will be consistent with the management measures for new sites discovered outside the study area (refer Section 10.2.4 iii).

Aboriginal sites that should be avoided include, but are not limited to, hearths, modified trees, stone arrangements and burials.

iii Changes to the irrigation area layout

If the layout of the irrigation area needs to be modified to avoid certain Aboriginal sites or places, then any necessary addition of land to the irrigation area will also require additional survey and collection (for stone artefact sites) or avoidance as per the measures set out in 10.2.5 i and 10.2.5 ii.

10.3 Management summary

Table 10.1 provides a summary of Aboriginal sites, impact types and management recommendations.

Table 10.1 Statement of scientific significance for Aboriginal sites

Site name	Site type	AHIMS number	Significance	Impact type	Management
BA01	Open stone artefact scatter	TBC	Low	None	Avoidance
BA02	Isolated find	TBC	Low	Between fence and wastewater treatment ponds	Collection
BA03	Open stone artefact scatter	TBC	Moderate	Between fence and wastewater treatment ponds	Partial collection
BA04	Open stone artefact scatter	TBC	Low	None	Avoidance
BA05	Open stone artefact scatter	TBC	Low	Between fence and wastewater treatment ponds	Collection
BA06	Isolated find	TBC	Low	Between fence and wastewater treatment ponds	Collection
BA07	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Collection
BA08	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Collection
BA09	Open stone artefact scatter	TBC	Low	Wastewater treatment ponds	Collection
BA10	Open stone artefact scatter	TBC	Moderate	Wastewater treatment ponds and area inside the fence	Partial collection
BA11	Isolated find	TBC	Low	None	Avoidance
BA12	Open stone artefact scatter	TBC	Low	Between fence and wastewater treatment ponds	Partial collection
BA13	Isolated find	TBC	Low	None	Avoidance
BA14	Open stone artefact scatter	TBC	Low	Road and Yard beside stockyards building	Partial collection
BA15	Isolated find	TBC	Low	None	Avoidance
BA16	Open stone artefact scatter	TBC	Low	Stockyard building and landscaped forecourt	Collection

Table 10.1 **Statement of scientific significance for Aboriginal sites**

Site name	Site type	AHIMS number	Significance	Impact type	Management
BA17	Open stone artefact scatter	TBC	Moderate	Road, sheds and area inside the boundary fence	Partial loss
BA18	Open stone artefact scatter	TBC	Low	Boundary fence	Collection
BA19	Open stone artefact scatter	TBC	Low	Landscaped forecourt	Collection
BA20	Open stone artefact scatter	TBC	Low	Car park	Collection
BA21	Open stone artefact scatter	TBC	Low	Road, gate house and car park	Collection
BA22	Open stone artefact scatter	TBC	Low	None	Avoidance
BA23	Open stone artefact scatter	TBC	Low	None	Avoidance
Ba24	Open stone artefact scatter	TBC	Moderate	Road	Partial collection
BA25	Open stone artefact scatter	TBC	Low	Road and area between road and fence	Collection

Abbreviations

Abbreviation	Term
\$	dollars
AHD	Australian Height Datum
ACHA	Aboriginal cultural heritage assessment
AHIMS	Aboriginal Heritage Information Management System
AMBS	Australian Museum Business Services
ATU	Archaeological terrain unit
BOM	Bureau of Meteorology
c.	circa
CHMA	Cultural Heritage Management Australia
cm	centimetres
DPE	Department of Planning and Environment
EMM	EMM Consulting Pty Limited
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
g	grams
GIS	geographical information system
GPS	global positioning system
IMT	Indurated mudstone/tuff
km	kilometres
LEP	Local Environmental Plan
LGA	Local Government Area
m	metres
m ²	square metres
mm	millimetres
Mtpa	million tonnes per annum
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential archaeological deposit
RAP	Registered Aboriginal Party
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
t	Tonne
TP	Test pit

Glossary

Many of these definitions have been taken from the *Code of Practice for archaeological investigation of Aboriginal objects in NSW* (DECCW 2010).

Aboriginal object: A physical manifestation of past Aboriginal activity. The legal term is defined in the *National Parks and Wildlife Act 1974* section 5 as: any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Typical examples include stone artefacts, grinding grooves, Aboriginal rock shelters which by definition include physical evidence of occupation, midden shell, hearths, stone arrangements and other landscape features which derive from past Aboriginal activity.

Archaeological survey: A method of data collection for Aboriginal heritage assessment. It involved a survey team walking over the land in a systematic way, recording information. Activities are not invasive or destructive.

Aboriginal culturally modified tree: A tree of sufficient age to have been mature at the time of traditional Aboriginal hunter-gatherer life and therefore generally of more than 220 years age with evidence of bark or cambium wood removal for the purpose of implement manufacture, footholds, bark sheet removal for shelter, or extraction of animals or other food. Care must be taken to distinguish Aboriginal scars from the much more common natural causes of branch tear, insect attack, animal impact, lightning strike and dieback. Culturally modified tree recognition guidelines exist to distinguish these features. Naturally scarred trees are often misidentified as Aboriginal culturally modified trees.

Aboriginal site: The location where a person in the present day can observe one or more Aboriginal objects. The boundaries of a site are limited to the extent of the observed evidence. In the context of this report a 'site' does not include the assumed extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal activity beyond visible Aboriginal objects. Such use of the term risks defining all of Australia as a single 'site'.

Aboriginal stone artefact: A stone object with morphological features derived from past Aboriginal activity such as intentional fracture, abrasion or impact. Artefacts are distinguished by morphology and context. Typically flaked stone artefacts are distinguished from naturally broken stone by recognition of clear marginal fracture initiation (typically herzian/conchoidal or wedging initiation) on highly siliceous stone types which can often be exotic to the area. Care must be taken to distinguish modern broken stone in machine impacted contexts and therefore context must be carefully considered as well as morphology.

AHIMS: Aboriginal Heritage Information Management System — a computer software system employed by the Office of Environment and Heritage to manage many aspects of Aboriginal site recording and permitting. AHIMS includes an Aboriginal sites database which can be accessed via an internet portal.

Archaeological deposit: Aboriginal objects occurring in one or more soil strata. The most common form of archaeological deposit relates to the presence of a single conflated layer of Aboriginal stone artefacts worked into the topsoil through **bioturbation**.

Backed artefact: A thin flake or blade-flake that has been shaped by secondary flaking (**retouch**) along one lateral margin. The retouched margin is typically steep and bipolar to form a blunt 'back' in the manner of a modern scalpel blade. Distinctive symmetrical and asymmetrical forms are typically found called geometric **microliths** and Bondi points respectively. A thick symmetrical form, called an Elouera, is typically the size of a mandarin segment.

Bioturbation: is the reworking of soils and sediments by animals or plants. Its effects include changing texture of sediments (diagenetic), bioirrigation and displacement of microorganisms and non-living particles.

Bipolar flaking: Where the stone to be worked is rested on an anvil or other stone before being hit by the hammerstone. This results in the presence of negative flake scars on both ends of the core.

Bondi point: See backed artefact definition.

Conchoidal: A term used in relation to fracture surfaces on Aboriginal stone artefacts - bulb-like in the manner of a bulbous protrusion on a bivalve shell.

Elouera: See backed artefact definition.

Erillure scar: The small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Exposure: estimates the area with a likelihood of revealing buried artefacts or deposits, not just an observation of the amount of bare ground.

Geometric microlith: See backed artefact definition.

Grinding grooves: Grinding grooves typically derive from the sharpening of stone hatchet heads on sandstone rock. Grooves appear as elliptical depressions of around 25 cm length with smooth bases. Although mostly occurring in association with water to wash the abraded stone dust away from the groove, such sites have been recorded away from water. Narrow grooves or broad abraded areas may occur less commonly and may be derived from spear sharpening or other grinding activities.

Holocene: A period of time generally 10,000 years, which marks the end of the last ice age, to the present.

Isotropic: Having a physical property that has the same value when measured in different directions. In relation to stone used for stone tools a fracture path is not hindered by layer boundaries or other favoured plane of cleavage.

Microlith: Very small fragments of flakes retouched into geometric shapes and usually present on tools like barbed spears, arrows and sickles.

Midden: A collection of shells and associated economic remains resulting from Aboriginal food gathering and processing activity. Middens comprise shellfish remains of consistent size in a rich dark earth matrix commonly associated with stone artefacts, fish bone and animal bone although shells are commonly the most obtrusive element.

Keeping place: A room or facility with the express and exclusive purpose of storing Aboriginal cultural heritage materials with accompanying documentation in a secure and accessible manner which protects their cultural heritage values.

Open stone artefact site/stone artefact site: An unenclosed area where Aboriginal stone artefacts occur – typically exposed from a topsoil archaeological deposit by erosion. Typically the term is used to refer to two or more artefacts although this is an arbitrary distinction. A general ‘rule of thumb’ boundary definition employed by archaeologists is that artefacts or features more than 50 m apart are regarded as separate sites, however there is no theoretical imperative dictating such as rule. (The 50 m separation rule is used for the most part in EMM’s work).

Pleistocene: A period of time 2.6 million years ago to 10,000 years ago. Reference to ‘Pleistocene sites’ generally means reference to sites older than 10,000 years.

Point cluster: A group of GPS points used to identify the locations of individual artefacts in the field.

Potential Archaeological Deposit (PAD): An area where there is an inferred presence of Aboriginal objects in the soil based on the environmental context which is typically associated with discovery of Aboriginal objects in analogous areas. This is not strictly a ‘site’ type, although AHIMS records it as such for the purpose of associating Aboriginal heritage Impact Permits with geographical areas.

Retouch: The modification of the edges of a flake or tool by the removal of a series of small flakes.

Thumbnail scraper: A thumbnail sized thin flake with steep unidirectional retouch or use-wear around a convex working edge.

Visibility: The amount of bare ground on exposures which might reveal artefacts or other archaeological materials.

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Appendix A

Aboriginal consultation documentation

Notice of Aboriginal Consultation

Project name: Proposed Bourke Small Stock Abattoir

Applicant: CAPRA Developments Pty Ltd (CAPRA)

Location: Lot 17, DP 753546 off the Mitchell Highway north of Bourke

CAPRA intends to seek development consent under Division 4.1 of Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act) to allow the construction and operation of a small stock abattoir approximately 14km north of Bourke in north-western NSW.

Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the proposal are invited to register an interest in a process of community consultation with the applicant.

The purpose of community consultation with Aboriginal people is to assist the applicant in: 1) assessing the Aboriginal heritage values of the area, 2) preparing an Environmental Impact Statement under Part 4, Division 4.1 of the EP&A Act, and 3) to assist regulators in the assessment of Aboriginal heritage reports prepared for this project. The project may require an Aboriginal Heritage Impact Permit.

Registrations of interest must be submitted in writing on or before 20 November 2015. Registrations should include the name of a contact person, address and other relevant contact details, preferably including an email address. The names of registered Aboriginal parties will be passed on to the relevant Local Aboriginal Land Council and the NSW Office of Environment and Heritage unless a request to the contrary is made.

Send registrations of interest to:

Bourke Small Stock Abattoir Project
C/o Rebecca Newell
EMM Consulting
PO Box 21, St Leonards, NSW, 1590
Email: rnewell@emmconsulting.com.au
Ph: 02 94939500
Fax: 02 94939599

Registration of interest does not guarantee paid involvement.

26 November 2015

Ground Floor, Suite 01, 20 Chandos Street
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St Leonards, NSW, 1590

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F +61 2 9493 9599

E info@emmconsulting.com.au

www.emmconsulting.com.au

Re: Invitation to Aboriginal organisations to register for the Bourke Small Stock Abattoir Project

Dear Interested party,

CAPRA Developments Pty Ltd (CAPRA) intends to seek development consent under Division 4.1 of Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act) to allow the construction and operation of a small stock abattoir approximately 14 km north of Bourke in north-western NSW.

EMM Consulting Pty Limited (EMM), on behalf of CAPRA, is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Bourke Small Stock Abattoir Project (see attached Figure 1).

Your organisation has been identified as having potential interest in registering for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010).

The project involves development activities under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*. Consultation will also encompass future Aboriginal Heritage Impact Permit (AHIP) applications for the Project issued under s.90 of the *National Parks and Wildlife Act 1974*.

If you wish to register your interest as an Aboriginal party your registration must be in writing (letter, fax or email), and include:

- your name/organisation; and
- current contact details (postal address, email, phone number/s).

EMM is seeking to engage all future correspondence with registered Aboriginal Parties (RAPs) via email. This method is considered the most reliable, cost-effective, and timely manner of consultation. As such, EMM requests your agreement to undertake the consultation via email as the official method of contact. A simple response in writing stating '**I agree to be contacted by email as the main source of consultation**' is requested.

Please note that the area requiring survey is relatively small and the archaeological survey is anticipated to run for one day on Tuesday 12 January 2016. Therefore, subject to the number of Aboriginal party registrations for the project, it is unlikely that all registered parties will be offered fieldwork positions. This will be confirmed once the registration period has closed.

Registrations must be received by Rebecca Newell (see contact details below) by close of business on 10 December 2015.

As required by the Office of Environment and Heritage (OEH) guidelines, details of people registering as Aboriginal Parties will be forwarded to OEH and the relevant Local Aboriginal Land Council unless you specify otherwise.

Registration of interest does not guarantee employment on fieldwork.

Please send correspondence to:

Bourke Small Stock Abattoir Project
Rebecca Newell
EMM Consulting
PO Box 21
St Leonards NSW 1590
Phone: 02 9493 9539
Fax: 02 9493 9599
Email: rnewell@emmconsulting.com.au

This letter also includes the following attachments for your review:

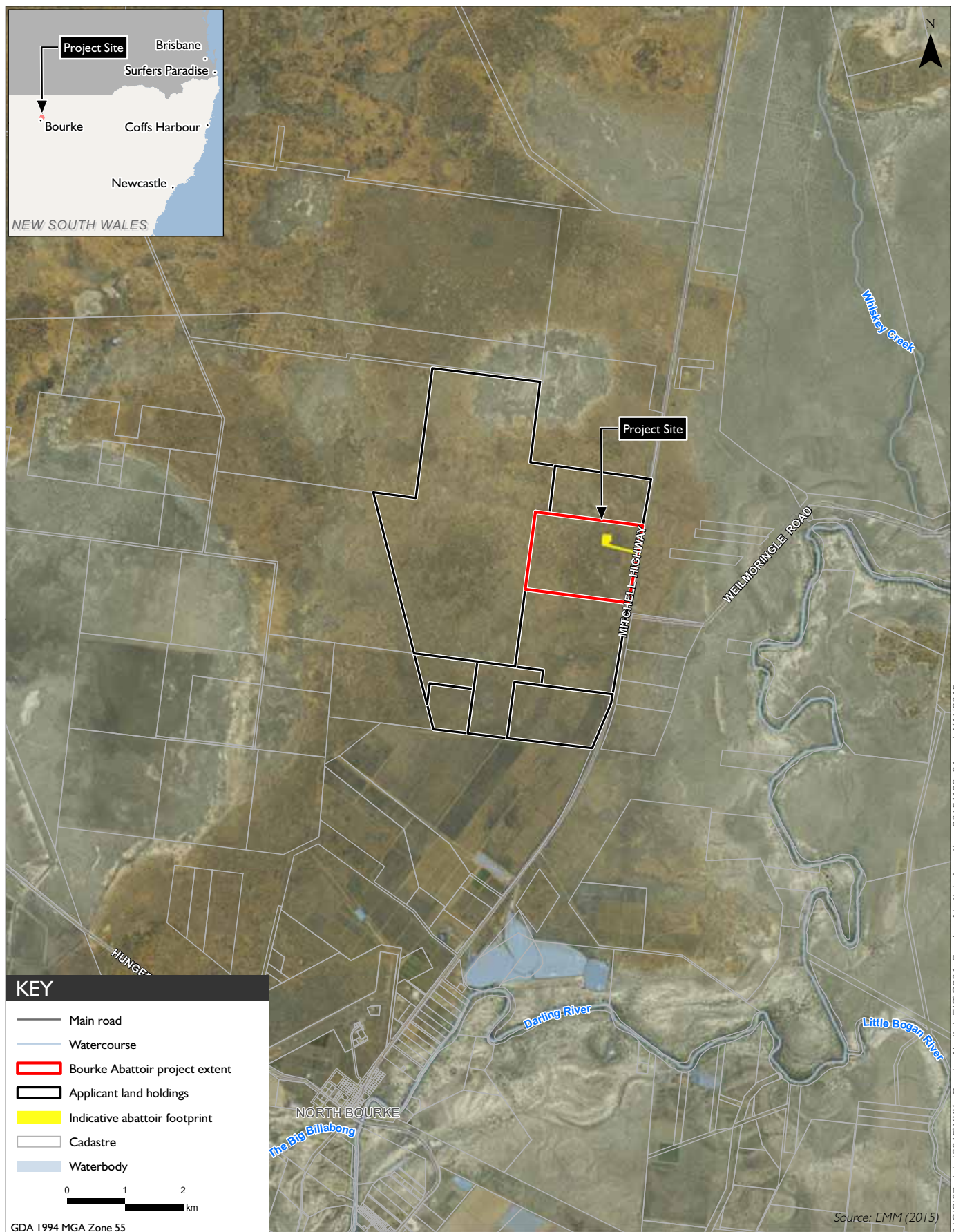
- Attachment A contains a presentation of the method for the Aboriginal heritage investigation of the project for review and comment. We welcome feedback before **4 January 2016**.
- Attachment B contains information on how to apply for fieldwork for this project, as noted above fieldwork is anticipated to be limited in scope and not all registered parties may be able to participate. Applications close on **10 December 2015**. The fieldwork date is **12 January 2016**.

If you have any questions or would like to discuss the project further please don't hesitate to contact me.

Yours sincerely



Rebecca Newell
Senior archaeologist
rnewell@emgamm.com.au



Project site location

Bourke Small Stock Abattoir
Figure I

Attachment A Aboriginal Cultural Heritage Assessment Method

1 Introduction

This attachment describes a draft ACHA method for your review and comment. We welcome your written feedback at your earliest opportunity, and no later than **4 January 2016**. **Letters attached to email is the preferred mode of written communication as it will reduce postal waiting periods.** This document is provided in accordance with sections 4.2 and 4.3.1 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, which is the Aboriginal consultation framework for the project.

2 Aboriginal heritage values

2.1 Identifying non-archaeological Aboriginal heritage values

Non-archaeological Aboriginal heritage values refer to places which have meaning in accordance with memory or tradition but not necessarily associated with cultural objects. Natural features of the landscape may figure in traditional stories; places may be associated with historical resource use; areas may have been used as historical fringe camps; and an area may have figured within a known traditional pathway. All such values can only be identified through archival research or interview with Aboriginal people with Aboriginal cultural knowledge.

In accordance with Section 4.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), EMM is seeking cultural information about the study area from registered Aboriginal parties (RAPs).

Aboriginal heritage incorporates a wide range of values such as stories, traditions and cultural practices. EMM welcomes any advice from the Aboriginal community about any form of Aboriginal heritage values (which might include archaeological sites or other types of values) relevant to the study area.

EMM is relying on the Aboriginal community for advice on non-archaeological Aboriginal values for the study area. We are happy to meet to discuss any information which you may be willing to share, and will respect confidentiality where requested. Email is our preferred method of communication (see contact details at the end of this letter) but we will also accept letters and faxes, and information given in person during the field survey.

Knowledge of areas of cultural significance may include, but are not limited to:

- sites or places associated with ceremonies, spiritual/mythological beliefs and traditional knowledge, which date from pre-contact period; these activities do not have to have persisted until the present time;
- sites or places associated with historical associations, which date from the post-contact period and are remembered today (e.g. plant and animal resource use areas and known camp sites); and
- sites or places of contemporary significance, for which the significance has been acquired in recent times.

If you are aware of any other form of Aboriginal heritage values (which might include archaeological sites or other types of values), please let us know so that we can take these values into account in the assessment. We would welcome any statement that describes how the land might be significant.

We invite you to include the following in a letter:

- how the project area land is significant to Aboriginal people; and
- your views on the site survey method described below.

Please respond as soon as possible and no later than **4 January 2016** to allow us to take all values into account in the Aboriginal heritage impact assessment. We will ensure that the information presented to us is kept confidential where it is demonstrated that confidentiality is required.

3 Draft assessment methodology

3.1 Overview

The results from the regional and local studies have indicated that the most common Aboriginal site types are open artefact scatters and isolated finds. These sites are usually found in relation to water with site size and frequency dependant on the distance to the water source. A draft method is suggested here for your review and comment. We welcome your feedback at your earliest opportunity but no later than **4 January 2016**.

The Secretary's Environmental Assessment Requirements (SEARs) for the project stipulate the following guidelines to be used in the process:

- *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011)*
- *Aboriginal cultural heritage consultation requirements for proponents (DECCW 2010);*
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010a).*

The purpose of the assessment is to identify the Aboriginal heritage values of all areas that will be affected by the project. Aboriginal heritage values will be identified from the following methods:

- consultation with registered Aboriginal parties to identify social values of the study area and places of special significance that should be considered;
- a search of the Aboriginal Heritage Information Management System (AHIMS - Aboriginal sites register) for records of previously registered Aboriginal sites (a completed search has not identified any previously recorded sites within the study area);
- a review of past Aboriginal heritage reports covering the study area, if any are available;
- a review of environmental characteristics to develop a landscape map of possible archaeological site location; and
- an archaeological inspection or survey with Aboriginal stakeholders focusing on landform transects in impact areas; and if indicated by the previous steps.

3.2 Aboriginal consultation

Consultation will be completed in accordance with the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010). In accordance with the 2010 guidelines, each private Aboriginal organisation or individual who responded with a written request to be registered for consultation is referred to as a RAP. Government agencies who registered interest will also be consulted in parallel with RAPs.

3.3 Field survey

An Aboriginal heritage field survey strategy has been prepared that will cover all areas to be impacted by the project. A series of walking survey tracks (transects) will be walked based on the landforms of the project area.

The survey will inspect all areas of ground within survey transects which will be covered by survey participants spread out across a c. 25 m path where possible. All mature trees will be inspected for scars of Aboriginal origin and areas relevant stone outcrops inspected for grinding grooves. All Aboriginal sites will be marked through flagging and then GPS waypoint recording by an archaeologist.

Survey transects will be undertaken with reference to a survey plan that will be prepared prior to fieldwork. The survey effort will generally follow predetermined transects comprised of discrete landform units that have been identified using topographic maps. However, there will be provision for changes to the survey plan once on site, to account for inaccessible areas or where landform units, unfruitful for the survey effort, are identified.

The field survey is proposed for Tuesday 12 January 2016.

3.3.1 Landform division for sampling

The survey will cover extensive areas as a continuous series of transects covering a representative sample of landform elements across the study area. The broad spread of landforms anticipated comprises:

- watercourses — generally second order (Strahler System) and above, including their near banks;
- open depressions — such as ephemeral drainage lines dissecting slopes or open depressions eroded by sheet wash;
- slopes — comprising simple, upper, mid and lower slopes;
- flat — such as alluvial floodplains, terraces and valley floors; and
- spur crests.

3.4 Test excavation

If the outcomes of the assessment support it, a test excavation under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code – DECCW 2010) may be required.

The aim of the test excavation would be to determine whether Aboriginal objects (such as stone artefact sites) are present beneath the ground surface through archaeological excavation using a systematic sample of test pits. The test excavation will involve a series of between 50 cm² and 100 cm² test pits in transects in areas of potential archaeological deposit (Figure 1). Some variation to the method may be made dependant on the areas of potential and consultation.

If Aboriginal objects are identified, excavation must continue to the extent where enough data are retrieved to allow an assessment of their cultural significance and to characterise the landscape. The resulting information will be combined with the results of the survey and serve as the basis of the ACHA report and would assist in identifying the type of archaeological management appropriate to the nature of the archaeological deposits and their significance.

3.5 Post-fieldwork

After fieldwork, a draft report will be prepared by EMM. Each RAP will be invited to submit relevant information on Aboriginal heritage values which will be addressed in the report after which each group (or individual if not part of a group) will be issued with a draft report for review and comment. All comments will be addressed in the final report.

4 What's next?

We look forward to receiving any response your organisation wishes to make about the proposed methodology by **4 January 2016**. Your response will be documented and considered for the assessment. Most importantly, your cultural information is also welcome within this timeframe but it can also be submitted up until the completion of the draft ACHA.

5 Any questions?

Please feel free to contact me with any questions or queries about the project via email (provided below) or telephone on 02 9493 9539.

Attachment B Fieldwork Application Pack

1 Introduction

This letter is to invite you to apply to participate in fieldwork as part of the Aboriginal heritage assessment for the Bourke Small stock Abattoir Project. It provides details of the fieldwork participation. You must agree to the contractual arrangement to be eligible.

The survey is anticipated to take one day to cover the project area (approximately 10 hectares). This calculation is based on five field participants spaced at 5 m covering 25 m wide survey transects. Therefore site officer positions are limited not all RAPs will be requested to provide a site officer.

Your organisation is invited to apply for one paid representative to participate in the field survey. Applicants must be willing to agree with the information provided below and satisfy the criteria regarding employment.

If applicants are sole traders or individuals, we will only accept applications from the sole trader or individual nominated as part of the registration.

If applicants are an organisation, please nominate one person who will be part of the field survey.

The aim of fieldwork participation is to assist in the archaeological investigation. As specified in OEH guidelines, involvement in fieldwork is separate from the Aboriginal community consultation process. We will continue to consult with all registered parties regardless of the outcomes of the fieldwork application process.

2 Scope of work

The field survey aims are to understand the landforms within the study area, identify Aboriginal heritage values (including Aboriginal sites and areas of potential archaeological deposit), to inform the ACHA component of the Environmental Impact Survey (EIS), including preparation of recommendations to manage potential impacts to Aboriginal sites and areas of archaeological potential.

The scope of work for field survey participation by RAPs is limited to involvement in field survey. No reports are requested as part of this arrangement. Reports submitted voluntarily are welcome, but are not part of this contractual arrangement. Separate to the scope of work for field surveys, all RAPs will be issued with a draft ACHA report for review and comment and invited to meet with EMM and CAPRA on the project. Details on your involvement in these activities will be provided in due course.

3 Fieldwork dates

The pedestrian survey is proposed for mid January, dates to be advised. Fieldwork days will be from 8 am to 4 pm.

The meeting point for field survey will be provided to survey participants in early January 2016. A visitor induction and pre-start meeting will be held there before starting the survey. The survey team will be accompanied by a CAPRA representative at all times.

Applications must be received by 10 December 2015 to ensure the field survey can commence within the scheduled timeframe.

4 Roles and responsibilities

The roles and responsibilities of EMM archaeologists, RAPs and CAPRA representatives during field surveys are outlined in Table 1. Specific work, health and safety responsibilities are included in the Safe Work Method Statement, which must also be signed prior to field surveys.

Table 1 Field survey roles and responsibilities

Team members	Roles and responsibilities
EMM archaeologists	• Direct the field surveys; • record Aboriginal sites and environmental data; • oversee safety (refer to Safe Work Method Statement); • consider and respect cultural perspectives, views, knowledge and advice and record data and/or direct field surveys based on these outcomes; and • apply professional code of conduct at all times.
RAPs	• Actively participate in field surveys, including assist with Aboriginal site identification and recording where requested; • provide cultural perspectives, views, knowledge and advice to EMM archaeologists; • indicate areas of cultural significance (if known), including: - sites or places associated with ceremonies, spiritual/mythological beliefs and traditional knowledge, which date from pre-contact period and which may have persisted until the present time; - sites or places with historical associations, which date from the post-contact period and are remembered today (e.g. plant and animal resource use areas and known camp sites); and - sites or places of contemporary significance (apart from those areas for which Aboriginal objects remain), for which the significance has been acquired in recent times; • be fit for work and have suitable experience to assist on the archaeological survey; • adhere to all safety protocols provided in the Safe Work Method Statement; and • apply professional code of conduct at all times.
CAPRA representatives	• Escort EMM archaeologists and RAPs during field surveys; • where possible, assist by answering questions regarding the project generally; • adhere to all safety protocols provided in the Safe Work Method Statement; and • apply professional code of conduct at all times.

5 Code of conduct

Professional code of conduct is expected at all times from all participants. Harassment or other inappropriate behaviour is not acceptable. Professional code of conduct should be based upon principles of mutual respect (each member of the survey team has the right to have a say and be heard) and acknowledgement for the knowledge, skills and experience of the other members of the survey team and their contributions to the program.

Any person who behaves in a manner that is abusive, threatening or humiliating towards other members of the survey team will be asked to leave immediately and will not receive any payment for work on that day.

6 Contractual arrangement

Aboriginal stakeholders who agree to these terms will be contracted to CAPRA Developments Pty Ltd for the preparation of the ACHA.

6.1 Payment

The terms of payment for successful applicants are as follows:

- one nominated person from each successful RAP will attend on the rostered days;
- \$500 per person per day for those nominated RAP members who are able to demonstrate more than five years experience (excluding GST); and
- \$300 per person per day for those nominated RAP members who have less than five years experience.

The nominated daily rate for field surveys excludes GST. If your organisation is registered for GST please list this on the invoice. If you are not registered for GST please do not include.

6.2 Invoicing

Your invoices must be formal tax invoices and include:

- the registered business name, address and ABN;
- details of the persons and dates involved; and
- electronic banking details.

One invoice should be issued for all of an organisation's involvement. Invoices must be made out to CAPRA Developments Pty Ltd. Payment will be made following receipt of a tax invoice from your RAP organisation. Payment will not be made separately to individual organisation members. Invoices are processed on a monthly cycle, so invoices received by 30 January are anticipated to be paid in February. Invoices received after this date will be processed in the next monthly billing cycle.

Send all invoices to the details below or rnewell@emmconsulting.com.au within four weeks of the completion of the survey:

Bourke Small Stock Abattoir
c/o Rebecca Newell
PO Box 21
St Leonards NSW 1590

7 Application process

If your organisation agrees to the above scope of work, roles and responsibilities, code of conduct and contractual arrangement you are invited to apply to participate in fieldwork. The following information must be presented with your application to be considered as part of the fieldwork team. Due to the large group of RAPs, positions are limited and not every RAP will be able to participate. One representative from each successful group will be present on the rostered survey days.

Applications must be received by 10 December 2015 to ensure the field survey can commence within the scheduled timeframe.

7.1 Fitness to work

Persons involved in field surveys must be fit to perform strenuous physical activity in areas of rugged terrain. It is expected that over 10 km will be walked each day. Persons with medical conditions that hamper physical activity should not participate for safety reasons. Surveys are designed in loops or other

configurations which will not involve returning to vehicles for breaks. All food and water must be carried. Survey participants must not be under the influence of drugs or alcohol.

Field representatives should also be able to show evidence of their previous experience in archaeological field surveys. As a minimum requirement, field representatives must be able to identify a range of Aboriginal object and site types. This includes, but is not limited to:

- stone artefacts (and the ability to distinguish these from naturally occurring rocks);
- grinding stones and grinding grooves;
- rock shelters (including rock art); and
- scarred or carved trees.

Knowledge regarding areas of potential archaeological deposits is also welcome.

7.2 Insurance

All participants must have a registered business name, ABN and address. These details must be unique to the organisation.

Appropriate insurance coverage (workers compensation, public liability insurance) must be provided by all applicants. If your organisation does not require these insurances please provide a written statement from WorkCover or your insurance provider acknowledging your insurance status and the reasons why this occurs. **Applications will not be considered without attached copies of workers compensation and public liability insurance, or evidence that workers compensation is not required.**

7.3 Safety

Each person who participates in the field survey will be required to read and sign on to EMM's Safe Work Method Statement prior to commencing the field survey.

Each day, each participant will be required to bring:

- hard hat with sun brim, sun block, safety glasses (or sunglasses that provide equivalent protection) and suitable clothing and footwear (i.e. high visibility shirt or vest, long sleeved shirt, long pants, wet weather gear, work gloves and steel-capped lace-up boots; no sneakers or running shoes);
- food and water sufficient for the day (at least two litres of water);
- pens, notebooks etc as required to satisfy your group's recording requirements; and
- a bag to carry your food, water and equipment.

The survey will cease if extreme weather (e.g. electrical storms or extreme wind, heat or cold) or other unsafe conditions (e.g. bushfires) occur. However, the survey will continue through light rain, and it is the responsibility of each survey member to bring adequate clothing in case of poor weather.

Should participants not have appropriate clothing they may not be able to participate in the survey.

8 Checklist

Does your application contain the following information?

- evidence of the nominated representative's previous experience in archaeological field surveys;
- evidence of workers compensation and public liability insurance where applicable or a statement declaring they are not required; and
- the completed sign off form attached.

9 Close

Applications must be received by 10 December 2015 to ensure the field survey can commence within the scheduled timeframe.

Please do not hesitate to contact me if you have any questions or comments. I can be contacted on 02 9493 9539 (or 0422 503 469) or via email (email address provided below). We look forward to working with you on this project.

Bourke Small Stock Abattoir Project
Rebecca Newell
EMM Consulting
PO Box 21
St Leonards NSW 1590
Phone: 02 9493 9539
Fax: 02 9493 9599
Email: rnewell@emmconsulting.com.au

Bourke Small Stock Abattoir Project Field Survey Employment Agreement

I have reviewed and agree to the terms and conditions provided in this letter relating to employment services and criteria, safety, fitness for work, payment, code of- conduct and insurance.

Name:	Date:	Signed

Name:	Date:	Signed



MPREC acknowledges the traditional owners of country throughout Australia, and their continuing connection to land, sea and community. We pay our respects to them and their cultures, and to elders both past and present.



Murdi Paaki Regional Enterprise Corporation Ltd
PO Box 4948 DUBBO NSW 2830
P: 02 6841 0111 F: 02 6841 0122
ABN 52 100 601 518

04/12/2015

Rebecca Newell
EMM Consulting
PO Box 21
St Leonards NSW 1590

Dear Rebecca,

Murdi Paaki Regional Enterprise Corporation would like to be involved in the
Bourke Small Stock Abattoir Project.

I agree to be contacted by email as the main source of consultation.

Many Thanks,

Rene Wykes
Acting CEO

Pamela Chauvel

Subject: FW: Proposed Bourke Small Stock Abattoir Project

From: Muda Aboriginal Corporation [mailto:muda@muda.com.au]

Sent: Wednesday, 9 December 2015 8:19 AM

To: Rebecca Newell

Subject: Proposed Bourke Small Stock Abattoir Project

Muda Aboriginal Corporation wishes to register for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010)*, in regards to the proposed Bourke Small Stock Abattoir Project.

I agree to be contacted by email, as the main source of consultation, in this matter.

Regards

Dot Martin

Chairman

2CUZFM – Indigenous Community Radio

Muda Aboriginal Corporation

PO Box 363

1 Wangkumarra drive

Bourke NSW 2840

Ph: (02) 6872 1065

Fax: (02) 6872 1228

Email: muda@muda.com.au

Website: www.2cuzfm.com

Pamela Chauvel

From: Phil Naden [PhilN@bahs.com.au]
Sent: Wednesday, 9 December 2015 10:29 AM
To: Pamela Chauvel
Cc: 'phillip.sullivan@environment.nsw.gov.au'; 'phillip.sullivan@hotmail.com'
Subject: RE: Invitation to register for the Bourke small stock abattoir project
Attachments: Registration Letter.pdf

Pamela

Please find attached a registration letter as requested.

regards

Phil Naden
Chief Executive Officer
Bourke Aboriginal Health Service
P O Box 362 / 61 Oxley Street
BOURKE NSW 2840



START WELL  **STAY WELL**  **LIVE LONGER**

Phone: 02 68723088 **Mobile:** 0419975624 **Fax:** 02 68722749 **Email:** PhilN@bahs.com.au



www.facebook.com/BAHSLtd **Website:** www.bahs.com.au

From: Pamela Chauvel [mailto:pchauvel@emmconsulting.com.au]
Sent: Friday, 4 December 2015 11:30 AM
To: Phil Naden
Subject: Invitation to register for the Bourke small stock abattoir project

Dear Phil,

This email is to follow up on a letter that we sent to you on 26th November inviting you to register for the Bourke small stock abattoir project. Please find attached a copy of the same letter.

If you have any questions about this, please don't hesitate to contact me.

Regards,
Pamela Chauvel
Archaeologist

Sydney, Newcastle and Brisbane.





Bourke Aboriginal Health Service Ltd

61 Oxley Street BOURKE NSW 2840

PO Box 362 BOURKE NSW 2840

Tel: 0268 723 088

Fax: 0268 722 749

Email: PhilN@bahs.com.au

ABN 46 003 392 667

EMM Consulting Pty Ltd

Ground Floor, Suite 1

20 Chandos Street

St Leonards NSW 2065

To whom it may concern

I am in receipt of a letter emailed to me from Pamela Chauvel re an invitation to Aboriginal Organisations to register for the Bourke Small Stock Abattoir Project.

Upon receipt of this letter, the Bourke Aboriginal Health Service wishes to register as an interested Aboriginal Organisation in the consultation phase of the Bourke Small Stock Abattoir Project.

I will be the contact person for the Bourke Aboriginal Health Service and the details of our organisation are listed on the above letter head.

Please do not hesitate to contact me if I can be of further assistance.

Yours sincerely

Phil Naden

Chief Executive Officer

Bourke Aboriginal Health Service

9th December 2015



Pamela Chauvel

From: Ryan Desic
Sent: Friday, 18 December 2015 10:17 AM
To: Ryan Desic
Cc: Rebecca Newell; Pamela Kottaras; Pamela Chauvel
Subject: Bourke Small Stock Abattoir Project: Archaeological field work

Dear Registered Party,

Thank you for your registration for the Bourke Small Stock Abattoir Project. This email is to provide the dates and times of fieldwork for the project. We will be completing one day of fieldwork on Tuesday 12 January 2016. **We will be meeting at 6am at the offices of the Nulla Nulla Local Aboriginal Land Council at 4-6 Oxley Street Bourke.**

If you would like to participate in the field survey please send the following information to EMM:

- the name and contact details of the nominated representative for your group;
- evidence of workers compensation and public liability insurance where applicable or a statement
- declaring they are not required; and
- the completed sign off form of Attachment B from your information pack.

Please note, responses to the methodology can be received until Monday 4 January 2016.

If you have any questions please do not hesitate to contact me.

Regards,
Ryan Desic
Senior Archaeologist

Sydney, Newcastle and Brisbane.



Ground Floor, Suite 01
20 Chandos Street
St Leonards NSW 2065

PO Box 21
St Leonards NSW 1590

T +61 (0)2 9493 9500 | D +61 (0)2 9493 9541 | M +61 411 329 712 | F +61(0)2 9493 9599

www.emmconsulting.com.au

Please note that EMGA Mitchell McLennan Pty Limited has changed its name to EMM Consulting Pty Limited (simply refer to us as EMM). Email and website addresses have been changed to reflect this. All other details including ABN, bank details etc remain unchanged.



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MURRAWARRI CULTURAL SURVEY

NORTH BOURKE SMALL STOCK ABATTOIR

Date of Cultural inspection: 04/02/2016

People who carried out Inspection: Fred Hooper and Phillip Sullivan

Location of Site: Approximately 5 Kilometre's north of the village of North Bourke on the Kidman Way

Background:

The proposed small stock abattoir is being constructed on the lands of the Murrawarri Nation just north of Bourke in NSW. The Murrawarri people have a very strong connection to the lands where the project is being under taken.

An inspection of the site was conducted by Ryan Desic and staff of EEM. A map was produced by them which showed a number of artifacts found by them during their inspection of the site and their locations.

Mr Fred Hooper was contacted by Mr Desic to conduct a cultural clearance of the site and a site clearance was conducted on 4th February 2016. We were accompanied to the site by Mr Peter Archer.

What was found on the site:

A number of artifacts were found by myself and Phillip Sullivan which confirmed and supported the findings of Mr Desic and his staff.

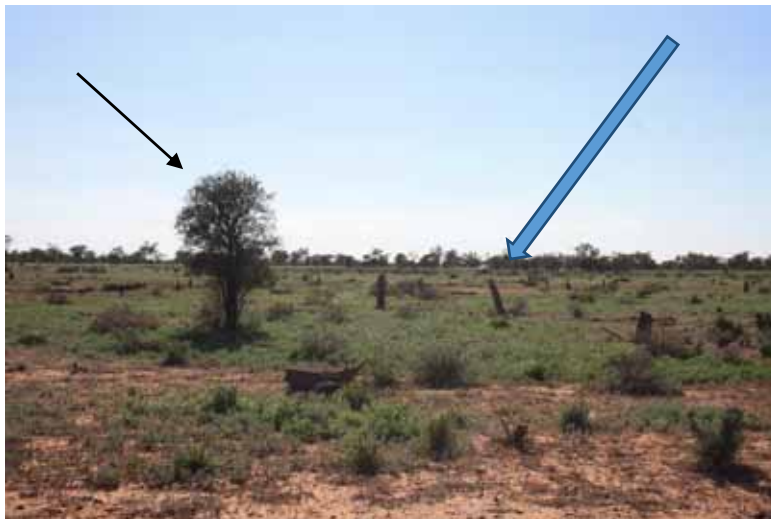
Below are some artifacts and items of Cultural Value to the Murrawarri peoples that was found on the site which needs to be preserved.



Flint artifact



Core Rock



Gurri or wild orange tree identified in the middle of the access road to the site identified with the black arrow.

Recommendations:

We recommend the following,

1. The road be move just to the south of this tree. We suggest that the point where the flag as identified by the blue arrow above be the northern edge of the access road.
2. That once the site is fenced at least 3 Murrawarri decedents with the Cultural Authority clear the site of all artifacts that are within the boundaries of the construction site.
3. All artefacts collected be kept and presented in a display within the site office of the Small Stock Abattoir with an interpretation display board.

18 February 2016

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

T +61 2 9493 9500

F +61 2 9493 9599

E info@emmconsulting.com.au

www.emmconsulting.com.au

Re: Bourke Abattoir Aboriginal Cultural Heritage Assessment: proposed irrigation area

Dear Registered Party

1 Introduction

Thank you for being involved in the Aboriginal Cultural Heritage Assessment (ACHA) for the Bourke small stock abattoir project (the project). There has been a recent addition of an irrigation area to the project, which will result in impacts to an additional 14 hectares (ha) of land. This letter is to update registered parties about the proposed addition, to identify potential impacts to Aboriginal objects resulting from the addition and present appropriate management recommendations that are consistent with those currently presented in the draft ACHA. The proposed addition will be incorporated into the ACHA and environmental impact statement (EIS) currently being prepared for the project.

The additional impacts will be clearing and ploughing and irrigating an area of land 150 m west of the current study area (Figure 1).

2 Justification

The abattoir will produce approximately 700 kL of wastewater per day. This wastewater will go through a number of treatment processes including screening and dissolved air flotation, after which it will go into four treatment ponds to further reduce the organic load and nitrogen levels. In order to reduce waste, the treated wastewater will be reused to irrigate crops on the 14 ha extension of the site. This additional land and activity has therefore been added to the project for which approval is being sought.

3 Implications

The proposed irrigation area has not been surveyed but the results of the survey for the abattoir footprint indicate that Aboriginal objects, primarily stone artefacts, are likely to be present on the ground surface. The irrigation area shares the same landscape context as the surveyed areas and therefore similar Aboriginal sites are expected to occur in this area.

The following potential impacts have been identified as a result of the proposed extension:

- Stone artefacts, if present on the ground surface, are likely to be displaced horizontally and vertically through ploughing;
- Modified trees, if present, are likely to be removed through vegetation clearance (although the area is largely devoid trees);

- Other rarer sites, such as hearths, stone arrangements and burials, if present, may be disturbed or destroyed from ploughing activities.

4 Management recommendations

4.1 Overview

The draft ACHA will be updated to incorporate the proposed irrigation area. This will involve updating the management measures to incorporate additional measures for the 14 hectares that have not been surveyed. The additional recommendations are provided in the headings below.

4.2 Recommendation 1: survey and salvage collection for stone artefacts

The 14 hectare irrigation area will be surveyed prior to vegetation clearance and ploughing. All stone artefacts) within this footprint will be recorded and collected by a team of RAPs and qualified archaeologists. The collection method will be finalised during the development of the Aboriginal heritage management plan (AHMP), but will generally follow the method set out in Section 10.2.3 of the draft ACHA, that is:

“During surface collection, each site will be collected into labelled bags recording the site name, location and collection date. The location of all collected artefacts will be recorded by GPS for distribution maps. Collected artefacts will be entered into a database with basic attributes recorded for each artefact. Basic assemblage analysis will be undertaken and integrated into a salvage report which will contribute to the overall interpretation of the area.”

4.3 Recommendation 2: avoidance of other Aboriginal site types

If Aboriginal objects other than stone artefacts or Aboriginal places are identified during the survey and collection program described in Recommendation 1, the following procedure should be undertaken:

- the site will be left *in-situ* and will not be collected or moved;
- the site will be recorded by a qualified archaeologist, including marking their GPS coordinates;
- once recorded, the boundary of the site will be demarcated using temporary fencing equipment; and
- these sites will be actively managed through fencing and avoidance and the area within the demarcated boundary will not be subject to vegetation clearance or ploughing.

Although this will be the primary management measure, if impacts to certain sites cannot be avoided alternative management measures proportionate to the significance of the site will be developed in consultation with RAPs, archaeologists and the client and incorporated into the AHMP.

Aboriginal sites that will be avoided include, but are not limited to, hearths, modified trees, stone arrangements and burials. Any areas demarcated for avoidance may result in a loss of potentially irrigated land in the 14 ha boundary. Therefore if additional areas outside the 14 ha proposed boundary are selected for ground disturbance activities, these too will require additional survey and collection.

4.4 Recommendation 3: follow special procedures established in the draft ACHA

Special procedures specified in Section 10.2.4 of the draft ACHA, regarding those for suspected Aboriginal ancestral remains, an Aboriginal keeping place and the identification of new Aboriginal sites will also apply to the Aboriginal objects identified in the modification area.

5 Close

Thank you for your consideration. Please do not hesitate to contact me regarding the proposed modification and management recommendations

Yours sincerely,

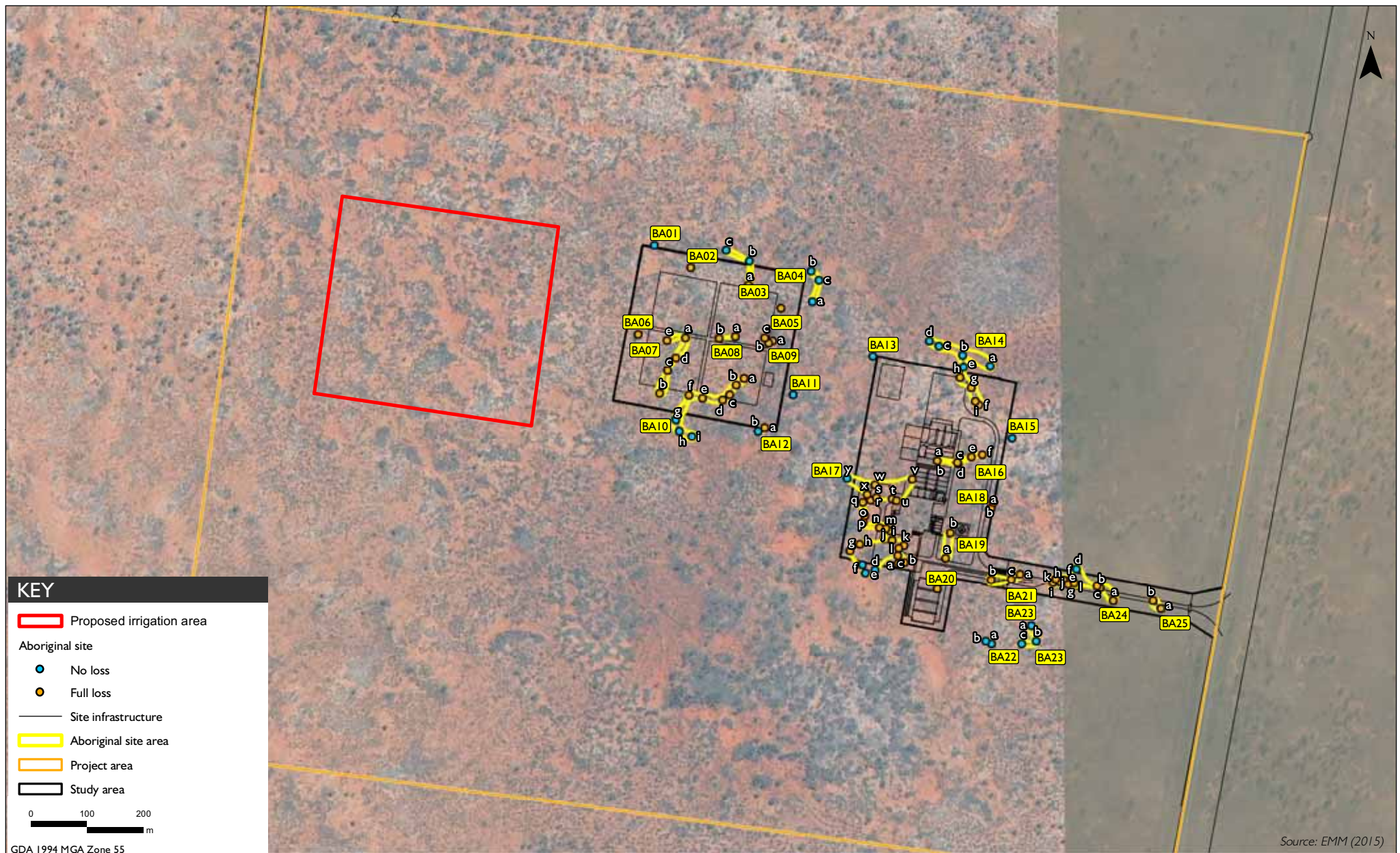
A handwritten signature in black ink, appearing to read 'Ryan Desic', with a stylized flourish at the end.

Ryan Desic

Senior Archaeologist

rdesic@emmconsulting.com.au

T 02 9493 9500 | D 02 9493 9541 | M 0411 329 712 | F 02 9493 9599



Proposed irrigation area
 Bourke Small Stock Abattoir
 Aboriginal Cultural Heritage Assessment
 Figure 1

From: Vicky Ansin [VickyA@mprec.org.au]
Sent: Friday, 26 February 2016 1:12 PM
To: Andrew Crisp
Subject: Re: Bourke Small Stock Abattoir ACHA - Final
Comment Deadline
Attachments: image001.png

Good afternoon Andrew,

Thank you for your phone call & the email.

I have reviewed the ACHA and have no comments that we wish to include.

Many thanks

Vicky Ansin

Sent from my iPad

On 26 Feb 2016, at 11:57 AM, Andrew Crisp <acrisp@emmconsulting.com.au> wrote:

Good morning everyone,

Today is the last day to receive any final comments on the proposed Bourke Small Stock Abattoir (the project) that you all have either been directly involved with or in close consultation during the course of the project. This morning I have endeavoured to contact everyone registered with the project. I have spoke to a number of individuals directly and the remainder I have left voice mails and/or messages with contacts at the respective group. If you have any final comments on the draft Aboriginal Cultural Heritage Assessment (ACHA) that each group has received or the project in general please reply to this email or call me on 02 9493 9539 before the close of business today (5pm Friday 26/02/2016). I will collate and address any comments made today prior to submitting the final report to Department of Planning for Monday next week.

On behalf of EMM I want to thank you for all your input into the project, it has been invaluable and is greatly appreciated. I look forward to speaking with you today, and if not, working with you again in the future.

Kind regards,

Andrew Crisp | Project Archaeologist

T 02 9493 9500 | **D** 02 9493 9539 | **F** 02 9493 9599

Ground Floor, Suite 01, 20 Chandos Street, St Leonards NSW 2065

PO Box 21, St Leonards NSW 1590

<image001.png>

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[planning](#) | [environment](#) | [acoustics](#) | [ecology](#) | [heritage](#) | [groundwater](#) | [soils, closure, rehab](#) | [gis](#)

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Date	RAP	RAP Person	EMM person	Details
4/12/2015	Nulla Nulla Aboriginal Land Council	George Orcher	PC	Calling re invitation to register - tried both numbers. Disconnected or engaged. Will try again
4/12/2015	Muda Aboriginal Corporation	Charlotte Finch	PC	Calling re invitation to register - left a message
4/12/2015	Bourke Aboriginal Health Service (BAHS)	Phil Naden	PC	Calling re invitation to register - spoke to someone who advised us of the correct email by which to contact Phil Naden. Email re-sent 4/12/15. He replied same day saying
4/12/2015	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	PC	Calling re invitation to register - spoke to a someone who said they would email Melissa with my details for her to follow up
4/12/2015	Bourke Aboriginal Community Working Party	Alistair Ferguson	PC	Previously expressed interest via phone. Called and spoke to someone who is going to let him know that he needs to
4/12/2015	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	RN	Received email and letter requesting to register
8/12/2015	DAA, DoE, Maranguka, Maranguka, Bourke Shire Council, Bourke High School, OEH, CAPRA			Meeting in Bourke organised by Alistair Ferguson/CAPRA? to discuss the Abattoir Project. EMM not involved. Minutes saved in consultation file
9/12/2015	Bourke Aboriginal Health Service (BAHS)	Phil Naden	PC	Received email and letter requesting to register
9/12/2015	Muda Aboriginal Corporation	Dot Martin	RN	Received email requesting to register
9/12/2015	Bourke Aboriginal Community Working Party	Alistair Ferguson	PC	Called and followed up with an email (copy of application pack attached) to be passed on to Alistair requesting him to
18/12/2015	all registered parties		RD	Email sent re. Fieldwork start time/place, insurance and liability requirements. Saved in consultation file
5/01/2016	Muda Aboriginal Corporation	Dot Martin	PC	Phone call to follow up on email sent 18/12/15 regarding fieldwork time/place and insurance details. Spoke to Dot who
5/01/2016	Nulla Nulla Aboriginal Land Council	George Orcher	PC	Tried to phone to follow up email we sent on 18/12/15 but number (from LALC website) didn't connect. Also tried 6872 2056 (as listed on Bourke Community Directory http://bourke.localinfo.org.au/community_dir.php) but that
5/01/2016	Bourke Aboriginal Health Service (BAHS)	Phil Naden	PC	Phone rang out

5/01/2016	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	PC	Phoned and left a message re. Follow up to email sent 18/12/15
5/01/2016	Bourke Aboriginal Community Working Party	Alistair Ferguson	PC	Phoned and spoke to Vivian who was able to locate the letter from 18/12/15 I went through it with her and she will follow
5/01/2016	OEH, Dubbo	Phil Purcell	PC	Phoned to obtain contact details for Nulla Nulla - he is out of
5/01/2016			PC	Rang around to try and find details for Nulla Nulla LALC - Bourke National Parks Service told me the building had burnt down. Also tried the Aboriginal Health Service but they didn't have a phone number for Nulla Nulla either. Called head
6/01/2016	Bourke Aboriginal Health Service (BAHS)	Phil Naden	PC	Phone conversation with Phil - he confirmed that he will be coming on fieldwork on 12 Jan and that he does have
6/01/2016	Muda Aboriginal Corporation	Dot Martin	PC	Called Dot who said she is unable to do the fieldwork (8 hours
6/01/2016	Bourke Aboriginal Health Service (BAHS)	Phil Naden	PC	Email received with insurance details
6/01/2016	Bourke Aboriginal Community Working Party	Alistair Ferguson	PC	Phoned and spoke to Kelly. Alistair is on holidays until 11/1/16. She gave me his wife's number
6/01/2016	Bourke Aboriginal Community Working Party	Alistair Ferguson	PC	Spoke to Alistair on the phone. He will speak to Phil Sullivan about insurance and send me the details. Phil will probably be the person coming out on fieldwork next week. Sent him an
6/01/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	PC	Tried phoning but phone out of range
7/01/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	PC	Tried phoning but phone out of range
7/01/2016	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	PC	Spoke on the phone with Rene who confirmed that Vicky will be coming on fieldwork but that she is travelling at the
7/01/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	PC	Email sent with details of fieldwork time/meeting place and request for insurance details.
11/01/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	PC	Insurance details received via email
29/01/2016	all registered parties		PC	Email - draft report and request for review.
29/01/2016	Nulla Nulla LALC	Leanne Orcher	PC	Phone rang out. Tried to call in response to a message she left for Nicole that she'd like to provide community consultation

1/02/2016	Nulla Nulla LALC	Leanne Orcher	PC	Phone rang out. Tried to call in response to a message she left for Nicole and to obtain an email so I can send her the draft
2/02/2016	Nulla Nulla LALC	Leanne Orcher	PC	Phone rang out. Tried to call in response to a message she left for Nicole and to obtain an email so I can send her the draft
2/02/2016	Nulla Nulla LALC		PC	Letter posted with copy of draft report for review
18/02/2016	Nulla Nulla LALC	George Orcher	AV	Phone call to follow up email. Bourke Abattoir document received. Will follow up with a phone call or email if he has
18/02/2016	Muda Aboriginal Corporation	Charlotte Finch	AV	Phone call to follow up email. Out of the office at the moment but will read through the Bourke document tonight
18/02/2016	Bourke Aboriginal Health Service (BAHS)	Phil Naden	AV	Phone call to follow up email. Out of the office but Gloria has passed on a message to Phil asking him to read the email and
18/02/2016	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	AV	Phone call to follow up email. Out of the office but secretary will ask Rene to read the letter and email feedback if
18/02/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	AV	Email sent and tried following up with a phone call, but no answer. Tried calling again in afternoon, but again no answer.
18/02/2016	Bourke Aboriginal Community Working Party	Alistair Ferguson	AV	Phone call to follow up email. Secretary will ask him to review Bourke document later and respond with feedback if
18/02/2016	Bourke Aboriginal Community Working Party	Phil Sullivan	AV	Email sent and tried following up with a phone call, but no answer. Tried calling again in afternoon, but again no answer.
18/02/2016	Murrawarri Traditional Council State	Fred Hooper	AV	Phone call to follow up email. Document received, will review it and respond with feedback if necessary.
18/02/2016	Muda Aboriginal Corporation	Dot Martin	AV	Phone call to follow up email. Dot requested to have the document sent to her personal email address (dotmartin45@gmail.com). Will review it and respond with
26/02/2016	Nulla Nulla LALC	George Orcher	AC	Tried twice on 02 6872 3003 with no success. Tried 6872 2056 with same result. Tried 02 6872 1281 which rang out. Follow
26/02/2016	Muda Aboriginal Corporation	Charlotte Finch	AC	Left a message on the answering machine at 02 6872 1869. Called Dot Martin who informed me that she didn't have much to do with the project, I told her I would call Charlotte in that case. Called Charlotte and she asked if i could call her back in 10 minutes. Charlotte informed me that Muda

26/02/2016	Bourke Aboriginal Health Service (BAHS)	Phil Naden	AC	Left a message with Gloria at reception detailing the consultation period is ending today and if he wants to make any more comments to return my call here at the office.
26/02/2016	Murdi Paaki Regional Enterprise Corporation	Rene Wykes	AC	Called Rene and was told to speak to Vicky Ansin (the Regional Manager). I called Vicky on 02 6836 3787 and spoke to Matt who informed me that Vicki was on the road and will
26/02/2016	Bourke Aboriginal Community Working Party	Alistair Ferguson	AC	Called Alistair on 02 5834 7915 which rang out. Called alternative number 0419 975 624 and actually connected to the voice mail of Phil Naden - left another message anyway.
26/02/2016	Bourke Aboriginal Community Working Party	Phil Sullivan	AC	Paraphased comments received from Phil: "Firstly - this is a great thing for Bourke. The arch survey was very good, nothing in particular in the main pad where the building is going to be but no survey where the dam is which we should do and survey down to the river. Avoid native orange where possible. Exhisting pipe for town water from north Bourke to cover everything where the freshwater pipes are going there
26/02/2016	Murrawarri Traditional Council State	Fred Hooper	AC	Left a message on his answering machine with my contact number and a quick brief. Followed up with email.
26/02/2016	Murdi Paaki Regional Enterprise Corporation	Vicky Ansin	AC	Vicki Ansin emailed to inform EMM that she had no further comments.

Aboriginal Consultation Log

Bourke Abattoir

Stage 1 - Advisory Requests Sent

Organisation	Contact type	Date Sent	Comment
Nulla Nulla Aboriginal Land Council	Letter	26-Nov-15	
Muda Aboriginal Corporation	Letter	26-Nov-15	
Bourke Aboriginal Health Service (BAHS)	Letter	26-Nov-15	
Murdi Paaki Regional Enterprise Corporation	Letter	26-Nov-15	
Bourke Aboriginal Community Working Party	Letter	26-Nov-15	
Badger Bates	Letter	26-Nov-15	
Barkindji Elders Council	Letter	26-Nov-15	
Mt Grenfell Historic Site Board of Management	Letter	26-Nov-15	
Gundabooka Aboriginal Management Committee	Letter	26-Nov-15	
Murrawari LALC	Letter	26-Nov-15	
Wanaaring LALC	Letter	26-Nov-15	

Aboriginal Group Notifications Sent - see "addresses" sheet

Organisation	Contact type	Date	Comments
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Aboriginal Group Registrations & Communications

Organisation	Contact type	Date	Comments
Murdi Paaki Regional Enterprise Corporation	email	04-Dec-15	Registration request from Rene Wykes
Bourke Aboriginal Health Service (BAHS)	email	09-Dec-15	Registration request from Phil Naden
Muda Aboriginal Corporation	email	09-Dec-15	Registration request from Dot Martin
Bourke Aboriginal Community Working Party	email	06-Jan-16	Alistair Ferguson
Murrawarri Traditional Council State	phone	11-Jan-16	Fred Hooper
Nulla Nulla Local Aboriginal Land Council	phone	18-Feb-16	Late registration: see comms record

OEH & LALC notified of Registered Stakeholders

Organisation	Contact type	Date	Comments
OEH	letter	19/01/2016	Copy of newspaper ad, invite to register and methodology for survey.
Nulla Nulla Aboriginal Land Council	letter	19/01/2016	Copy of newspaper ad, invite to register and methodology for survey.

**Stage1 - Methodology Advice
Sent with request for registration**

Organisation	Contact type	Date Sent	Comments
Murdi Paaki Regional Enterprise Corporation	letter	26-Nov-15	
Bourke Aboriginal Health Service (BAHS)	letter	26-Nov-15	
Muda Aboriginal Corporation	letter	26-Nov-15	
Bourke Aboriginal Community Working Party	letter	26-Nov-15	
Murrawarri Traditional Council State	letter	26-Nov-15	
Nulla Nulla LALC	letter	26-Nov-15	
	letter	26-Nov-15	

Stage 2 - Fieldwork details

Organisation	Contact type	Date Sent	Comments
Murdi Paaki Regional Enterprise Corporation	email	07-Dec-15	
Bourke Aboriginal Health Service (BAHS)	email	07-Dec-15	
Muda Aboriginal Corporation	email	07-Dec-15	
Bourke Aboriginal Community Working Party	email	06-Jan-16	
Murrawarri Traditional Council State	phone	11-Jan-16	
Nulla Nulla LALC	email	07-Dec-15	

Draft ACHA sent to RAPs for review

Organisation	Contact type	Date Sent	Comments
Murdi Paaki Regional Enterprise Corporation	email	29-Jan-16	
Bourke Aboriginal Health Service (BAHS)	email	29-Jan-16	
Muda Aboriginal Corporation	email	29-Jan-16	
Bourke Aboriginal Community Working Party	email	29-Jan-16	
Murrawarri Traditional Council State	email	29-Jan-16	

Nulla Nulla LALC

letter

Email sent on 29.01.2016 but seems to not
02-Feb-16 have worked, therefore letter was sent

Bourke Abattoir Aboriginal Cultural

Heritage Assessment: proposed irrigation area

Organisation	Contact type	Date Sent	Comments
Nulla Nulla LALC	Email and phone	18-Feb-16	
Muda Aboriginal Corporation	Email and phone	18-Feb-16	
Bourke Aboriginal Health Service (BAHS)	Email and phone	18-Feb-16	
Murdi Paaki Regional Enterprise Corporation	Email and phone	18-Feb-16	
Bourke Aboriginal Community Working Party	Email and phone	18-Feb-16	
Murrawarri Traditional Council State	Email and phone	18-Feb-16	

Stage 3 - Review of Draft ACHA

Organisation	Contact type	Date Sent	Comments
Murdi Paaki Regional Enterprise Corporation	Email and phone	26-Feb-16	
Bourke Aboriginal Health Service (BAHS)	Email and phone	26-Feb-16	
Muda Aboriginal Corporation	Email and phone	26-Feb-16	
Bourke Aboriginal Community Working Party	Email and phone	26-Feb-16	
Murrawarri Traditional Council State	Email and phone	26-Feb-16	
Nulla Nulla LALC	Email and phone	26-Feb-16	

Appendix B

AHIMS search results and site cards

EMGAMM-St Leonards (previously EMGA)

Ground Floor, Suite 01 20 Chandos Street

St Leonards New South Wales 2065

Attention: Rebecca Newell

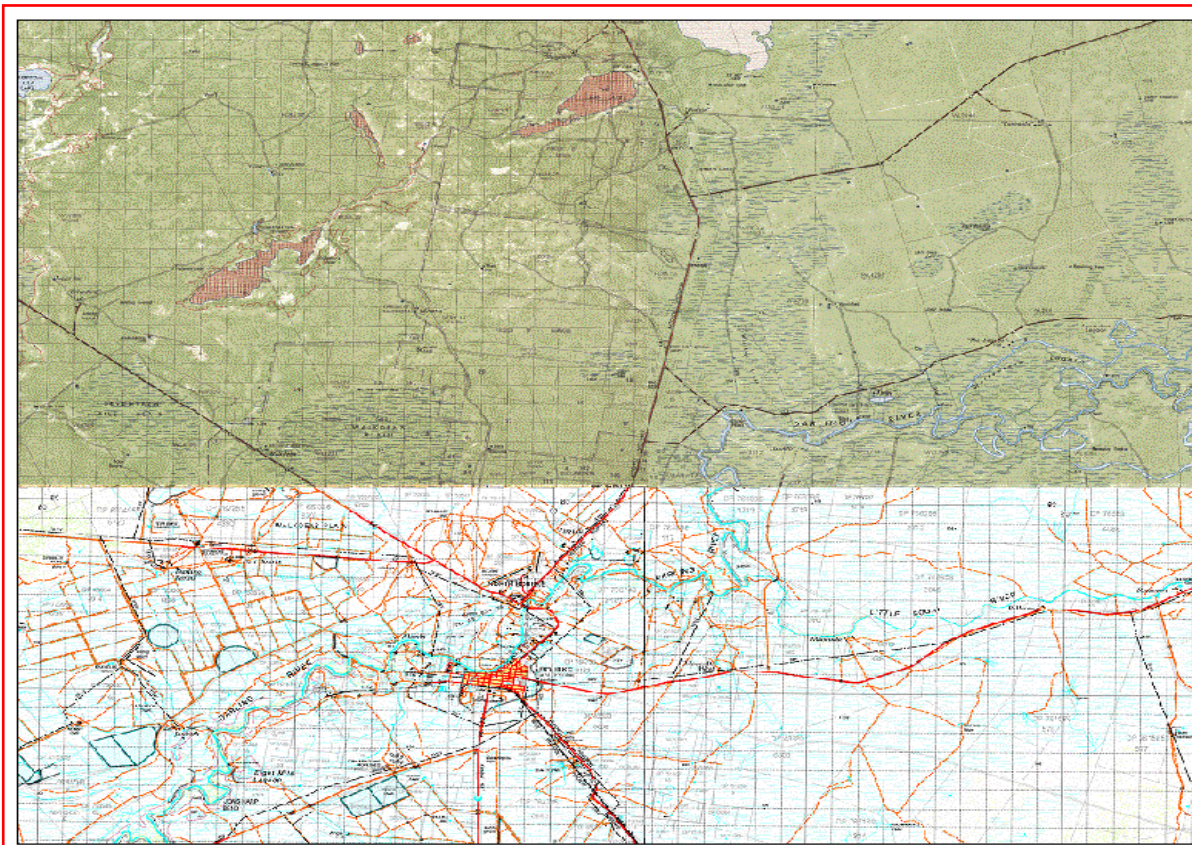
Email: rnewell@emgamm.com

Dear Sir or Madam:

Date: 10 November 2015

AHIMS Web Service search for the following area at Lat, Long From : -30.1182, 145.7568 - Lat, Long To : -29.8299, 146.2139 with a Buffer of 1000 meters, conducted by Rebecca Newell on 10 November 2015.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

65	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](http://www.nsw.gov.au/gazette) (<http://www.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
17-1-0030	NB-OS-2/HS-1	AGD	55	398460	6673800	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0031	NB-OS-7	AGD	55	400640	6675300	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0034	NB-ST-4	AGD	55	400390	6675640	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0035	BLF-IF-5;	AGD	55	397410	6666360	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0036	BLF-IF-3	AGD	55	397390	6666350	Open site	Valid	Artefact : -	Isolated Find	3223
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0037	BLF-IF-2	AGD	55	397400	6666350	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0038	BLF-IF-4	AGD	55	397400	6666350	Open site	Valid	Artefact : -	Isolated Find	3223
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0039	BLF-IF-1	AGD	55	397400	6666360	Open site	Valid	Artefact : -	Isolated Find	3223
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0040	BBG1;	AGD	55	397320	6671580	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Phil Sullivan,D Egan					<u>Permits</u>		
17-1-0041	BBG2;	AGD	55	397880	6671430	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Phil Sullivan,D Egan					<u>Permits</u>		
17-1-0042	BBG3;	AGD	55	397540	6671620	Open site	Valid	Artefact : -, Earth Mound : -, Hearth : -	Mound (Oven),Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Phil Sullivan,D Egan					<u>Permits</u>		
17-1-0043	BBG4;	AGD	55	396110	6671420	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Phil Sullivan,D Egan					<u>Permits</u>		
17-1-0044	BBG5;	AGD	55	397570	6671660	Open site	Valid	Artefact : -, Earth Mound : -, Hearth : -	Mound (Oven),Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Phil Sullivan,D Egan					<u>Permits</u>		

Report generated by AHIMS Web Service on 10/11/2015 for Rebecca Newell for the following area at Lat, Long From : -30.1182, 145.7568 - Lat, Long To : -29.8299, 146.2139 with a Buffer of 1000 meters. Additional Info : ACHA. Number of Aboriginal sites and Aboriginal objects found is 65

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
17-1-0007	BLB-FCS-1	AGD	55	399000	6670600	Open site	Valid	Aboriginal Ceremony and Dreaming : -		2807
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0008	BLB-ST-1;	AGD	55	399400	6670800	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	2807
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0010	BLB-ST-3;	AGD	55	399400	6670800	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	2807
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0011	BRB-ST-3;	AGD	55	399600	6670000	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	2807
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0012	BLB-OS-3;	AGD	55	399300	6670900	Open site	Valid	Artefact : -	Open Camp Site	2807
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0014	BFR-ST-1;	AGD	55	392098	6671400	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0015	Bourke Fishing Reserve;	AGD	55	392100	6671110	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0016	BFR-OS-1;	AGD	55	392500	6670500	Open site	Valid	Artefact : -, Hearth : 9	Open Camp Site	
	<u>Contact</u> Phil Sullivan	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0023	NB-OS-4	AGD	55	399650	6673880	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0024	NB-OS-3	AGD	55	398400	6674160	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0025	NB-OS-2	AGD	55	398460	6673800	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0026	NB-OS-1	AGD	55	399080	6674120	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd							<u>Permits</u>
17-1-0027	NB-ST-3	AGD	55	398670	6674260	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree	3247
								-		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0028	NB-ST-2	AGD	55	398730	6674310	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0029	NB-ST-1	AGD	55	398670	6674260	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0018	BAR-IF-1	AGD	55	395830	6671260	Open site	Valid	Artefact : -	Isolated Find	3709
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0019	BAR-IF-2	AGD	55	395900	6671380	Open site	Valid	Artefact : -	Isolated Find	3709
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0020	BLF-OS-1	AGD	55	397400	6666350	Open site	Valid	Artefact : -	Open Camp Site	3223
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>	764	
17-1-0021	NB-OS-6	AGD	55	400390	6675640	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
17-1-0022	NB-OS-5	AGD	55	399690	6673780	Open site	Valid	Artefact : -	Open Camp Site	3247
	<u>Contact</u>	<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd					<u>Permits</u>		
08-5-0122	Llandillo 15;	AGD	55	412800	6683600	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0123	Llandillo 14;	AGD	55	412600	6683750	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0124	Llandillo 13;	AGD	55	412400	6683750	Open site	Valid	Shell : -, Artefact : -	Midden	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0125	Llandillo 12;	AGD	55	412550	6683750	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0126	Llandillo 11;	AGD	55	412200	6683850	Open site	Valid	Earth Mound : -, Hearth : -	Mound (Oven)	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		

Report generated by AHIMS Web Service on 10/11/2015 for Rebecca Newell for the following area at Lat, Long From : -30.1182, 145.7568 - Lat, Long To : -29.8299, 146.2139 with a Buffer of 1000 meters. Additional Info : ACHA. Number of Aboriginal sites and Aboriginal objects found is 65

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
08-5-0127	Llandillo 10;	AGD	55	412300	6683850	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0128	Llandillo 9;	AGD	55	412450	6683900	Open site	Valid	Earth Mound : -, Hearth : -, Burial : -, Artefact : -, Modified Tree (Carved or Scarred) : -	Burial/s,Mound (Oven),Open Camp Site,Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0129	Llandillo 8;	AGD	55	412550	6683900	Open site	Valid	Artefact : -, Hearth : -, Shell : -, Modified Tree (Carved or Scarred) : -	Midden,Mound (Oven),Open Camp Site,Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0130	Llandillo 6;	AGD	55	412800	6683700	Open site	Valid	Modified Tree (Carved or Scarred) : -, Earth Mound : -, Hearth : -	Mound (Oven),Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0131	Llandillo 7;	AGD	55	412800	6683700	Open site	Valid	Artefact : -	Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0132	Llandillo 5;	AGD	55	412700	6683900	Open site	Valid	Earth Mound : -, Hearth : -, Artefact : -, Modified Tree (Carved or Scarred) : -	Mound (Oven),Open Camp Site,Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0133	Llandillo 4;	AGD	55	412300	6684100	Open site	Valid	Shell : -, Artefact : -, Hearth : -	Midden,Mound (Oven),Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0134	Llandillo 3;	AGD	55	412700	6684000	Open site	Valid	Artefact : -	Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		
08-5-0135	Llandillo 1;	AGD	55	412900	6683900	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	<u>Contact</u>	<u>Recorders</u>	Doctor.sarah martin					<u>Permits</u>		

Report generated by AHIMS Web Service on 10/11/2015 for Rebecca Newell for the following area at Lat, Long From : -30.1182, 145.7568 - Lat, Long To : -29.8299, 146.2139 with a Buffer of 1000 meters. Additional Info : ACHA. Number of Aboriginal sites and Aboriginal objects found is 65

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
08-5-0136	Llandillo 2;	AGD	55	412800	6683900	Open site	Valid	Earth Mound : -, Artefact : -, Hearth : -	Mound (Oven),Open Camp Site	
	Contact	Recorders	Doctor.sarah martin					Permits		
08-4-0008	LILA DMR 7;	AGD	55	378960	6698130	Open site	Valid	Artefact : -	Open Camp Site	3550
	Contact	Recorders	Mr.John Appleton					Permits		
08-4-0009	LILA DMR 8;	AGD	55	379300	6698420	Open site	Valid	Artefact : -	Open Camp Site	3550
	Contact	Recorders	Mr.John Appleton					Permits		
08-4-0010	LILA DMR 9;	AGD	55	379680	6698690	Open site	Valid	Artefact : -	Open Camp Site	3550
	Contact	Recorders	Mr.John Appleton					Permits		
08-5-0001	The Lagoon;	AGD	55	415948	6684675	Open site	Valid	Artefact : -, Modified Tree (Carved or Scarred) : -, Shell : -	Midden,Open Camp Site,Scarred Tree	64
	Contact	Recorders	David Bell					Permits		
08-5-0002	The Lagoon;	AGD	55	415951	6684309	Open site	Valid	Modified Tree (Carved or Scarred) : -, Artefact : -, Shell : -	Midden,Open Camp Site,Scarred Tree	64
	Contact	Recorders	David Bell					Permits		
08-5-0003	The Lagoon Darling River	AGD	55	416235	6683123	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	64
	Contact	Recorders	David Bell					Permits		
08-5-0004	The Lagoon;	AGD	55	416862	6684683	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	64
	Contact	Recorders	David Bell					Permits		
08-5-0006	The Lagoon;	AGD	55	418970	6683970	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	64
	Contact	Recorders	David Bell					Permits		
17-1-0045	ALAMI 2	AGD	55	394115	6673249	Open site	Valid	Artefact : -		4754
	Contact	Recorders	Archaeological Surveys & Salvage ,Janice Wilson					Permits		
17-1-0046	ALAMI I	AGD	55	394463	6674728	Open site	Valid	Artefact : -		4754
	Contact	Recorders	Archaeological Surveys & Salvage ,Janice Wilson					Permits		
17-1-0100	003	AGD	55	392336	6670282	Open site	Valid	Hearth : 2		
	Contact	Recorders	Ms.Melissa Prince					Permits		
17-1-0009	BLB-ST-2;	AGD	55	399500	6670300	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	2807
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
17-1-0098	004	AGD	55	392141	6670374	Open site	Valid	Hearth : 2		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : H15101

Client Service ID : 198692

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	Gerry Saals	<u>Recorders</u>	Ms.Melissa Prince				<u>Permits</u>		
17-1-0099	005	AGD	55	392268	6670330	Open site	Valid	Hearth : 1		
	<u>Contact</u>	Gerry Saals	<u>Recorders</u>	Ms.Melissa Prince				<u>Permits</u>		
08-5-0005	The Lagoon;	AGD	55	418148	6683871	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	64
	<u>Contact</u>		<u>Recorders</u>	David Bell				<u>Permits</u>		
17-1-0033	NB-IF-1	AGD	55	398640	6674310	Open site	Valid	Artefact : -	Isolated Find	3247
	<u>Contact</u>		<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd				<u>Permits</u>		
17-1-0032	NB-IF-2	AGD	55	398690	6674300	Open site	Valid	Artefact : -	Isolated Find	3247
	<u>Contact</u>		<u>Recorders</u>	Central West Archaeological and Heritage Services Pty Ltd				<u>Permits</u>		

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Appendix C

Aboriginal survey site results

	e	402971	6684032	55																			
	h	402988	6684044	55																			
	i	403046	6684051	55																			
	j	403042	6684068	55																			
	k	403067	6684041	55																			
	l	403057	6684037	55																			
	m	403034	6684071	55																			
	n	403023	6684073	55																			
	o	402994	6684084	55																			
	p	402997	6684095	55																			
	q	402994	6684118	55																			
	r	403008	6684122	55																			
	s	403018	6684126	55																			
	t	403045	6684124	55																			
	u	403054	6684121	55																			
	v	403081	6684159	55																			
	w	403015	6684149	55																			
	x	403001	6684131	55																			
	y	402965	6684161	55																			
BA18	a	403222	6684107	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete	deflated landform with high erosion from scalds and livestock	10	10	100	3		2.8	Darling River	Adjacent to a little soak/depression. Grey silcrete: 1 flake, 1 distal flake, 1 core.
BA19	a	403141	6684019	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete	deflated landform with high erosion from scalds and livestock	45	10	450	4		2.9	Darling River	On a scald exposure. 3 grey silcrete cores and 1 flake.
	b	403149	6684064	55																			
BA20		403126	6683964	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete	deflated landform with high erosion from scalds and livestock	1	1	1	2		2.8	Darling River	1 silcrete flake with retouch along right lateral margin near distal end - 1 core.
BA21	a	403273	6683990	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete	deflated landform with high erosion from scalds and livestock	50	10	500	7			Darling River	2 silcrete flakes, 1 distal flake, 1 longitudinally split flake, 1 flake piece
	b	403222	6683980	55																			
	c	403257	6683980	55																			
BA22	a	403222	6683866	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete, chert/mudstone	deflated landform with high erosion from scalds and livestock	10	10	100	4		2.7	Darling River	1 white glossy chert/mudstone flake, 2 silcrete retouched flakes (one with retouch)
	b	403213	6683872	55																			
BA23	a	403293	6683899	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete, chert	deflated landform with high erosion from scalds and livestock	50	10	500	8		2.6	Darling River	5 grey silcrete flakes, 1 medial silcrete flake, 1 longitudinally split silcrete flake, and 1 proximal chert flake. On a scald exposure.
	b	403302	6683871	55																			
	c	403276	6683867	55																			
BA24	a	403439	6683943	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete,	deflated landform with high erosion from scalds and livestock	110	20	2200	20		2.6	Darling River	5 silcrete, 1 quartzite and 2 chert flakes, 2 retouched silcrete flake, 6 silcrete cores, 2 silcrete flaked pieces
	b	403416	6683965	55																			
	c	403410	6683968	55																			
	d	403374	6683999	55																			
	e	403351	6683980	55																			
	f	403364	6683981	55																			
	g	403359	6683972	55																			
	h	403343	6683976	55																			
	i	403332	6683975	55																			
	j	403337	6683981	55																			
	k	403337	6683981	55																			
	l	403370	6683974	55																			
BA25	a	403524	6683929	55	12-Jan-16	> 1%	Open stone artefact	Plain	Flat	Scald	Scrub / grazing		70	silcrete	deflated landform with high erosion from scalds and livestock	20	10	200	2		2.5	Darling River	1 silcrete flake and 1 silcrete core. On a scald exposure
	b	403510	6683943	55																			

Appendix D

Aboriginal artefact data

Site	Silcrete								chert			quartzite	TOTAL
	flake	flake	distal	proximal	medial	longit	core	retouch	flake	distal	proximal	flake	
BA01	2		2										4
BA02	1												1
BA03	10	2	3										15
BA04	5							1					6
BA05	3												3
BA06	1												1
BA07	5												5
BA08	1	2					3						6
BA09	4		1										5
BA10	12	1					2						15
BA11							1						1
BA12	2						1						3
BA13	1												1
BA14	5		1	1			3						10
BA15	1												1
BA16	4	2		1			1		1				9
BA17	24	3	4	4		2	7	1	1	1		1	48
BA18	1		1				1						3
BA19	1						3						4
BA20	1							1					2
BA21	2	1	1			1	2						7
BA22	1	1						1	1				4
BA23	5				1	1					1		8
BA24	5	2	2				6	2	2			1	20
BA25	1						1						2
	98	14	15	6	1	4	31	6	5	1	1	2	184



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