

Appendix C. Final ACHAR



Hume Dam Battery Energy Storage System

Aboriginal Cultural Heritage Assessment

Final |
Sep 29, 2020

Meridian Energy Australia

IA213400



Hume Dam Battery Energy Storage System

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Executive Summary

Meridian Energy Australia Pty Ltd (Meridian) operate the Hume Dam Hydro Power Station, located approximately 11km east of Albury NSW. Meridian are proposing to construct a Battery Energy Storage System (BESS) and associated infrastructure required to link the BESS to the Hydro Power Station and to existing electricity transmission lines. The Hume BESS Project (referred to here as 'the project') will increase the Hydro Power Station's "dispatchability", which is the effectiveness with which it can supply electricity to the grid and respond to increases and decreases in demand. The BESS will be able to store excess electrical energy produced by the Hydro Power Station during times of low demand. This stored energy will then be available to be released into the grid during periods of high demand.

Jacobs, on behalf of Meridian, is preparing an Environmental Impact Statement (EIS) for the assessment of the project, in accordance with Division 4.7 of the *Environmental Planning and Assessment Act 1979 (NSW)*.

The project would be carried out on WaterNSW land located on the northern side of the Murray River, adjacent to the Hume Dam Hydro Power Station, in the Albury City Council Local Government Area (LGA).

The features of the project would include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity cabling infrastructure from the existing switchyard to the BESS Construction of fencing around the perimeter of the BESS compound.

This document presents the results of an assessment of Aboriginal cultural heritage within the project area. This Aboriginal cultural heritage assessment involved:

- Consultation with Aboriginal stakeholders (following the procedures outlined in Aboriginal Cultural Heritage Consultation Requirements for Proponents DECCW 2010a) to obtain feedback on the assessment process and input on significance and cultural values associated with the project area
- Conducting an archaeological assessment involving a desktop study and an archaeological survey of the entire project area.

Prior to this assessment no Aboriginal sites had been recorded within the project area. No Aboriginal objects were identified within the project area during the archaeological survey. One area of Potential Archaeological Deposit (PAD), named here as Hume PAD 001, was identified during the survey.

The following management actions are recommended for the project:

- 1) A program of test excavation will be carried out on Hume PAD 001 to assess the nature and significance of any subsurface archaeological material that might be present. Test excavations will occur prior to construction project works commencing. The test excavations would be carried out following the procedures outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b), and so the test excavation program would not require an AHIP. The results of these test excavations would inform decisions around subsequent management of this area of PAD.
- 2) If Aboriginal cultural heritage material is identified during the test excavation program, the location where these objects were found would be registered as an Aboriginal site. Approval to impact this Aboriginal site would need to be obtained prior to project construction works commencing.
- 3) In the event that Aboriginal objects are discovered within the project area during construction project works being carried out, all work in the area will be halted immediately, and the unexpected finds protocol (Appendix E) will be implemented.
- 4) A copy of this ACHAR will be submitted to Heritage NSW (former NSW Office of Environment and Heritage) for review and assessment as part of the EIS.

Abbreviations

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BESS	Battery Energy Storage System
DECCW	Department of Environment, Climate Change and Water NSW
DPIE	Department of Planning, Industry and Environment
EESG	Environment, Energy and Science Group of the Department of Planning, Industry and Environment (former NSW Office of Environment and Heritage, now Heritage NSW)
Jacobs	Jacobs Group (Australia) Pty Ltd
km	Kilometres
LGA	Local Government Area
m	Metres
Meridian	Meridian Energy Australia Pty Ltd
MW	Megawatt
MWh	Megawatt-hour
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party

1. Introduction

1.1 Project background

Meridian Energy Australia Pty Ltd (Meridian) operate the Hume Dam Hydro Power Station, located approximately 11km east of Albury NSW. Meridian are proposing to construct a Battery Energy Storage System (BESS) and associated infrastructure required to link the BESS to the Hydro Power Station and to existing electricity transmission lines. The Hume BESS Project (referred to here as 'the project') will increase the Hydro Power Station's "dispatchability", which is the effectiveness with which it can supply electricity to the grid and respond to increases and decreases in demand. The BESS will be able to store excess electrical energy produced by the Hydro Power Station during times of low demand. This stored energy will then be available to be released into the grid during periods of high demand.

Jacobs, on behalf of Meridian, is currently drafting an Environmental Impact Statement (EIS) for the assessment of The Project, in accordance with Division 4.7 of the *Environmental Planning and Assessment Act 1979 (NSW)*. The project has been declared as State Significant Development (SSD) and Secretary's Environmental Assessment Requirements (SEARs) have been issued (see Section 1.5).

The Hume Dam Hydro Power Station was commissioned in 1957 and comprises two turbines each producing 29 Megawatts (MW) of electrical power. The Hydro Power Station supplies electricity to both Albury in New South Wales and Wodonga in Victoria. The amount of power the Hydro Power Station can produce is dependent, in part, on the rate at which water flows through the Hume Dam. This rate of water flow is regulated by water release instructions and downstream water level requirements. This means that the Hydro Power Station has a limited capacity to respond to increases and decreases in demand from electricity users.

Construction of the BESS would increase the Hydro Power Station's capacity to respond to changes in demand for electricity. The BESS would store energy produced by the Hydro Power Station during periods of low demand and supply this energy to the grid during periods of high demand. This would enable the Hydro Power Station to control the rate at which energy is supplied to the grid, and to optimise that rate in response to the needs of electricity users.

The project aims to showcase the relevance and opportunities offered by coupling a BESS with an existing Hydro Power Station that is subject to water release regulations. By enabling the Hydro Power Station to respond to changes in demand from the grid, the project will maximise the economic benefits of the electricity the Power Station generates. If proven successful, this project could be replicated at other midscale run-of-river hydropower systems in Australia.

The BESS is intended to have an operational life of 20 years. Following the end of economic life, above ground components would be removed and land rehabilitated to achieve a safe, stable and non-polluting state.

The BESS itself would comprise batteries housed within containers or similar protective structures. These structures would be mounted on concrete footings, and would consequently involve excavation and other ground-disturbance works.

Two areas were originally identified as possible locations for the BESS. Both areas were subject to the assessment process outlined in this document. An underground electricity cable would be laid to link the BESS with the existing switchyard adjacent to Hume Dam. Other ancillary infrastructure would include minor upgrades to the existing switchyard, and the construction of fences around the BESS.

During construction, additional areas would be impacted by construction vehicle movements and equipment laydown areas.

The Project works would include the following elements:

- Installation, commissioning, and operation of a 20MW/40MWh BESS

- Construction and operational access track from existing internal WaterNSW access road
- Ancillary upgrades to the existing substation switchyard to connect the BESS to the National Energy Market
- Underground electricity cabling infrastructure from the existing switchyard to the BESS
- Construction of fencing around the perimeter of the BESS compound.

The maximum disturbance area for the project, including temporary construction areas and permanent footprint, would be approximately 1.2 hectares. Permanent infrastructure is anticipated to require less than one hectares.

1.2 Project area

The project would be carried out on WaterNSW land located on the northern side of the Murray River, adjacent to the Hume Dam Hydro Power Station, in the Albury City Council Local Government Area (LGA). The project is located within the following land: Lot 2, DP1165089 (Figure 1-1, Figure 1-2).

The project area is defined as all areas that would be directly impacted by the proposed works. It includes the total project footprint, ancillary activities, and any other areas that would be temporarily impacted during construction.

The maximum disturbance area for the project would be less than one hectare. The permanent infrastructure (BESS, underground cable and ancillary upgrades to the switchyard) is anticipated to occupy a footprint of 0.5 hectare.

1.3 Objectives

The objectives of this ACHAR document are:

- To conduct an archaeological investigation to locate, identify and study Aboriginal objects, archaeological deposits and historical, oral and environmental sources to provide an assessment of the archaeological and cultural heritage significance of the proposal area
- To present an ACHAR that complies with legislative requirements, codes of practice and assessment procedures relevant to the proposal (refer to Section 2).

1.4 Method

The ACHAR reported here involved:

- Consultation with Aboriginal stakeholders (following the procedures outlined in DECCW 2010a) to obtain feedback on the assessment process and input on significance and cultural values associated with the project area
- Conducting an archaeological assessment involving a desktop study and an archaeological survey of the project area in full.

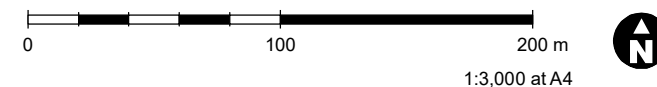
The method of assessing Aboriginal cultural heritage was designed to meet the requirements of the following advisory documents and guidelines:

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b).



Legend

- | | | |
|---|------------------------------|----------------------------|
| Maximum disturbance footprint | Re-grade ex-track | B.E.S.S fence line |
| Proposed Battery Energy Storage System (BESS) | Culvert | Natural water course |
| Proposed hardstand laydown area | Rip Rap | Sediment fence |
| Proposed ramp | Sediment pond | Stormwater |
| Proposed vehicle access | Topsoil stockpile | Proposed cable trench line |
| Embankment | Existing vehicle access road | |



Data sources

Jacobs 2020
NSW Spatial Services 2019
Service Layer Credits:
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GDA94 MGA55

Figure 1-1 Overview of the project area



Legend

- Proposed Battery Energy Storage System (BESS)
- Proposed hardstand laydown area
- Proposed ramp
- Proposed vehicle access
- Existing vehicle access road
- Contour lines



Data sources

Jacobs 2020
 NSW Spatial Services 2019
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Figure 1-2 Overview and topography of the project area

1.5 Compliance with the heritage elements of the Secretary's Environmental Assessment Requirements (SEARs)

The SEARs for the project were issued on June 14, 2020. This ACHAR has been prepared in accordance with the relevant SEARs (Table 1-1).

Table 1-1 Compliance with the heritage components of the SEARs

SEARs	Addressed in this report
<p>The EIS must address the following specific issues...</p> <p>Heritage – including:</p> <ul style="list-style-type: none"> an assessment of the likely Aboriginal and historic heritage¹ (cultural and archaeological) impacts of the development, including consultation with the local Aboriginal community in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 	<p>Section 4-9</p> <p>Sections 3, 5, 7, and 9</p>

1.6 Report outline

The report is structured as follows:

- Section 2** outlines the legislative and policy framework relevant to the investigation and assessment of Aboriginal heritage in New South Wales
- Section 3** presents an overview of consultation undertaken with the Aboriginal community in relation to the proposal, with supporting information provided in Appendix A. Consultation was carried out in accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (DECCW 2010a)
- Section 4** presents background information relevant to the proposal, including environmental information (geology, soils, climate and vegetation) as well as a discussion of ethnographic data
- Section 5** presents a summary of the identified Aboriginal cultural values associated with the project area. This information has been sourced directly from the RAPs
- Section 6** describes the method and results of the Aboriginal archaeological assessment of the project area. This includes the archaeological research, fieldwork and analysis that have been conducted in support of this report.
- Section 7** assesses the heritage significance of Aboriginal sites assessed as part of this report using the NSW heritage significance criteria
- Section 8** assesses the project's direct and indirect impact on identified Aboriginal sites and their significance
- Section 9** presents recommended management measures to mitigate the impact of the project on Aboriginal sites and associated cultural values within the project area.

¹ Historic heritage is assessed in accordance with the SEARs in a separate report.

1.7 Investigators and contributors

The report was authored by:

- Oliver Macgregor (Senior archaeologist, Jacobs). Oliver holds a PhD in Archaeology and Palaeoanthropology from the Australian National University and has over ten years' experience as an archaeologist.

A draft of the report was reviewed by:

- Rose Overberg (Principal archaeologist and heritage consultant, Technical Lead, Jacobs).

Maps were prepared by:

- Kasia Dworniczak (Senior spatial consultant, Jacobs), and
- Connor Skeels (Undergraduate spatial and information services consultant, Jacobs).

2. Legislative and policy framework

The following State and Commonwealth legislation is relevant to the Aboriginal cultural heritage assessment:

2.1 Commonwealth legislation

2.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) provides for the protection of the environment, especially in matters of national environmental significance (MNES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the MNES without approval from the Commonwealth Minister for the Environment. The definition of the environment under the EPBC Act includes both natural and cultural elements. Under the EPBC Act, heritage items can be listed on the National Heritage List (for items of National heritage significance) or the Commonwealth Heritage List (for items of heritage significance on land owned or managed by the Commonwealth).

2.2 State legislation

2.2.1 *Environmental Planning and Assessment Act 1979*

The EP&A Act regulates environmental planning and assessment for NSW. Land use planning requires that environmental impacts are considered as part of the assessment of development, including impacts on Aboriginal cultural heritage.

Division 4.7 of Part 4 of the EP&A Act applies to development declared to be SSD. The project has been declared SSD under the *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD). The consent authority for SSD is the Independent Planning Commission if the development is of the kind described in clause 8A(1)(a)-(c) of the State Environmental Planning Policy (State and Regional Development) 2011, or is the Minister for development not of that kind (although the Minister has delegated this function to senior governmental officers).

An AHIP under section 90 of the *National Parks and Wildlife Act 1974* is not required for development for which a SSD development consent has been granted (Section 4.41(d) of the EP&A Act). However an EIS is required for SSD projects and the SEARs issued for the project include provisions requiring the assessment of Aboriginal heritage, as well as consultation with Aboriginal stakeholders (Table 1-1).

2.2.2 *National Parks and Wildlife Act 1974 and National Parks and Wildlife Amendment Act 2010*

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) protects Aboriginal heritage within NSW. Protection of Aboriginal heritage is outlined in Section 86 of the NPW Act, as follows:

- "a person must not harm or desecrate an object that the person knows is an Aboriginal object" (Section 86(1))
- "a person must not harm an Aboriginal object" (Section 86(2)), and
- "a person must not harm or desecrate an Aboriginal place" (Section 86(4)).

Section 87(1) of the NPW Act provides that it is a defence to these provisions if the harm or desecration is authorised by an AHIP.

Harm is defined under the NPW Act as 'any act that destroys, defaces or damages the object including moving the object from the land on which it has been situated or causes or permits the object to be harmed'.

As outlined in Section 2.2.1, an AHIP is not required for development for which a SSD development consent has been granted and the provisions of the NPW Act that prohibit an activity without such an authority do not apply (Section 4.41(d) of the EP&A Act).

2.2.3 Local Environment Plans

Local Environment Plans (LEPs) are a type of environmental planning instrument, which are legal documents that control development and set out how land is to be used. LEPs apply either to all or part of a local government area. LEPs guide planning decisions for local government areas. They do this by allocating 'zones' to different parcels of land, such as rural, residential, industrial, public recreational, environmental conservation, and business zones. Each zone has a number of objectives, which indicate the principal purpose of the land, such as agriculture, residential or industry. Each zone also lists which developments are permitted with consent, permitted without consent, or prohibited. All land, whether privately owned, leased or publicly owned, is subject to the controls set out in the LEP. LEPs determine the form and location of new development, and provide for the protection of open space and environmentally sensitive areas.

The project is located within the Albury City Council Local Government Area (LGA). In accordance with the local planning instrument, being the *Albury Local Environment Plan* (NSW 2010), Aboriginal heritage is protected as follows (Part 5.10, (8)):

Aboriginal places of heritage significance: The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance -

- a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
- b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

2.3 Regulatory documents

2.3.1 Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010a)

This document establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making for any application for an AHIP. The ACHCRP comprises four stages with associated timeframes which must be adhered to:

- Stage 1 — Notification of project proposal and registration of interest (14 days from date letter sent to register as a registered Aboriginal stakeholders);
- Stage 2 — Presentation of information about the project;
- Stage 3 — Gathering information about cultural significance (28 days for Registered Aboriginal Parties to provide a review and feedback to information about the project, and the proposed method for archaeological assessment); and
- Stage 4 — Review of draft cultural heritage assessment report (Registered Aboriginal Parties have 28 days from sending of the report to make a submissions).

2.3.2 Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b)

The Code of Practice sets out the detailed requirements for archaeological investigations of Aboriginal objects in NSW for activities that require assessment under Part 4 or Part 5 of the EP&A Act. An AHIP or Secretary's Environmental Assessment Requirements (SEARs) to undertake sub-surface testing are not required if complying with this Code, as sub-surface testing complying with this Code is excluded from the definition of harm to an Aboriginal object. The Code of Practice sets out in detail:

- Minimum qualifications for anyone undertaking archaeological investigation under the Code in NSW;
- Assessment steps required to be undertaken for all archaeological investigation; and
- Assessment steps that may be required to be undertaken to adequately characterise the Aboriginal objects being investigated.

2.3.3 Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011)

This guide provides guidelines for the investigation and assessment of Aboriginal cultural heritage (under part 6 of the NPW Act) to explore the harm of a proposed activity on Aboriginal objects and declared Aboriginal places and to clearly set out which impacts are avoidable, and which are not.

The document provides:

- Guidance on the process for investigation and assessing Aboriginal cultural heritage in NSW; and
- Heritage NSW's requirements for an ACHAR.

3. Consultation

3.1 Stage 1 consultation

Stage One of the consultation process is to identify, notify and register any Aboriginal people or groups who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/ or places in the project area.

Notification was initiated on the Aug 23, 2019 to all relevant organisations listed under section 4.1.2 in the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010a). These relevant organisations are listed below in Table 3-1.

Table 3-1 List of contacted organisations (stage 1 consultation)

Name of organisation	Date of notification sent	Date of response received
Albury and District Local Aboriginal Land Council	Aug 23, 2019	None
NTS Corp	Aug 23, 2019	None
EESG Southwest office (now Heritage NSW)	Aug 23, 2019	Sep 2, 2019
Office of the Registrar, Aboriginal Land Rights Act 1983	Aug 23, 2019	Oct 16, 2019
Albury City Council	Aug 23, 2019	Sep 17, 2019 (letter dated Aug 30, 2019)
Murray Catchment Management Authority	Aug 23, 2019	None

In accordance to Section 4.1.3 (DECCW 2010a) a notice in the local newspaper circulating in the general location of the proposed project must be completed, with information explaining the project and its exact location. A notice was placed in the Border Mail on Wednesday Aug 28, 2019. This advertisement provides an additional opportunity for Aboriginal people who would be interested in the project to register. A copy of the advertisement is included in Appendix A.

A search of the National Native Title Register was carried out on Aug 30, 2019. No Native Title claims or determinations overlapping the project area were identified.

Project notifications were sent to all groups and individuals identified as a result of the above consultation process on Sep 18, 2019 and Sep 19, 2019. A total of four groups and/or individuals registered their interest. These Registered Aboriginal Parties (RAPs) for the project are listed in Table 3-2.

Table 3-2 RAPs identified through Stage 1 consultation

Organisation	Contact person
Yalmambirra	Yalmambirra
Wiradjuri Council of Elders	Rob Clegg and David Acheson
Ken Murray	Ken Murray
Albury and District Local Aboriginal Land Council	Milly Thomson

Following Section 4.1.6 of Stage 1 of the Consultation Requirements (DECCW 2010a), a list of Registered Aboriginal Parties for the project, and an outline of actions taken by Jacobs during stage 1 consultation, were

submitted to Heritage NSW and the Albury and District Local Aboriginal Land Council on Oct 17, 2019. A copy of the notification is provided in Appendix A.

3.2 Stage 2 consultation

Stage two of the consultation process is to provide registered Aboriginal parties with information about the scope of the proposed project and the proposed cultural heritage assessment process.

The RAP's were provided with a letter outlining the project, and a copy of the document *Hume BESS Project Information and Method* (Appendix C). Comments on this document were invited from RAPs and they were invited to contact Jacobs at any time throughout the assessment process to discuss the project. RAPs were provided the opportunity to nominate a Site Officer to participate in the archaeological survey.

Site Officers nominated for the archaeological survey were issued a checklist to ensure safety and preparedness for work.

3.3 Stage 3 consultation

Stage three of the consultation process is to facilitate a process whereby registered Aboriginal parties can provide information that will enable the cultural significance of Aboriginal objects and/or places within the proposed project area to be determined. The process enables Aboriginal parties to have input into the development of cultural heritage management recommendations.

RAPs are invited to submit information relevant to the cultural significance of the study area and any areas and objects within it, at any time during all stages of the consultation process.

3.4 Stage 4 consultation

An ACHAR (this document) was drafted to document the assessment process. This document was sent in draft form to all RAPs 13 July 2020, so that they could review the document and supply comments and feedback. A 28 day review period was provided for return of comments on the ACHAR draft.

One response to the draft ACHAR was provided, on 26 July 2020. This response, from Yalmambirra, expressed support for the ACHAR and its recommendations. The response is provided in Appendix A.

No other responses to the draft ACHAR were provided from RAPs.

3.5 Sensitive cultural information and management protocol

During the consultation process, there is a possibility that RAPs would provide sensitive cultural information to which access needs to be restricted.

In the event that RAPs wished to supply such information, the Method document supplied to RAPs informed them that when supplying the information, they should state how they wish that information to be treated, and how access to the information should be restricted.

Jacobs will follow the stated wishes provided by the RAP group in question when managing and using the information provided to Jacobs. All stated restrictions of access, communication and publication of the information will be followed. These might include:

- Restrictions on reproducing the information (in whole or in part) in reports;
- Restrictions on reproducing the information in reports provided to different audiences (for example, the version provided to the client, the version provided to Heritage NSW and the AHIMS database);
- Restrictions on communication of the information in other ways;

- Restrictions on the location/storage of the information;
- Other required processes relating to handling the information;
- Any names and contact details of persons authorised within the relevant Aboriginal group to make decisions concerning the information, and their degree of authorisation;
- Any details of any consent given in accordance with customary law; and
- Any restrictions on access to and use of the information by RAPs.

3.6 Consultation log

A log summarising all consultation carried out with Aboriginal parties in relation to the project to date is provided in Appendix B.

4. Background information

4.1 Environmental context

4.1.1 Topography and hydrology

The project area is located within a landscape of low rolling hills and ridges, with low gradient slopes and rounded tops, that extend back from the bank of the Murray River. In the project area, this landscape intersects with river terraces created by the Murray River. Beyond the southern edge of the project area, the terrain drops steeply away to form the river's northern bank.

The Murray River is the main watercourse in the surrounding area, and lies approximately 150 metres southwest of the project area.

It is probable that the Murray and its tributaries were less focused in their courses in the pre-contact period, with a larger number of swamps and ponds occurring along or adjacent to the main watercourses. An early European explorer described the riverbank landscape as: "On the banks of the [Murray] river are swampy flats of rich soil, covered with reeds and reedy grasses, but apparently often flooded and ill-drained. Behind these flats, lagoons are frequently met with" (Walker 1838: 22). The project area itself sits on terrain that is elevated above the present riverbank, and has probably been unaffected by changes in the course of the river that might have happened in the past. Prior to European settlement of the area, there could well have been riverine features such as swamps, ponds and lakes in the immediately surrounding area which no longer exist. The surrounding region might consequently have contained a more diverse array of natural resources for Aboriginal people to exploit than exist currently.

4.1.2 Geology and soils

The bedrock geology of the Murray River basin is extremely complex, including igneous rock such as granite, metamorphic rock such as slate, quartzite, and hornfels, and clasts of quartz and other silica-rich rock types suited to the production of flaked stone artefacts. The bedrock geology has been eroding since the Silurian or Devonian, resulting in an extremely varied and heterogeneous distribution of rock types in secondary deposits such as gravels. Sedimentary rocks such as shales have formed from erosional sedimentary deposits (National Heritage Consultants 2007).

Regolith of the current floodplain consists of young unconsolidated alluvial deposits, which can range from clay to gravels (Grant *et al.* 1981; National Heritage Consultants 2007). On flats and slopes above the floodplain, duplex soils have formed on older alluvial or colluvial deposits. The parent deposits of these soils are highly variable and dependent upon the depositional history of the specific area, and the energy levels of water or gravity flow involved. The spatial distribution of soils and sediments across the landscape is regionally variable, dependent upon the age and energy of river channels that have existed in the past. Areas can have complex histories of stream incision and alluvial deposition and infill, which can occur through multiple cycles as stream courses alter through time (National Heritage Consultants 2007).

4.1.3 Vegetation

The project area currently has sparse tree cover, with isolated and unevenly distributed trees across the area. Some mature trees are present, but none of them are likely to pre-date European settlement of the area. The majority of the study area is under thick grass cover.

Vegetation in the study area and the surrounding region has been extensively modified following European settlement, with clearing and farming occurring across the entire the landscape. The nature of pre-contact vegetation within the upper Murray corridor cannot be assumed to be similar to the currently existing vegetation.

4.1.4 Climate

The Albury region has a Mediterranean climate, characterised by cold wet winters and hot dry summers (National Heritage Consultants 2007). Rainfall varies between 660mm and 2040mm, mostly falling from June to August. The average monthly temperature varies from 3.9 degrees to 30.5 degrees.

4.1.5 Former land use and disturbance

The land surrounding the project area has been considerably altered by activities that have happened following European settlement of the area. Construction of the Hume Dam weir, and the inundation of Lake Hume is the largest and most obvious landscape alteration that has occurred. The nature of the landscape currently inundated by Lake Hume, as it would have existed prior to European contact, cannot be assessed in this report.

European farming practises, including land clearing and the introduction of exotic plants and animals, has altered the landscape and its plant and animal communities. The richness, diversity and distribution of plant and animal resources is presumed to be substantially different now from the period prior to European settlement. The rate of water flow in the Murray River and its tributaries has been altered through the construction of dams and flood retardant structures, and it is likely that rivers and creeks have become more channelised and incised in the landscape. Watercourses in the pre-contact period are likely to have had a larger number of associated swamps, ponds and lakes than are currently present.

The project area itself has experienced substantial alterations to the ground surface and its topography. The consequences of these alterations of the ground surface to the project area's archaeological potential are discussed in detail in Section 6.

The project area has been impacted by the construction of the Hume Dam weir and the buildings and infrastructure associated with it. Buildings and infrastructure currently existing on and near the project area (such as WaterNSW workshops, offices, carparks, and laydown yards) are situated on level terraces that have been created through extensive earthworks.

During construction of the weir, additional buildings existed on and near the project area. Historical photographs during construction show an extensive village of workers huts to the north and east of the project area (Figure 4-1, Figure 4-2). Construction of worker accommodation might have impacted parts of the project area at different times during the construction of the weir. The movement of vehicles, foot traffic, and equipment across the project area during weir construction might also have disturbed the ground surface.

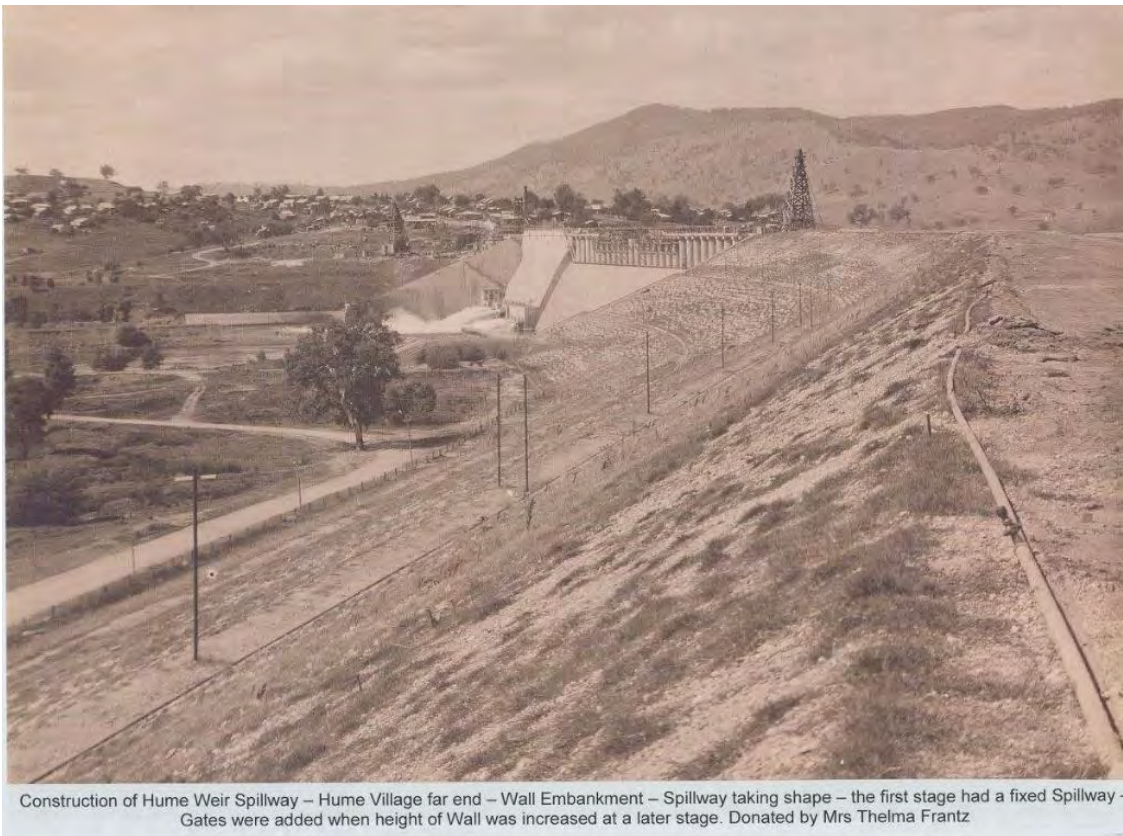


Figure 4-1 Historical photo taken during weir construction, showing project area at top left of frame



Figure 4-2 Historical photo taken during weir construction. Project area is centre and top left of frame

4.2 Ethnographic information

Accurately reconstructing pre-contact Aboriginal lifeways in the Murray River region is limited by several factors. A paucity of reliable or comprehensive data from early historic observations of Aboriginal groups is the most important limiting factor. Historical records on the Aboriginal inhabitants of the Albury region are limited (Clark *et al.* 2003).

The impact of disease and violence by European settlers had serious impacts on Aboriginal groups' population numbers, territories, demographics, and capacity to continue traditional practices. Historic records, consequently, generally consist of observations of a people whose lives were different from the pre-contact period (Hiscock 2008: 12-17). The ethnographic picture of Aboriginal groups constructed from historic records should not be assumed to be an accurate representation of pre-contact Aboriginal Australia (Hiscock 2008: 17 - 19).

4.2.1 Aboriginal tribal boundaries

Tribal boundaries in the region are imperfectly understood, and it is highly probable that many details of tribes and groups that existed prior to European arrival have been lost. Various attempts have been made to map the territorial boundaries of Aboriginal groups along the Murray (Tindale 1940; Tindale 1974). These tribal boundaries are primarily based on the ranges of different language groups, and so do not preserve any finer-grained distinctions between groups that might have existed as different entities while speaking the same language.

The studies cited above place the study area within the boundaries of the Wiradjuri language group, Tindale's (1940) map depicts the Wiradjuri territory extending northwards from the Murray to Mudgee and Dubbo in the northeast, and Ivanhoe in the northwest.

The Murray River probably did not function as an impermeable border between Aboriginal groups, as historical accounts of Aboriginal groups accessing and occupying both banks of the river indicate that several groups' territories overlapped the river itself (Spennemann 2015).

4.2.2 Social organisation, settlement, resources and subsistence

The Murray River was one of the most densely populated regions in pre-contact Australia, with Aboriginal occupation probably heaviest around the central and lower portions of the river (Mulvaney and Kamminga 1999: 303). The population along the river corridor was sustained by the abundant and diverse plant and animal resources associated with the river, swamps and billabongs. In the upper portion of the Murray, where the Project area sits, Aboriginal people would have had access to a relatively fertile hinterland, with higher rainfall than the semi-arid or arid hinterland found around the central and lower Murray. The hinterland around Albury and further up the Murray also contains hilly and mountainous regions, providing greater variation in altitude and a greater variety of ecological zones. Consequently, terrestrial plant and animal resources would often have been more variable in the upper portion of the Murray than in the central or lower portion, although riverine resources would generally have been less rich.

High population density along the Murray River is likely to have resulted in Aboriginal groups having small territories relative to groups in less resource-rich parts of Australia (Birdsell 1953; Pardoe 1988; 1994; Webb 1995). These densely clustered groups would have had a greater affinity, genetically and culturally, with one another than they had with non-riverine groups living in the hinterland (Clarke 2009; Pardoe 1994; 2006).

Historical observations of Aboriginal camps in the Albury region are sparse. One observer records that camps were usually located in clear ground near water, “as fish and birds were the principle articles of food” (Andrews 1920: 35), and that these camps were usually used for long periods by large numbers of people. It is possible that large camps adjacent to water were more visible to European observers than smaller or more ephemeral camps that might have occurred away from watercourses.

William Hovell recorded the existence of constructed fish traps in the Albury area in 1824: “the natives frequently resort here, & I have no doubt they are numerous, as fish are plentiful both in the river and lagoons, it appears they are caught in dams where there is a running stream as there is one they have made now in front of us” (Andrews 1981: 137). Fish, shellfish, waterfowl and turtles are likely to have been the major sources of protein for the Aboriginal population, on the basis of historical records (Spennemann 2015). Shellfish are historically recorded as being present in all rivers and creeks in the region, and as being a food source for Aboriginal people (Andrews 1981).

There are frequent historical records of Aboriginal people annually burning off the land to restrict the growth of understorey plants and encourage grasses (see references in Spennemann 2015: 3). This practise presumably functioned to increase the number of Kangaroos and other grazing marsupials which could be hunted (Vigilante and Bowman 2004). It might also have been employed to encourage plants that could be exploited for food or other purposes. Understorey plants with edible roots, such as the yam daisy (*Microseris lanceolata* and *Microseris scapigera*) grow more prolifically when competing vegetation is removed through burning (Denham 2008; Gammage 2012), and it is likely that burning was employed as one strategy for cultivating and encouraging the growth of yam beds. Harvesting of yams was also done in a way that ensured the survival of the yam bed, and encouraged the growth of the plants left unharvested (Berndt and Berndt 1993). Aboriginal use of the daisy yam, and the plant’s prevalence in the landscape at the time of European settlement, is mentioned in many early historic accounts (for a review see Gott 2008). These accounts provide strong evidence that this plant provided an important food source for Aboriginal populations in southeast Australia.

In riverine environments such as the Albury area, aquatic plant species were an important component of the Aboriginal diet. The bulrush (or southern cattail or cumbungi, *Typha domingensis* and *Typha orientalis*) was used as a food source as well as a source of fibres for making twine and other artefacts (Gott 2008). The importance of this plant as a food source is emphasised by one observer of Aboriginal groups in the Lower Murray: “The staff of their existence is the bulrush root... it is to them what bread is to the European” (Angas 1847). Several other aquatic plant species were food sources to Aboriginal people living near rivers and other water sources (Gott 2008).

Burial sites are recorded in the historical record as visible low mounds or as buried human remains discovered during quarrying and excavation by European settlers. In cases where human remains were discovered, the encasement of these remains between sheets of bark is sometimes recorded (Spennemann 2015).

4.2.3 Material culture

Evidence of the use of bark canoes was observed by Hovell during the first European expedition through the area, and their use continued and is frequently recorded in the historical record in the first half of the 19th century (Spennemann 2015), with use of bark canoes recorded as late as 1902 (Anonymous 1902).

Fish traps were made by Aboriginal people, by constructing dams out of rock across shallow parts of streams. The presence of fish traps in the area is first recorded by Hovell, who states that Aboriginal people herded fish into the dammed ponds and intoxicated them with “the bark of a willow tree” (Andrews 1981: 137). Hovell was probably extrapolating this specific hunting behaviour from observations of Aboriginal people elsewhere in the country, as his expedition did not observe any Aboriginal people directly (Spennemann 2015).

The main weapons carried by Aboriginal people are historically recorded as spears and waddies (Anonymous 1839). The method of construction of these weapons is not recorded, but elsewhere in southeast Australia spears were constructed from grass trees, and tipped with hardwood or bone (e.g. White 1790). Descriptions of other tools are sparse in the historic record. Little is recorded of how Aboriginal people made and used stone

tools. Hatchets with edge-ground stone heads are one tool type that is often referred to by historic records in southeast Australia – these tools were used frequently by Aboriginal people at the time of European contact. They carried out a variety of tasks including woodworking, tree climbing and harvesting bark and other resources such as tree dwelling animals (for a review of historical sources see Dickson 1976; Flood 1980; McBryde 1984). The butt of the hatchet head was also commonly used as a hammerstone for producing flaked stone artefacts (Mulvaney and Kamminga 1999). As a tool that was frequently used and habitually carried by their users, they were an important piece of personal equipment and consequently prized by their owners (Flood 1980). Axes were interred in human burials as grave goods in several parts of Australia, with one known site of this type near Jindabyne (Flood 1980). Trade of hatchets presumably increased social bonds between Aboriginal groups (Lourandos 1983; McBryde 1984). Many other types of stone artefact were used as tools by Aboriginal people, but historical and ethnographic records of their use are mainly from arid zones, with records from temperate southeast Australia being rare and undetailed.

The construction of huts within Aboriginal campsites is recorded historically (Robinson 1844-45). These huts were probably constructed from timber and bark. Robinson describes the huts he saw as being a wooden cross beam, supported by two y-shaped branches, with sheets of bark hooked over the beam to form a one sided shelter (Robinson 1844-45). It is likely that the types of hut constructed by Aboriginal people varied according to season and weather, and consequently isolated observations by European observers probably do not capture the full range of variability employed in hut construction.

Physical objects left at abandoned Aboriginal camps are reported as being sparse by historical observers, with the area not having large middens as found in the Lower Murray (Andrews 1920: 35). Scatters of shell are recorded as present on Aboriginal camp sites, however (Andrews 1981).

4.2.4 Spiritual locations and culture

Gatherings of Aboriginal people are recorded historically, interpreted as corroborees (Elliot 1906) or as meetings between different groups as they travelled through the area (Andrews 1920). The river crossing at Albury made the region an important place for meetings and exchanges between Aboriginal groups from further afield (Spennemann 2015). Migrations of Aboriginal groups through the area to access the mountains to the east for seasonal exploitation of Bogong Moths is cited as a particular reason for meetings and gatherings of Aboriginal people in the Albury area (Andrews 1920).

4.2.5 European and Aboriginal interaction

Reliable historical records for the initial period of British settlement of the region around Lake Hume are rare. The first wave of British colonial settlement in the area occurred between 1835 and 1840 (Spennemann 2015).

Most descriptions of the countryside or the river at the time of European settlement relate to the Riverine Plains to the west of Albury where the country was already eminently suitable for grazing without clearing and pasture improvement. Explorers were quickly followed by squatters and European invaders (National Heritage Consultants 2007).

There are few historical records for the initial period of British settlement of the region around Lake Hume. Explorers Hume and Hovell crossed into Victoria in November 1824 several miles above what is now Hume Dam. Soon thereafter the first wave of colonial settlement in northern Victoria occurred between 1835 and 1840 in an area east and north of the Ovens River (National Heritage Consultants 2007).

British explorers were quickly followed by 'overlanders' and squatters. Overlanding activities involved moving large numbers of stock from NSW to new land in the Port Phillip district between the 1830s and 1850s in response to new markets created by gold rushes. The region attracted many settlers and by 1856 both sides of the Murray River were well populated. By the 1860s there were over 100 holdings in the vicinity of Albury. Within a decade, selectors were displacing the squatters and by 1917 all the easily accessible arable land had been cleared. The descendants of many of these early settler families live in the region today and their names are perpetuated in the list of rural property owners at Lake Hume.

The nature of interactions between Europeans and Aboriginal people, as recorded in historical records, is complex. Interactions ranged from peaceful and mutually beneficial trade to aggression and violence. The new diseases the Europeans brought with them were the most harmful aspect of the contact between the two groups.

The overall number of different Aboriginal groups and the location of their territorial boundaries were severely affected by an epidemic beginning in or before 1789. Soon after the first European settlement in NSW, the arrival of a disease with symptoms similar to smallpox (Tench 1789) in the local Aboriginal population was recorded. Despite the coincidence of these two events, it is now hypothesised that smallpox had originally been contracted by Aboriginal people living in Arnhem Land, who caught the disease from fishermen from Southeast Asia (Butlin 1985; Campbell 2002; Macknight 1986). If this hypothesis is correct, the disease had spread across the continent to arrive in NSW.

Mortality rates from the epidemic are difficult to measure precisely, but are likely to have been around 80 percent (Butlin 1983). Mortality could plausibly have been as high as 98 percent based on observations of smallpox's effects on previously unexposed populations in other continents (Hiscock 2008: 14). The epidemic resulted in movements of people across the landscape, and possibly the disappearance of some previously existing groups. Governor Arthur Phillip recorded that, in the Sydney region, many Aboriginal people migrated inland, away from the European settlement, in an attempt to escape the disease (Phillip 1789). Lieutenant-Governor David Collins recorded a group that had been reduced to three survivors negotiating to merge with another group, and also observed a group that had been reduced to a single survivor (Collins 1798). The mortality rates from smallpox are likely to have been particularly high in the dense populations along the Murray River (Mulvaney and Kamminga 1999: 68).

The impact of the smallpox epidemic on the distribution of Aboriginal groups across the landscape is likely to have been severe. Hiscock (2008: 14) sums up the effect of smallpox by stating it would have "altered the operation of Aboriginal life". This alteration resulted from the reduction in population and other effects flowing on from this. The possible disappearance of some groups through mortality and group mergers, the mass migration of people fleeing the disease, the depopulation of areas, and the incursion of groups into abandoned or depopulated lands, would have substantially altered the social landscape of Aboriginal groups that had existed prior to the epidemic. The tribal boundaries mapped by European researchers after contact are those of a population that had survived the epidemic (and further epidemics that followed) and had adapted their occupation of the landscape in response to it. Subsequent disease epidemics of smallpox, measles, influenza, and venereal diseases followed in the years after European settlement.

Violence toward Aboriginal populations from European settlers would probably have had effects similar to disease. Frontier violence was particularly severe along the Murray River in general (Clarke 2009), and at least one massacre occurred near the project area, at Tabletop Mountain adjacent to the river just above Lake Hume in 1836 (Smithwick 2003). In this massacre (the Dora Dora massacre), at least twelve Aboriginal people of the Wiradjuri group were killed by European settlers as a reprisal for the killing of two European stockmen. Other massacres in the region include one near Benalla in 1838 (the Faithfull massacre or Battle of Broken River), where a number of Aboriginal people attacked a group of Europeans in reprisal for the party shooting on, and probably injuring or killing, Aboriginals some days earlier (Bassett 19891; Spennemann 2015).

Displacement of Aboriginal people from the land also resulted from non-violent European settlement activities. The nature of European farming practises functioned to cut Aboriginal groups off from many of the resources they had depended upon during the pre-contact period. Early occupation of prime agricultural land adjacent to rivers and other water sources by European farmers made aquatic and river-plain resources inaccessible to Aboriginal people (Goodall 1996; Kohen 1993), and indeed destroyed many of these resources. For example, sheep quickly learned to dig up yam daisies and other root plant foods, depleting or destroying yam beds in the process (Gott 2008). In short, Aboriginal populations found themselves in conflict with European settlers for resource-rich areas of land, whether those conflicts were violent in nature or not.

The Aboriginal population in the region immediately around Albury declined sharply after European settlement of the area. An estimate of around 250 Aboriginal inhabitants in the Albury area in 1844 (Robinson 1844-45) is contrasted by an estimate ten years later, in 1854, that "from Albury and its immediate neighbourhood, too, the blacks have for a considerable time past almost entirely disappeared" (Elliot 1906). The reduction in population was caused both by deaths and by Aboriginal groups moving away from the area to regions less densely settled by Europeans (Spennemann 2015).

The impact of violent as well as non-violent conflict on Aboriginal groups and the operation of Aboriginal society was substantial (Clarke 2009). Conflict with European settlement would have altered the ways in which Aboriginal society functioned, compared with the pre-contact period. As with disease, conflict caused Aboriginal groups to move off land they had previously occupied, to give up sources of food and other resources that they had previously utilized, and to alter their use of the landscape to avoid the risk of encountering European settlers. Conflict, like disease, would have drastically altered the distribution of Aboriginal groups across the landscape. The areas occupied by groups before European contact, the overall number of groups, and the ways in which these groups utilised the land, is likely to be different from the picture we have from post-contact historical records.

5. Aboriginal cultural values

5.1 Method of obtaining information

Input and feedback can be provided by RAPs at any time throughout the assessment process. Jacobs has sought input and feedback from RAPs at several points during the process (following procedures outlined in DECCW 2010a):

- During Stage 2 – Initial presentation of information about the proposed project.
- During Stage 3 - Providing RAPs with the draft proposed methodology. RAPs were invited to provide feedback on the proposed methodology, and to identify cultural heritage values associated with the study area.
- During fieldwork.
- During Stage 4 - Providing RAPs with the draft Aboriginal Cultural Heritage Assessment Report. RAPs are invited to provide feedback on the report, and any further information they wish to be included.

5.2 Identified cultural heritage values relevant to the study area

The landscape of the Murray River corridor has cultural value to Aboriginal people, being a landscape that their ancestors lived on, travelled through, and utilised for subsistence. The river itself, and its associated riverine landscape features such as swamps and lakes, were resource-rich areas that groups would occupy for long periods of time, and frequently revisit as they travelled around the landscape.

The Albury region was a natural crossing point prior to European settlement of the area, and so was an area in which groups from north and south of the river could interact, carry out trade, and hold ceremonies.

Aboriginal groups living in the Albury region had extensive trade networks with groups elsewhere, particularly with groups across the large territory of the Wiradjuri people. Aboriginal artefacts found in the Albury region have been sourced to areas further north, providing evidence of these trade networks.

6. Archaeological assessment

6.1 Desktop assessment

6.1.1 AHIMS search results

A search of the Aboriginal Heritage Information Management System (AHIMS) was carried out on June 23, 2020 by Oliver Macgregor (Senior Archaeologist, Jacobs). The search area was rectangular, extending 4km to the west, east, and north of the project area, as well as southwards to the Victorian border (on the Murray River).

No previously recorded sites are present within Lot 2 DP1165089.

Thirty-six previously recorded sites are present within the wider search area. Of these, eight are modified trees; 23 are artefact scatters; and five are artefact scatters associated with areas of potential archaeological deposit (PAD). The results of the AHIMS search are provided in Appendix D.

The distribution of previously recorded sites is mapped in Figure 6-1.

6.1.2 Previous archaeological assessments in the project area and surrounding region

A large scale systematic archaeological survey was carried out at Lake Hume (National Heritage Consultants 2007), commissioned by Goulburn-Murray Water and overseen by a Steering Committee representing relevant Aboriginal community organisations, government departments and agencies involved in administering Lake Hume, and Victorian and NSW heritage regulatory agencies. The survey recorded a total of 441 sites (including isolated finds) – 289 in Victoria and 152 in NSW. These sites comprised 358 artefact scatters, 79 isolated finds, three possible scarred trees and one Aboriginal historic place. There were approximately 1.86 sites located per kilometre of survey transect within the study area.

Kamminga undertook several interim reports on small areas subject to development works at Lake Hume, including: an assessment of Aboriginal stone artefacts on the bank of Lake Hume (Mitta Mitta Arm) at Tallangatta, Victoria (Kamminga 2002); an examination of Aboriginal heritage sites at Ludlows Reserve (Kamminga 2004a); a study of the Aboriginal heritage sites at the proposed Kurrajong boat ramp site, Lake Hume, Victoria (Kamminga 2006), and; a report on Indigenous heritage sites identified in the vicinity of the Tallangatta town water offtake site, Lake Hume, Victoria (Kamminga 2004b).

O'Halloran (2000) undertook a thesis on submerged heritage, examining threats to archaeological sites on the in and around Lake Hume.

Witter and Kelly (2002) conducted an archaeological survey of the Lake Hume foreshore, with analysis and risk assessment for proposed changes in the lake level.

6.1.3 Predictive model

The following predictive model is used to identify areas of archaeological sensitivity. The model is based on a 'land system' or 'archaeological landscape' model of site location. This type of model predicts site location based on known patterns of site distribution in similar landscape regions.

The predictive model is based on:

- A review of previous models developed for the project area;
- A synthesis of the results of the previous archaeological assessments reviewed in Section 6.1.2;
- The interpretation of the distribution patterns of known sites close to the project area; and
- A study of previous impacts to the project area and the potential effects of these impacts on the archaeological record.

The following specific predictive model has been developed for the project area:

- Elevated landforms adjacent to watercourses have high archaeological potential. Existing archaeological data for the Murray River region indicate a strong trend for the presence of open sites within 200 m of watercourses, specifically, on river and creek banks and elevated 'flats', terraces, and bordering slopes;
- Landforms adjacent to permanent watercourses have a higher archaeological potential than those adjacent to ephemeral watercourses;
- The most common site type will be open sites containing surface or sub-surface scatters of stone artefacts; and
- Other site types that may present in the landscape are scarred trees, hearths, quarries and grinding grooves where suitable rock occurs. It is noted that no hearths or grinding grooves have been recorded to date in the surrounding region, so the occurrence of these sites occurring is presumed to be low.

A number of post-depositional processes can result in disturbance or destruction of archaeological sites. Identifying areas of high disturbance is an important factor in the predictive model. Disturbance can alter the patterns of site location expected from the points above. The following general predictive points relate to the effects of site disturbance:

- Landforms adjacent to watercourses and which have been subject to frequent or high-energy flooding events will have reduced archaeological potential;
- Steep hillslopes have reduced archaeological potential, as sites will be more likely to have been displaced by downslope movement and surface erosion; and
- European land-use practises can have a range of impacts to sites. Roads will have low archaeological potential, particularly if heavily graded or capped with imported material. Areas that have been excavated, inundated by dammed watercourses, or buried under fill or stockpiled materials will have low to no archaeological potential.

Many post-depositional processes result in the movement of artefacts away from their original location and context, without resulting in damage or destruction to the artefacts themselves. Some post-depositional processes will result in the destruction of some, but not all, artefacts within a site. Only severe impacts will destroy or remove all Aboriginal objects from a landform. Factoring post-depositional disturbance into the assessment of a landform's archaeological potential should consequently take a precautionary approach. A landform should be assumed to retain archaeological potential unless there is compelling evidence for severe disturbance that can be confidently inferred to have removed all sites from the landform.

6.2 Archaeological survey method

The field survey systematically investigated the areas which will potentially be subject to impact by the project (the project area). The survey was carried out on foot. The survey investigated the project area in full. No sub-sampling of the area was employed.

The survey was carried on two separate dates. The first survey occurred on November 15, 2019, and covered survey units 1, 2 and 4 (see Section 6.3). A second survey, resulting from a variation in the project area, occurred on Friday June 26, 2020, and covered survey units 1, 2 and 3.

The survey team consisted of one archaeologist and three Sites Officers from the Registered Aboriginal Parties (Table 6-1).

Table 6-1 Archaeological survey team members and organisations represented

Name	Organisation
November 15, 2019	
Yalmambirra	Representing self
Jim Davis	Albury and District Local Aboriginal Land Council
Noel Stewart	Representing Ken Murray
Oliver Macgregor	Jacobs
June 26, 2020	
Yalmambirra	Representing self
Andom Rendell	Albury and District Local Aboriginal Land Council
Sam Wickman	Representing Ken Murray
Oliver Macgregor	Jacobs

The survey aimed to identify any Aboriginal objects and areas of potential archaeological deposit (PAD) within the project area.

In the event that archaeological sites or areas of PAD were encountered, the following attributes were recorded:

- Site location (single point for isolated artefacts, or as a boundary drawn around larger sites such as artefact scatters or areas of PAD);
- Site type;
- Landform context;
- Vegetation type;
- Land use;
- Categories of features and artefacts present on the site;
- Orientation/aspect of the site;
- Observations on individual stone artefacts: stone material type; artefact type; platform surface; platform type; termination type; cross-section category; length, width and thickness in millimetres;
- Observations on modified trees: living status of tree; condition of tree; condition of scar; tree species; length and width of scar; height above ground; presence of regrowth; depth of scar (height of regrowth); shape of scar; orientation of scar; presence/absence of axe marks;
- Observations of other specific site types (grinding groove, art, shell scatter, closed site) following the requirements of Heritage NSW site recording forms;
- Photographs of the site and individual site features/artefacts will be taken as judged necessary by the field team; and
- Any other comments or information as judged relevant by the field team.

The survey also recorded land disturbance, survey coverage variables (ground exposure and archaeological visibility) and landform types across the project area. Data were captured using handheld GPS, and digital camera.

6.3 Archaeological survey results

6.3.1 Survey units and survey coverage

The project area was divided into separate survey units based on landform type (Figure 6-2). For each unit, the size of the unit was calculated using GIS, and the ground surface visibility was assessed in the field. These two variables were used to calculate the effective surface coverage of the survey for each survey unit. Data on survey coverage and effective survey coverage is provided in Table 6-2.

Table 6-2 Survey coverage for each survey unit

Survey unit	Landform	Survey unit area (square metres)	Visibility within exposures	Exposure %	Effective coverage area (square metres)	Effective survey coverage %
1	Variable gradient slopes	4436	100	10	444	10
2	Dished drainage line	2947	100	10	295	10
3	Linear ridge, variable gradient terrain	9960	100	5	498	5
4	Road verge and top of slope	688	100	30	206	30

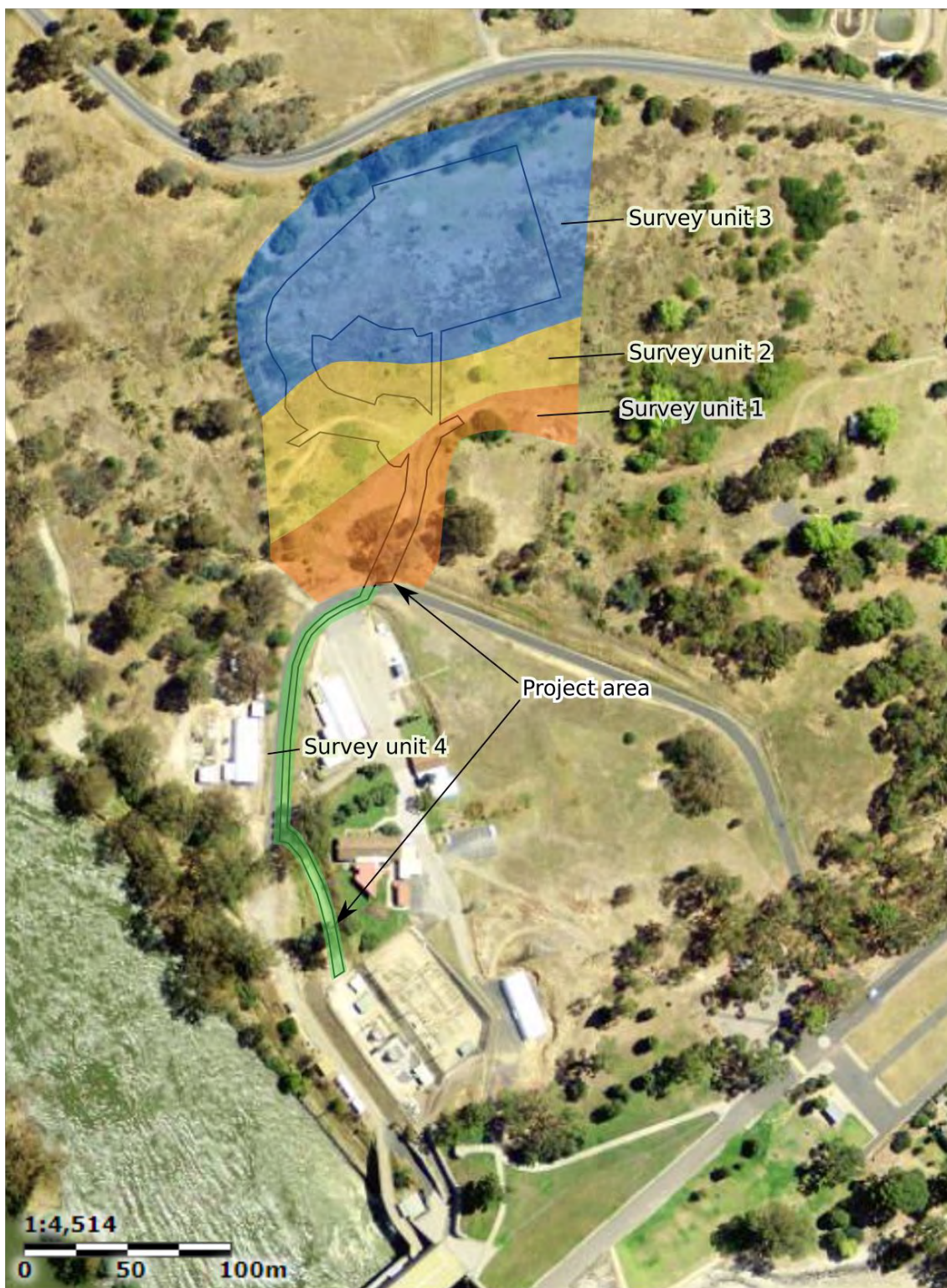


Figure 6-2 Map of the project area showing boundaries of survey units

6.3.2 Topography and ground disturbance across project area

The topography across the project area and its immediate surrounds was mapped during the archaeological survey. Slopes are depicted using hachure marks, the thick end of which demarcates the break-of-slope at the top of the slope, and the pointed end of which demarcates the break-of-slope at the lower toe of the slope. A map of all topographic features overlain on an aerial photograph, showing the project area boundaries, is provided in Figure 6-3.



Figure 6-3 Map of the project area and surrounds showing surface topography

6.3.2.1 Survey unit 1

Survey unit 1 consists of slopes with gradients varying from approximately 1:10 (10%) to 1:2 (50%). Vegetation across this survey unit consisted of thick grass cover with occasional ground surface exposures, and isolated trees and bushes. An unsealed vehicle track runs through the survey unit. The overall ground surface visibility across the unit was 10%.

A steep slope, with a gradient of 1:2, runs across the northern edge of the project area (Figure 6-4). The toe of this slope terminates on an unsealed vehicle track for most of its length. The crest of the slope terminates in more level terrain extending away to the north. This slope appears to be too steep to be part of the natural terrain in the region, which is typically rolling hills with lower gradient sides. The fact that the toe of the slope mostly terminates at a vehicle track indicates that this slope has been formed through cutting the level vehicle track into the previously existing terrain (Figure 6-4).

Moving south from this slope and adjacent vehicle track, the terrain drops into a shallow dished drainage channel that runs east-west across the project area. The base of this drainage channel makes up survey unit 2. To the south of the drainage channel, the terrain again becomes a series of slopes and is designated as the southern section of survey area 1.

The unsealed vehicle track turns southward to run in a north-south direction through the southern portion of survey area 1. Along this portion of the survey unit's eastern edge, a high and steep slope, with a gradient of 1:2, rises up to a height of approximately 2m above the level of survey unit 1 (Figure 6-5). At the top of this slope is a level area of ground designated as survey area 3 (see description below). This slope appears to be too steep to be part of the natural terrain in the region. It is likely that this slope is a feature created through European earthworks.

The vehicle track, which runs along the western toe of this steep slope, is a level ground surface. To the vehicle track's west, the terrain drops downward toward the drainage channel, which lies to the northwest.

The majority of this survey unit is the creation of European earthmoving activities. Two steep and large slopes present within the unit have almost certainly been created by excavation or building-up of the ground surface. The vehicle tracks are abnormally level compared with the surrounding terrain, and have probably been bulldozed or graded level along most or all of their lengths.

Vegetation in this survey unit consists of occasional isolated trees and bushes, with the majority of the unit being vegetated by thick grass cover of varying lengths. Exposed areas of ground surface are rare, making up around 10% of the survey unit. Visibility within areas of exposure is 100%, so overall ground surface visibility within the unit is 10%.



Figure 6-4 Northern edge of survey unit 1, looking east. Note steep slope (left) and unsealed vehicle track (lower right)



Figure 6-5 From southern edge of survey unit 1, looking north.

6.3.2.2 Survey unit 2

Survey unit 2 consists of the floor of a shallow dished drainage channel, which runs through the project area in a northeast to southwest direction. The drainage channel has unsealed vehicle tracks crossing through it, which create level sections of terrain that do not conform to the channel's general shallow dished cross-section.

The ground surface across most of this survey unit was boggy and saturated with water during the survey, through no surface water was running through the drainage channel at the time. Vegetation consisted of thick long grass and reeds. Several small immature trees, approximately one to two metres high, have been planted along the base of the drainage channel, and staked (Figure 6-6).

Apart from the levelled vehicle tracks, and presumed localised ground disturbance that occurred during tree plantings, no other signs of past ground disturbance within this survey unit were identified. It is probable, however, given the amount of evidence of earthmoving and ground disturbance across the project area overall, that the drainage line has been subject to erosion and deposition of mobile sediments created by earthmoving activities. The ground surface within the drainage line could well be substantially altered from its pre-European contact form as a result of the likely substantial sediment movement across the project area.

Areas of exposed ground surface made up 10% of this survey unit. These exposed areas were all located along the vehicle tracks running through the drainage channel. Visibility within these exposures was 100%, so ground surface visibility across the survey unit was 10%.



Figure 6-6 Survey unit 2, from its southern edge looking north. Note immature tree plantings centre-left of frame



Figure 6-7 Survey unit 2, from its northern edge looking south

6.3.2.3 Survey unit 3

Survey unit 3 consists of a low, round-topped linear ridge, running in a northeast to southwest direction. The ridge top slopes gently downwards toward the southwest. The southern flank of the ridge is steep, with a gradient ranging from one in five to one in three (Figure 6-8). This slope runs downward to the drainage line in survey unit 2. The northern flank of the ridge is more gently sloped, with a gradient of around one in ten (Figure 6-9).

Vegetation across the whole of survey unit 3 consists of thick low grass cover, with sparse and scattered trees (Figure 6-10, Figure 6-11). Exposed areas of ground were rare at the time of the survey.

No signs of previous ground disturbance were visible within this survey unit, other than some small depressions that might be the remnants of holes excavated for tree plantings.

Areas of exposed ground made up 5% of this survey unit. These exposures were areas in which the grass has died back, or has been uprooted by burrowing animals. Ground surface visibility within these exposures was 100%, so ground surface visibility across the survey unit was 5%.



Figure 6-8 Survey unit 3, from its southwest edge looking northwest. Ridge crest at top left of frame



Figure 6-9 Survey unit 3, from its centre looking north



Figure 6-10 Survey unit 3, from its eastern edge looking southwest along the ridge crest



Figure 6-11 Survey unit 3, looking west along the unit's southern edge

6.3.2.4 Survey unit 4

Survey unit 4 consists of level and gently sloping terrain immediately adjacent to a sealed road. The survey unit is the narrow corridor within which the proposed above-ground powerline from the Battery Energy Storage System to the existing substation will be placed.

Along most of the survey unit's length, the ground surface drops away steeply at a distance of one to two metres from the western edge of the sealed road (

Figure 6-12). The ground surface rises steeply at a distance of one to two metres from the road's eastern edge (Figure 6-13, Figure 6-14, Figure 6-15) The ground surface along the edge of the road appears to be an artificial one, created when the road was constructed. The road has been elevated above the level of the terrain to its west. As a consequence, the ground along the road verge, which survey unit 4 runs along, is a ground surface that has been built up to create a corridor of level ground for the road to be laid on.

Vegetation within the survey unit consists of thick short grass cover. Exposed areas make up 30% of the survey unit. Visibility within these exposures was 100%, and so ground surface visibility across the survey unit was 30%.



Figure 6-12 Survey unit 4, viewed from its northern end, looking south. Note steep slope dropping away from road edge



Figure 6-13 Survey unit 4, viewed from the middle of the survey unit looking east. Note steep slope rising away from road edge



Figure 6-14 Survey unit 4, viewing the survey unit's southern section looking north. Note steep slopes rising away from road edge at right of frame



Figure 6-15 Survey unit 4, viewed from its southern end, looking north. Note slope rising upward to the east (right of frame)

6.3.3 Aboriginal sites

No Aboriginal objects were identified in the project area.

One area of potential archaeological deposit (PAD) was identified in the project area. This area has been named 'Hume PAD 001' and is located on the top of the linear ridge in survey unit 3 (Figure 6-16).

6.3.3.1 Hume PAD 001

Hume PAD 001 is an area of near-level ground on the crest of a broad round-topped linear ridge. The ridge runs in a northeast to southwest direction, sloping gently downward toward the southwest. Across the area of Hume PAD 001, the gradient of the ridgetop decreases, creating a near-level platform of ground.

The boundaries of Hume PAD 001 occur where the terrain becomes more steeply sloped. Along the southern edge of Hume PAD 001, the ground drops away to form the steeply sloped southern flank of the ridge. At the eastern and western edges of Hume PAD 001, the gradient of the ridge-top increases, sloping upward to the east and downward to the west. Along the northern edge of Hume PAD 001, the ground drops away to form the gently sloping northern flank of the ridgetop.

The nearest permanent water source is the Murray River, which lies approximately 300m to the southwest of Hume PAD 001. Hume PAD 001 is elevated approximately 30m above the present level of the Murray River. An ephemeral drainage line (running through survey unit 2) runs approximately 20m to the south of Hume PAD 001. This drainage line currently contains an area of swampy ground, approximately 60m to the south of Hume PAD 001, but it is important to note that the ground around the drainage line has been substantially modified by post-contact earthworks, and its current form might have been different prior to European colonisation.

Vegetation across Hume PAD 001 consists of thick low grass cover (Figure 6-17, Figure 6-18). Ground surface visibility across the PAD is negligible, with exposed areas of ground making up less than 5% of the PAD.

In areas where the ground surface underlying the grass cover has been exposed, through small patches where the grass has died back or been uprooted by burrowing animals, the regolith of the area consists of sandy silt-clay with small gravels (less than 5mm in diameter) present (Figure 6-19). A moderately well developed humic topsoil has formed on this sandy mud. It is possible that the sandy mud is an alluvial sedimentary deposit, and that the ridge is an ancient river terrace. The depth of the sandy mud observed at the ground surface cannot be estimated at this stage.

Hume PAD 001 has been assessed as an area of potential archaeological deposit due to its elevated and level terrain, the lack of visible prior ground disturbance in the area, and the area's low ground surface visibility. Level terrain is more likely to have been an attractive area to camp for Aboriginal people than sloping terrain, and artefacts deposited on level terrain are less likely to have been disturbed or removed through erosion. The elevation of the area relative to the Murray River would protect it from flood damage. If Aboriginal people had deposited artefacts on the area, there are no apparent natural processes of post-depositional disturbance that would function to damage or remove these artefacts. Similarly, no signs of human activities that would have disturbed the ground surface in the area are visible. The area is free from signs of modification through earthworks, in contrast to other parts of the project area. The ridge top appears to have retained its natural ground surface morphology.

There is a possibility that activities associated with construction of Hume Dam weir might have impacted the ridge-top on which Hume PAD 001 is situated. Historical photographs of the area during construction of the weir (see Figure 4-1, Figure 4-2) show a village of workers huts immediately to the north of the ridge. These huts appear to extend northwards from where Trout Farm Road is now. The area of Hume PAD 001, and the ridgeline on which it sits, do not have huts built on them in the two photographs. It is possible that huts or other buildings were constructed on the area of Hume PAD 001 at periods before or after these photographs were taken. These photographs themselves, however, do not provide evidence for historical disturbance of the ground along the ridgeline.

If any Aboriginal artefacts are present within Hume PAD 001, the thick grass cover prevents their being visible on the ground surface. Any artefacts present would almost certainly be hidden under this vegetation, and might also have been incorporated down into the sandy soils and sediments at the ground surface. As a consequence, the presence or absence of Aboriginal artefacts cannot be established through surface survey. For these reasons, the area is assessed as having the potential to contain Aboriginal artefacts, and is consequently designated as an area of PAD.

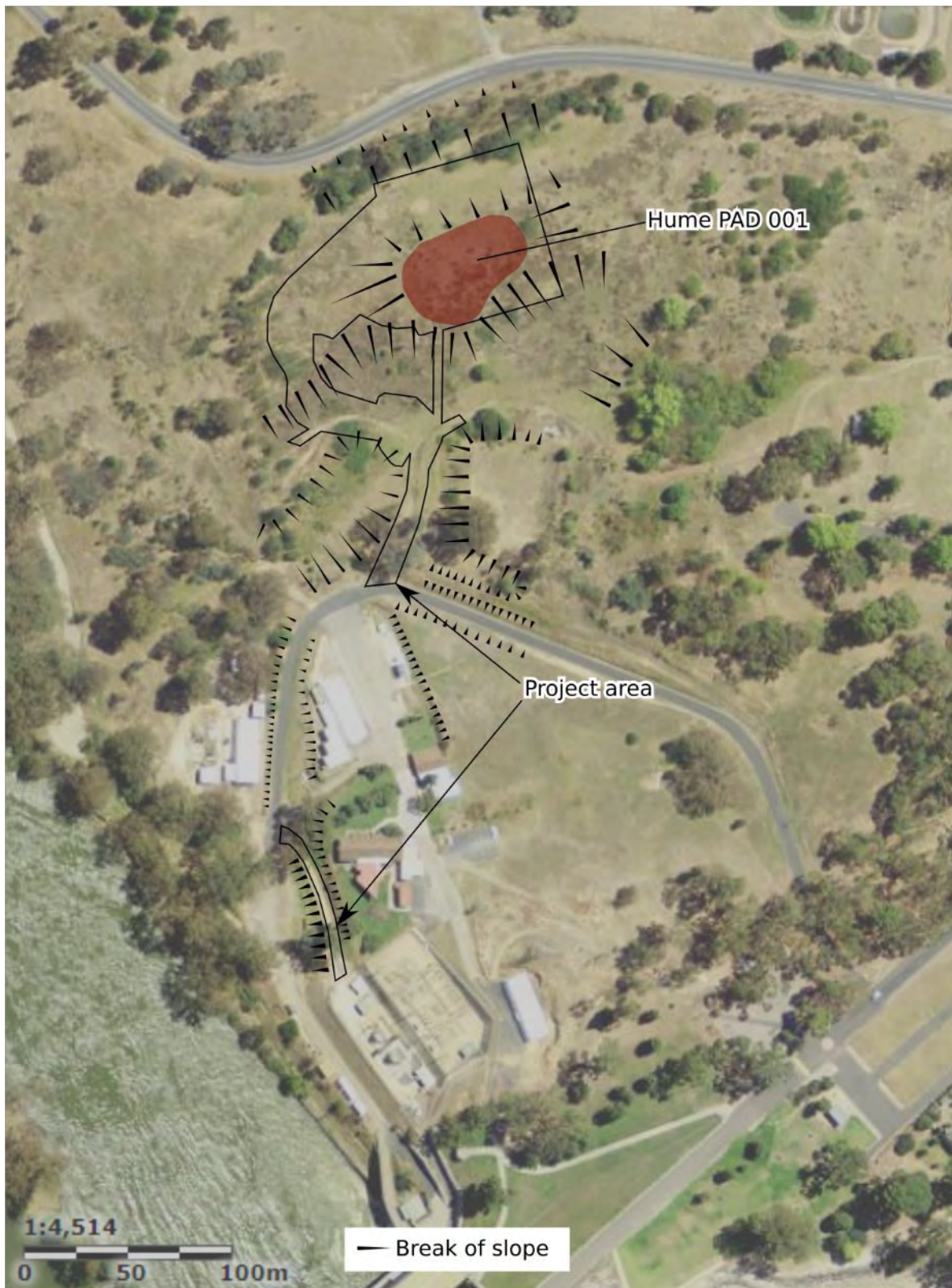


Figure 6-16 Map of the project area showing the location of Hume PAD 001



Figure 6-17 Hume PAD 001, from its western edge looking east



Figure 6-18 Hume PAD 001, from its centre looking southwest



Figure 6-19 Exposed area of ground surface within Hume PAD 001

6.4 Summary and discussion of results

There is evidence of ground disturbance in the post-European contact period in most of the survey units the project area has been divided into. In survey units 1, 2, and 4, this disturbance has been substantial, and involves large-scale earthworks that have modified the ground surface and created artificial landforms such as slopes, terraces, roads, and vehicle tracks. The morphology of the ground surface within survey units 1, 2, and 4 is largely the product of earthworks carried out in the recent (post-European contact) past. The substantial alteration of the ground surface in these survey units results in their having negligible potential to contain Aboriginal objects and sites.

The extent of disturbance and alteration to the ground surface across the project area is likely to have resulted in substantial disturbance to, or destruction of, any Aboriginal objects that might have been deposited within the project area prior to European contact.

No Aboriginal objects were found in any part of the project area. One area of potential archaeological deposit was identified (Hume PAD 001), in survey unit 3. The potential for Aboriginal objects to be present within other parts of the project area, either on the ground surface or buried in subsurface deposits in concentrations great enough to be detectable through test excavation, is assessed as being negligible.

7. Significance assessment

7.1 Method of significance assessment

7.1.1 Basis for assessment

A significance assessment is made up of several significance criteria that attempt to define why a site is important. Such assessment recognises that sites may be important for different reasons to different people, and even at different times. The assessment of Aboriginal cultural heritage in this assessment is based upon the four values of the Australia ICOMOS Burra Charter (Australia ICOMOS 2000).

- Social values
- Historical values
- Scientific values
- Aesthetic values.

7.1.2 Social significance

The significance of a heritage item does not relate only to its scientific or research value. Aboriginal people's views on the significance of archaeological sites are usually related to traditional, cultural and educational values, although some Aboriginal people also value any scientific information a site may be able to provide.

Aboriginal cultural significance was assessed from consultation with the nominated Site Officers for the relevant RAPs during and following field assessments. It should be noted that Aboriginal significance assessed in this manner may not reflect the views of all members of the community.

7.1.3 Historic significance

The historic value of a site is determined through its association with historically important people, events or activities.

A place or object can have cultural significance if it is significant in exhibiting particular historic characteristics such as:

- It is significant in the evolution or pattern of the history of a locality, region, state, nation or people.
- Importance for the density or diversity of cultural features illustrating the human occupation and evolution of the locality, region, state or nation.
- Importance in relation to an event, phase or activity of historic importance in the region, state or nation.
- Importance for close association with an individual or individuals whose life, works or activities have been significant within the history of the region, state or nation.
- Importance as an example of technical, creative, design or artistic excellence, innovation or achievement in a particular period.

7.1.4 Scientific significance

A concept, place or object can have cultural significance if it is significant in exhibiting particular scientific characteristics. Such as:

- It has demonstrable potential to yield information that will contribute to an understanding of the natural or cultural history of the region, state or nation.
- Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.

- Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the locality, region, state or nation.
- It is significant in demonstrating a high degree of technical innovation or achievement.

Research potential or scientific significance of an Aboriginal archaeological site can be assessed by using the criteria set out below. Each criterion is rated as low, moderate or high.

- **Site integrity** – The integrity of a site refers to its state of preservation, or condition. A site can be disturbed through a number of factors including natural erosion processes, destructive land use practices or repeated use of a site in the past by both humans and animals
- **Site structure** – Structure refers to a site's physical dimensions, that is, size and stratigraphy. A large site or a site with stratified deposits has more research potential than small sites and/or surface scatters. Sometimes however, specific research questions may be aimed at smaller sites in which case they would be rated at a higher significance than normal. Site structure cannot be assessed for scarred trees or isolated artefacts
- **Site contents** – This category refers to the range and type of occupation debris found in a site. Generally, complex art sites, extensive quarries with associated debris and surface sites that contain a large and varied amount of organic and non-organic materials are considered to have greater research potential than those sites with small, uniform artefacts, single motif art sites and small quarries with little or no debris. For scarred trees, contents may refer to the size and type of scar and/or how many scars there are on the one tree
- **Representativeness and rarity** – Representativeness refers to how much variability exists between the subject site and others inside or outside the subject area. It also considers the types of sites already conserved in the area and how much connectivity between sites exists. Rarity considers how often a particular site type occurs in an area. Assessment of representativeness and rarity requires some knowledge of the background archaeology of the area or region in which a study is being carried out. Rarity also relates to whether the subject site or area is important in demonstrating a distinctive way of life, custom, process, land use, function or design which is no longer practiced (OEH 2011).

7.1.5 Aesthetic significance

This refers to the sensory value of a place, and can include aspects such as form, texture, and colour, and can also include the smell and sound elements associated with use or experience of a site (Australia ICOMOS 2000). Aesthetic significance can be closely linked to the social value of a site.

A place or object can have cultural significance if it is significant in exhibiting particular aesthetic characteristics, such as:

- Importance to a community for aesthetic characteristics.
- Importance for its creative, design or artistic excellence, innovation or achievement.
- Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.

7.2 Statements of significance

No Aboriginal objects or places have been identified within the project area.

The significance of Hume PAD 001 cannot be assessed based on the data gathered during the archaeological survey. Surface survey provides an understanding of the nature, and consequently the significance, of Aboriginal objects currently visible on the ground surface only.

8. Impact assessment

No currently known Aboriginal sites will be impacted by the project.

One area of archaeological potential, that has the potential to contain Aboriginal objects in subsurface deposits or hidden under vegetation cover, was identified within the project area (Hume PAD 001).

The project would represent a direct impact to Hume PAD 001, resulting in complete destruction of the area of PAD. Hume PAD 001 lies within an area proposed to be the location of the Battery Energy Storage System (BESS) and an associated area of levelled terrain to be capped with hardstand material and used as a vehicle and laydown yard. The project would extensively modify the ground surface along the ridgetop, employing a cut and fill method to create the area of levelled terrain needed for the BESS and the adjacent laydown yard. The existing soils and sediments on and immediately underneath the present ground surface within Hume PAD 001 would be substantially disturbed or removed from the area, and any Aboriginal artefacts present within them would be removed from their archaeological context and potentially damaged or destroyed.

8.1 Significance of impact

The significance the proposed impact to Hume PAD 001 cannot be assessed based on the archaeological survey detailed in this report. Assessing the significance of this area of PAD would require further archaeological work including subsurface test excavation.

8.2 Cumulative impacts

Assessing cumulative impacts involves the consideration of the proposed impact in the context of existing developments and past destruction of heritage sites, as well as the population of heritage sites that still exist in the region of interest (Godwin 2011). The concept of assessing cumulative impacts aims to avoid discussing the impact of a development in isolation, and aims to assess the impact in terms of the overall past and future degradation of a region's heritage resource.

No known Aboriginal objects or places will be impacted by the project.

It is not known whether any Aboriginal objects are present within Hume PAD 001. The significance of any Aboriginal objects that might be present within this area of PAD is also unknown, and cannot be assessed or predicted on the basis of the surface survey detailed in this report. The cumulative impact to the archaeological resource of the region that the project would represent cannot be assessed as a consequence. Assessment of the project's cumulative impact can only be made after the presence or absence of Aboriginal objects within the area of PAD has been tested, and an understanding of the nature and significance of any objects has been obtained.

9. Management recommendations

The management recommendations presented here are based on the assessment of impacts in Section 8.

This assessment has identified no objects or places of Aboriginal heritage within the project area, but has identified one area of PAD (Hume PAD 001) that would be impacted by the project. The following actions are recommended:

- 1) A program of test excavation would be carried out on Hume PAD 001 to assess the nature and significance of any subsurface archaeological material that might be present. Test excavations will occur prior to construction project works commencing. The test excavations would be carried out following the procedures outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b), and so the test excavation program would not require an AHIP. The results of these test excavations would inform decisions around subsequent management of this area of PAD.
- 2) If Aboriginal cultural heritage material is identified during the test excavation program, the location where these objects were found would be registered as an Aboriginal site. Approval to impact this Aboriginal site would need to be obtained prior to project construction works commencing.
- 3) In the event that Aboriginal objects are discovered within the project area during construction project works being carried out, all work in the area will be halted immediately, and the unexpected finds protocol (Appendix E) will be implemented.
- 4) A copy of this ACHAR will be submitted to Heritage NSW (former NSW Office of Environment and Heritage) for review and assessment as part of the EIS.

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Appendix A. Aboriginal consultation documents



Hume Battery Energy Storage System Project

Invitation for registration of Aboriginal interests. The Hume Battery Energy Storage System (BESS) Project is being proposed by Meridian Energy Australia Pty Ltd (Meridian). Meridian proposes carrying out construction near the existing Hume Dam Hydro Power Station, 11km east of Albury NSW.

The key features of the project include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity network distribution feeder connections from the existing switchyard to the BESS

- Construction of fencing around the perimeter of the BESS compound

Following the consultation guidelines, Jacobs (on behalf of Meridian) is seeking registrations of interest

from Aboriginal people who hold cultural knowledge relevant to the project area.

Community consultation with Aboriginal people will assist Meridian in the preparation of an Aboriginal

Cultural Heritage Assessment Report (ACHAR). Consultation will also assist the Director General of the

Department of Planning, Industry and Environment in his/her consideration and determination of any

subsequent permit applications(if required).

Any Aboriginal people or organisations with relevant cultural knowledge can register in writing (email or

letter) to:

Oliver Macgregor

Archaeologist

Jacobs

Email: oliver.macgregor@jacobs.com

Mail: 1/64 Allara Street, Canberra City, ACT 2600

Telephone: (02) 6246 2716

Registrations must be received by close of business 11th Sept 2019

September 18, 2019

Project Name: Hume BESS Project
Project Number: IA213400

Subject: Seeking Aboriginal knowledge holders to assist preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) for Meridian Energy Australia's Hume BESS Project

Dear

The Hume Battery Energy Storage System (BESS) Project is being proposed by Meridian Energy Australia Pty Ltd (Meridian). Meridian proposes carrying out construction near the existing Hume Dam Hydro Power Station, 11km east of Albury NSW. The BESS would be constructed on WaterNSW land in the Albury City Council Local Government Area (LGA).

The BESS Project would enable the existing Hume Dam Hydro Power Station to better respond to the needs of the National Energy Market. The BESS would store energy from the Hydro Power Station during periods of low demand, and would release that energy into the grid during periods of high demand.

The key features of the project include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity network distribution feeder connections from the existing switchyard to the BESS
- Construction of fencing around the perimeter of the BESS compound.

The Project area is shown in Figure 1. The maximum disturbance footprint for the project, including temporary construction areas and permanent footprint, would be less than one hectare.

Following the consultation guidelines, Jacobs (on behalf of Meridian) is seeking registrations of interest from Aboriginal people who hold cultural knowledge relevant to the project area.

Community consultation with Aboriginal people will assist Meridian in the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR). Consultation will also assist the Director General of the Department of Planning, Industry and Environment in his/her consideration and determination of any subsequent permit applications (if required).

In accordance with section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010), it would be appreciated if your organisation could please provide a list



September 18, 2019

Subject: Seeking Aboriginal knowledge holders to assist preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) for Meridian Energy Australia's Hume BESS Project

of the names of, or pass this request along to, Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or Aboriginal places within the proposed Project area.

Thank you for your assistance and advice in this matter. If you have any questions or would like to discuss this further, please contact me via the following:

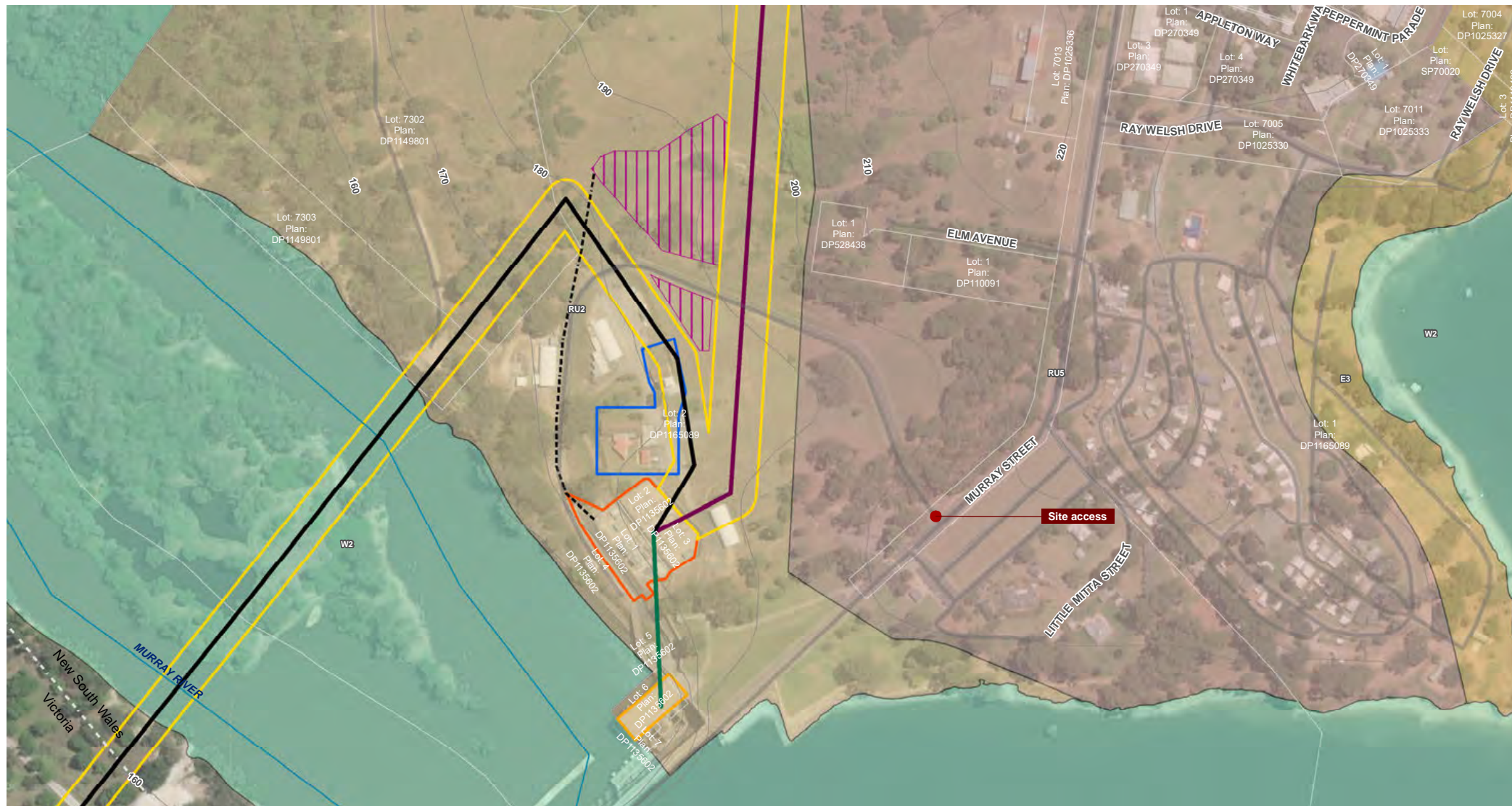
Post: Oliver Macgregor, Jacobs, 1/64 Allara Street, Canberra City, ACT 2600

Email: oliver.macgregor@jacobs.com

Phone: 02 6246 2716

Yours sincerely

Oliver Macgregor
Senior Archaeologist



Legend

- Site access
- Proposed 11kV cable - From switchyard to battery
- ||||| Potential battery locations
- - - New South Wales/Victoria state boundary
- Contours (10 metres)
- Watercourse
- Cadastral extent
- NSW LEP zoning**
 - E3 Environmental Management
 - RU2 Rural Landscape
 - RU5 Village
 - W2 Recreational Waterways
- 132 kV transmission line to Albury (NSW)
- 66 kV transmission line to Wodonga (Victoria)
- Connection from power station to switchyard
- Existing power station
- WaterNSW Offices
- Meridian switchyard
- Typical easement buffer for the 66kV line (15 m) and the 132 kV line (20 m)

0 100 200 Metres
1:3,000 at A3



Data sources

Jacobs 2019
NSW Spatial Services 2019
Geoscience Australia 2019
Imagery: ESRI, DigitalGlobe, GeoEye,
Earthstar Geographics, CNES/Airbus DS, USDA,
USGS, Aerogrid, IGN and the GIS User Community

GDA94 MGA55

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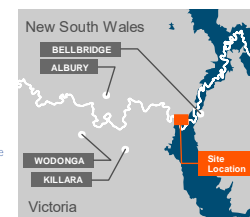


Figure 1 Hume BESS - Site layout



Our ref: DOC19/725781

Senders ref:

Mr Oliver Macgregor

Jacobs
1/64 Allara Street
CANBERRA ACT 2600

Via email: oliver.macgregor@jacobs.com

2 September 2019

Dear Mr Macgregor

Subject: Hume Battery Energy Storage System (BESS) Project, Albury LGA

**WRITTEN NOTIFICATION OF PROPOSAL AS REQUIRED UNDER DECCW ABORIGINAL
CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010**

Thank you for your correspondence received 23 August 2019 about the above matter seeking comments from the Biodiversity and Conservation Division of the Department of Planning, Industry and Environment (The Department).

The Biodiversity and Conservation Division was formerly part of the Office of Environment and Heritage (OEH). It forms part of the new Environment, Energy and Science Group in the Department (see <https://intranet.dpie.nsw.gov.au/>). The Environment, Energy and Science Group works to protect and strengthen NSW's natural environment by managing the conservation of our environment and energy resources. We support the community, as well as business and government, in developing their ability to achieve these outcomes.

The Biodiversity and Conservation Division has statutory responsibilities relating to biodiversity (including threatened species, populations, ecological communities, or their habitats), Aboriginal cultural heritage and flooding. For matters relating to national parks estate matters please refer these to the National Parks and Wildlife Service.

Attached is a list of known Aboriginal parties for the Albury local government area that the Department considers likely to have an interest in the development. Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties. Receipt of this list does not remove the requirement of a proponent/ consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010).

Under Section 4.1.6. of the Consultation Requirements, you must also provide a copy of the names of each Aboriginal person who registered an interest to the relevant Department regional office and Local Aboriginal Land Council (LALC) within 28 days from the closing date for registering an interest.

Please note that the contact details in the list provided by the Department may be out of date as it relies on Aboriginal parties advising the Department when their details need changing. If individuals/companies undertaking consultation are aware that any groups contact details are out of date, or letters are returned unopened, please contact either the relevant stakeholder group (if you know their more current details) and/or the Department. AHIP applicants should make a note of any group they are unable to contact as part of their consultation record.

If you have any questions about this advice, please contact me via rog.southwest@environment.nsw.gov.au or 02 6022 0623.

Yours sincerely

A black rectangular redaction box covers the signature of Andrew Fisher. A small, faint handwritten mark is visible to the right of the box.

Andrew Fisher

Senior Team Leader Planning

South West Branch

Biodiversity and Conservation Division

Department of Planning, Industry and Environment

ATTACHMENT A Registered Aboriginal Interests – Albury Local Government Area

ATTACHMENT A Registered Aboriginal Interests

Albury Local Government Area

Organisation/ Individual Name	Address	Contact Details
Albury and District Local Aboriginal Land Council		
Yalmambirra		
Mungabareena Aboriginal Corporation		
Wiradjuri Council of Elders		
Denise McGrath		
Leonie McIntosh		
Nancy Rooke		
Dan Clegg		

15 October 2019

By email: Oliver.Macgregor@jacobs.com

Mr Oliver Macgregor
Senior Archaeologist
Jacobs Group Australia Pty Ltd
1/64 Allara Street
Canberra City ACT 2600

Your ref: Hume BESS Project #IA213400

Dear Mr Macgregor,

Request - Search for Registered Aboriginal Owners

We refer to your letter dated 23 August 2019 ("Letter") regarding an Aboriginal Cultural Heritage Assessment for the proposed developments within the project area indicated on the map attached to the Letter, located approximately 11 km east of Albury, NSW.

Under Section 170 of the *Aboriginal Land Rights Act 1983* the Office of the Registrar is required to maintain the Register of Aboriginal Owners (RAO). A search of the RAO has shown that there are not currently any Registered Aboriginal Owners in the project area.

We suggest you contact Albury and District Local Aboriginal Land Council on 02 6025 7075 as they may be able to assist you in identifying Aboriginal stakeholders who wish to participate.

Yours sincerely

|

[Redacted signature]

Elizabeth Loane
Project Officer, Aboriginal Owners
Office of the Registrar, ALRA

30 August 2019

Oliver Macgregor
Senior Archaeologist
Jacobs Group
PO Box 237
CIVIC SQUARE ACT 2608

Dear Sir

Request for Information on Aboriginal Stakeholders

I refer to your letter dated 23 August 2019 seeking contact details of relevant person(s) with Aboriginal cultural knowledge relevant to determining the significance of Aboriginal objects and/or places in the Albury Local Government Area (LGA).

AlburyCity is of the understanding that contacts are sourced to assist the preparation of an Aboriginal Cultural Heritage Assessment Report for the works associated with the installation of a Battery Energy Storage System at Lake Hume, Wirlinga.

Please find outlined below a list of known Aboriginal parties for the Albury local government area that the NSW Office of Environment and Heritage considers likely to have an interest in the development.

Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties. Receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (April 2010).

Albury Local Government Area

Organisation/ Individual Name	Address	Contact Details
Albury and District Local Aboriginal Land Council		
Yalmambirra		
Mungabareena Aboriginal Corporation		
Wiradjuri Council of Elders		
Denise McGrath		
Leonie McIntosh		

Nancy Rooke	
Dan Clegg	
Ken (Tunny) Murray	

Should further information be required, please contact Council's Senior Strategic Planner, Chris Graham on (02) 6023 8148 or via email at cgraham@alburycity.nsw.gov.au.

Yours faithfully



David Christy
Team Leader Town Planning
Infrastructure, Planning & Environment

18th September 2019

Subject: Seeking Aboriginal knowledge holders to assist Jacobs, on behalf of Meridian Energy Australia Pty Ltd to prepare a cultural heritage assessment report for the Hume Battery Energy Storage System Project

Dear [REDACTED]

Meridian Energy Australia Pty Ltd (Meridian) operate the Hume Dam Hydro Power Station, located approximately 11km east of Albury NSW. Meridian are proposing to construct a Battery Energy Storage System (BESS) and associated infrastructure required to link the BESS to the Hydro Power Station and to existing electricity transmission lines.

The Hume BESS Project will increase the Hydro Power Station's "dispatchability", which is the effectiveness with which it can supply electricity to the grid and respond to increases and decreases in demand. The BESS will be able to store excess electrical energy produced by the Hydro Power Station during times of low demand. This stored energy will then be available to be released into the grid during periods of high demand.

The features of the project are presented in the accompanying map, and are proposed to include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity network distribution feeder connections from the existing switchyard to the BESS
- Construction of fencing around the perimeter of the BESS compound

The project would be carried out on WaterNSW land located on the northern side of the Murray River, adjacent to the Hume Dam Hydro Power Station, in the Albury City Council Local Government Area (LGA).

The maximum disturbance area for the project would be less than one hectare. The permanent infrastructure (BESS, underground cable and ancillary upgrades to the switchyard) is anticipated to occupy a footprint of 0.5 hectares.

Jacobs, on behalf of Meridian, is currently undertaking an assessment of Aboriginal cultural heritage relevant to the project area.

As per the consultation guidelines, Jacobs on behalf of Meridian is seeking registrations of interest from Aboriginal people who hold cultural knowledge relevant to the project area. The purpose of consultation with the Aboriginal community is to assist Meridian in the preparation of a cultural heritage assessment report, and to assist in the assessment of the project by the NSW Minister for Planning.



18th September 2019

Subject: Seeking Aboriginal knowledge holders to assist Jacobs, on behalf of Meridian Energy Australia Pty Ltd to prepare a cultural heritage assessment report for the Hume Battery Energy Storage System Project

Jacobs are inviting registrations of interest in the process of community consultation from Aboriginal person(s) or groups who hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places within and around the project area.

Please note that Section 4.1.6 of the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) requires the proponent to advise OEH and the Local Aboriginal Land Council of Aboriginal people who have registered an interest in the project. Please advise if you **do not** want your details forwarded to OEH or the LALC.

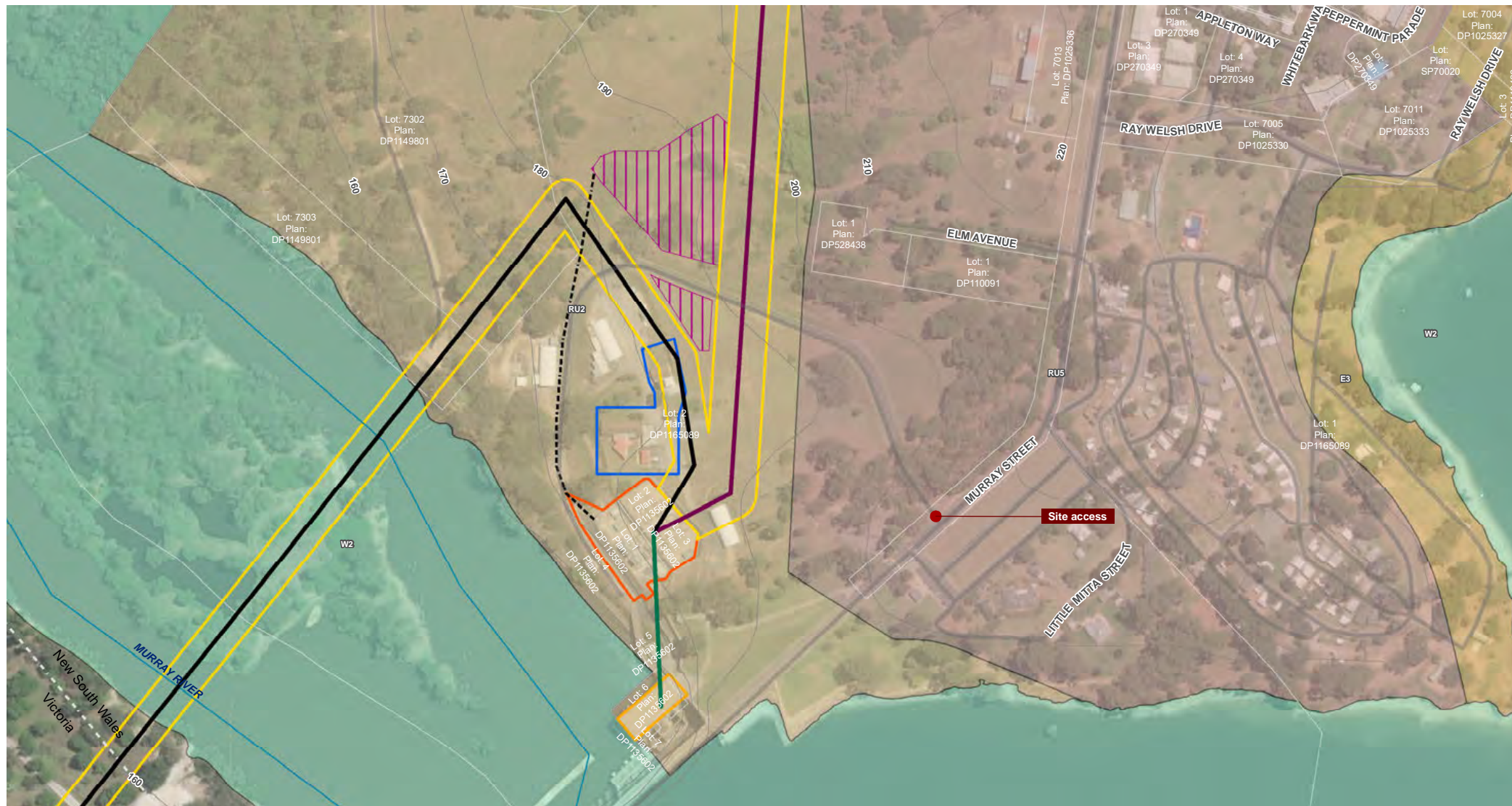
We hope you or your organisation choose to participate in this project and enclose for your completion a Notice to Register. **These completed forms need to be returned to Jacobs via email or post by 5pm 3rd October 2019.**

Please contact me with any questions you might have,

Yours sincerely,



Oliver Macgregor
Senior Archaeologist
1/64 Allara Street, Canberra City, ACT 2600
oliver.macgregor@jacobs.com
(02) 6246 2716



Legend

- Site access
- Proposed 11kV cable - From switchyard to battery
- ||||| Potential battery locations
- - - New South Wales/Victoria state boundary
- Contours (10 metres)
- Watercourse
- Cadastral extent
- NSW LEP zoning**
 - E3 Environmental Management
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- Typical easement buffer for the 66kV line (15 m) and the 132 kV line (20 m)

0 100 200 Metres
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Data sources

Jacobs 2019
NSW Spatial Services 2019
Geoscience Australia 2019
Imagery: ESRI, DigitalGlobe, GeoEye,
Earthstar Geographics, CNES/Airbus DS, USDA,
USGS, Aerogrid, IGN and the GIS User Community

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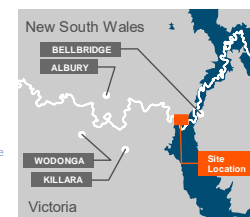


Figure 1 Hume BESS - Site layout

Macgregor, Oliver

From: CEO | Albury District ALC <[REDACTED]>
Sent: Wednesday, 30 October 2019 10:06 AM
To: Macgregor, Oliver
Subject: [EXTERNAL] RE: Hume Battery Project

Categories: Entered in consultation log

Hi Oliver

I have a sites officer for Monday, Jim Davis. Sorry for the delay.

Milly

From: Macgregor, Oliver [mailto:Oliver.Macgregor@jacobs.com]
Sent: Monday, 28 October 2019 2:41 PM
To: CEO | Albury District ALC <[REDACTED]>
Subject: FW: Hume Battery Project

Dear Albury and District LALC,

Following up from our phone conversation this afternoon, below is my previous email (with attached information about the project).

At the moment the archaeological survey is scheduled to take place on Monday November 4th at 10am. It's anticipated to take around four hours.

Jacobs will be engaging a labour hire firm to employ your fieldworker for the job (should you wish to send one), so your fieldworker won't need their own insurance.

Let me know if you have a fieldworker available to participate in the survey, there's some additional paperwork that they'll need to fill out for the labour hire firm which I'll send through to you.

Cheers,
Oliver.

From: Macgregor, Oliver
Sent: Wednesday, 18 September 2019 2:15 PM
To: [REDACTED]
Subject: Hume Battery Project

Dear Albury and District Local Aboriginal Land Council,

Please find attached a letter inviting you to register as a Registered Aboriginal Party (RAP) for the Hume Battery Energy Storage System project, proposed by Meridian Energy Australia. Some preliminary information about the proposed project is included in the letter.

Also attached is a Notice of Registration form to fill out and return to me, should you wish to register for this project.

Please don't hesitate to contact me with any questions you might have. I look forward to hearing from you.

Regards,
Oliver.

Oliver Macgregor | | Jacobs | Senior archaeologist | Buildings and Infrastructure
| 02 6246 2716 | Oliver.Macgregor@jacobs.com | www.jacobs.com

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Notice of Registration

To: Oliver Macgregor
Heritage Consultant
Jacobs
1/64 Allara Street
Canberra City, ACT 2600
Email: oliver.macgregor@jacobs.com

I, Ken Murray (NAME)

(ORGANISATION)

(POSITION)

(ADDRESS)

wish to be registered by Jacobs, on behalf of Meridian Energy Australia Pty Ltd as an Aboriginal Party to be consulted as part of the Hume Battery Energy Storage System Project

I confirm that I am authorised to register on behalf of this organisation.

(Tick if relevant)

☐ I **DO NOT** wish for my details to be forwarded to OEH or the Local Aboriginal Land Council pursuant to Section 4.1.6 of the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).

My preferred method of communication is (Please tick preferred method and provide details below):

☐ Email

☒ Mail

☐ Fax

☐ Phone

Email

Address: _____

Mailing

address: _____

Fax: _____

Phone: _____

Macgregor, Oliver

From: Robert Clegg <[REDACTED]>
Sent: Wednesday, 18 September 2019 4:59 PM
To: Macgregor, Oliver
Cc: Wiradjuri Elders
Subject: [EXTERNAL] Re: Hume Battery Energy Storage System project

Categories: Entered in consultation log

I accept the invitation. Please contact Yalmambirra who is our cultural heritage representative in Albury. Yalmambirra is also a member of the Wiradjuri council of Elders.

Robert Clegg
Chairperson
Wiradjuri Council of Elders

On Wed., 18 Sep. 2019, 14:19 Macgregor, Oliver, <Oliver.Macgregor@jacobs.com> wrote:

Dear Wiradjuri Council of Elders,

Please find attached a letter inviting you to register as a Registered Aboriginal Party (RAP) for the Hume Battery Energy Storage System project, proposed by Meridian Energy Australia. Some preliminary information about the proposed project is included in the letter.

Also attached is a Notice of Registration form to fill out and return to me, should you wish to register for this project.

Please don't hesitate to contact me with any questions you might have. I look forward to hearing from you.

Regards,

Oliver.

[Oliver Macgregor](#) | [Jacobs](#) | Senior archaeologist | Buildings and Infrastructure

| 02 6246 2716 | Oliver.Macgregor@jacobs.com | www.jacobs.com

Macgregor, Oliver

From: yalmambirra yalmambirra <[REDACTED]>
Sent: Wednesday, 18 September 2019 7:23 PM
To: Macgregor, Oliver
Subject: [EXTERNAL] RE: Hume Battery Energy Storage System project

Categories: Entered in consultation log

Hullo Oliver

Thank you for the invitation to register. I had trouble filling out the form so my details are as follows:

Name: Yalmambirra

Address: [REDACTED]

Organisation: Wiradjuri Council of Elders

Position: Wiradjuri Elder

Preference for contact: Email

Email address: [REDACTED]

Phone: [REDACTED]

I am already registered with OEH as a RAP

Hope this helps Oliver, but give me a call if you need additional information...

Yal

Sent from [Mail](#) for Windows 10

From: Macgregor, Oliver <Oliver.Macgregor@jacobs.com>
Sent: Wednesday, September 18, 2019 2:16:32 PM
To: [REDACTED] <[REDACTED]>
Subject: Hume Battery Energy Storage System project

Dear Yalmambirra,

Please find attached a letter inviting you to register as a Registered Aboriginal Party (RAP) for the Hume Battery Energy Storage System project, proposed by Meridian Energy Australia. Some preliminary information about the proposed project is included in the letter.

Also attached is a Notice of Registration form to fill out and return to me, should you wish to register for this project.

Please don't hesitate to contact me with any questions you might have. I look forward to hearing from you.

Regards,
Oliver.

[Oliver Macgregor](#) | [Jacobs](#) | Senior archaeologist | Buildings and Infrastructure
| 02 6246 2716 | Oliver.Macgregor@jacobs.com | www.jacobs.com

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17 October 2019

The CEO
Albury and District Local Aboriginal Land Council

Subject: Hume Battery Energy Storage System (BESS) project, letter advising of RAPs

Dear Albury and District Local Aboriginal Land Council,

Pursuant to Section 4.1.6 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Energy, Climate Change and Water 2010), we are writing to advise you of the steps taken to identify and invite Aboriginal parties with traditional knowledge relevant to this project and to advise you of the outcomes.

- 1) Letters to the following agencies were sent on August 23, 2019 requesting details of known Aboriginal parties to be consulted regarding the project.
 - DPIE Southwest Branch
 - Albury and District Local Aboriginal Land Council
 - NTS Corp
 - National Native Title Tribunal
 - Office of the Registrar of the Aboriginal Land Rights Act
 - Murray Catchment Management Authority

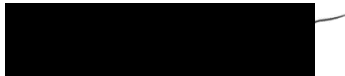
Of these, DPIE responded on September 2, 2019. Albury City Council responded in a letter dated August 30, 2019 but which was received by Jacobs on September 17, 2019. Following these responses, letters of invitation were sent to all identified potential knowledge holders. The Office of the Registrar of the Aboriginal Land Rights Act responded after the deadline, on October 16, 2019. Their response did not supply the names of any Aboriginal parties.

- 2) A search of the National Native Title Register (nntt.gov.au) was carried out on August 30, 2019.
- 3) A notice was placed in The Border Mail on August 28, 2019 inviting Aboriginal parties to register to be consulted regarding the project.

Subject: Hume Battery Energy Storage System (BESS) project, letter advising of RAPs

- 4) Letters of invitation were sent to all Aboriginal parties identified in step 1). These letters were sent on September 18, 2019 (email) and September 19, 2019 (post), depending on the Aboriginal parties' addresses.
- 5) Following these actions, the following parties have registered as RAPs for the project:
 - Yalmambirra
 - Wiradjuri Council of Elders
 - Ken Murray

Yours sincerely

A black rectangular redaction box covering the signature of Oliver Macgregor.

Oliver Macgregor
Senior Archaeologist
0262462716
oliver.macgregor@jacobs.com

17 October 2019

Andrew Fisher
Senior Team Leader Planning
South West Branch
Biodiversity and Conservation Division
Department of Planning, Industry and Environment

Subject: Hume Battery Energy Storage System (BESS) project, letter advising of RAPs

Dear Mr Fisher,

Pursuant to Section 4.1.6 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Energy, Climate Change and Water 2010), we are writing to advise you of the steps taken to identify and invite Aboriginal parties with traditional knowledge relevant to this project and to advise you of the outcomes.

- 1) Letters to the following agencies were sent on August 23, 2019 requesting details of known Aboriginal parties to be consulted regarding the project.
 - DPIE Southwest Branch
 - Albury and District Local Aboriginal Land Council
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 - Office of the Registrar of the Aboriginal Land Rights Act
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Of these, DPIE responded on September 2, 2019. Albury City Council responded in a letter dated August 30, 2019 but which was received by Jacobs on September 17, 2019. Following these responses, letters of invitation were sent to all identified potential knowledge holders. The Office of the Registrar of the Aboriginal Land Rights Act responded after the deadline, on October 16, 2019. Their response did not supply the names of any Aboriginal parties.

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Subject: Hume Battery Energy Storage System (BESS) project, letter advising of RAPs

- 4) Letters of invitation were sent to all Aboriginal parties identified in step 1). These letters were sent on September 18, 2019 (email) and September 19, 2019 (post), depending on the Aboriginal parties' addresses.
- 5) Following these actions, the following parties have registered as RAPs for the project:
 - Yalmambirra
 - Wiradjuri Council of Elders
 - Ken Murray

Yours sincerely

A black rectangular redaction box covering the signature of Oliver Macgregor.

Oliver Macgregor
Senior Archaeologist
0262462716
oliver.macgregor@jacobs.com

Macgregor, Oliver

From: yalmambirra yalmambirra <[REDACTED]>
Sent: Sunday, 26 July 2020 5:11 PM
To: Macgregor, Oliver
Subject: [EXTERNAL] RE: Hume Battery Energy Storage System ACHAR

Categories: Entered in consultation log

Oliver

Thank you for the opportunity to read and comment on the Report.

I am happy with the report and the suggested form of further archaeological investigation (test pit excavations).

Yalmambirra

Sent from [Mail](#) for Windows 10

From: [Macgregor, Oliver](#)
Sent: Monday, 13 July 2020 3:49 PM
To: [REDACTED]
Subject: Hume Battery Energy Storage System ACHAR

Dear Yalmambirra,

Please find attached the draft Aboriginal Cultural Heritage Assessment Report (ACHAR) for the Hume Battery Energy Storage System (BESS) Project.

As you will recall, this project proposes to construct a battery and associated infrastructure just north of Hume Dam weir.

The draft ACHAR is being provided for you to review, and to return comments or feedback. Please ensure that any feedback you wish to provide is submitted to me by midnight on Monday, August 10th, 2020. After this date, the ACHAR will be finalised.

Please contact me if you have any questions relating to this archaeological assessment, or on the process of reviewing and providing comments on the ACHAR.

Regards,
Oliver.

Oliver Macgregor | [Jacobs](#) | Senior Archaeologist
+61 (02) 6246 2716 | oliver.macgregor@jacobs.com
1/64 Allara Street | Canberra City, ACT 2600 | Australia

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Appendix B. Consultation log

Date	To	From	Medium
23-Aug-19	Albury City Council	Jacobs	email
23-Aug-19	NTS Corp	Jacobs	email
23-Aug-19	NTS Corp	Jacobs	mail
23-Aug-19	DPIE Southwest	Jacobs	email
23-Aug-19	Office of the Registrar of the Aboriginal Land Rights Act	Jacobs	email
23-Aug-19	Albury and District LALC	Jacobs	email
23-Aug-19	Murray Catchment Management Authority	Jacobs	email
30-Aug-19	Jacobs	Albury City Council	Post
2-Sep-19	Jacobs	DPIE	email
18-Sep-19	National Native Title Tribunal	Jacobs	email
18-Sep-19	Albury and District Local Aboriginal Land Council	Jacobs	email
18-Sep-19	Yalmambirra	Jacobs	email
18-Sep-19	Mungabareena Aboriginal Corporation	Jacobs	email
18-Sep-19	Wiradjuri Council of Elders	Jacobs	email
18-Sep-19	Denise McGrath	Jacobs	email
18-Sep-19	Leonie McIntosh	Jacobs	email
18-Sep-19	Dan Clegg	Jacobs	email
19-Sep-19	Ken Murray	Jacobs	Post
19-Sep-19	Nancy Rooke	Jacobs	Post
Responses to invitation to register letter			
18-Sep-19	Jacobs	Wiradjuri Council of Elders	email
18-Sep-19	Wiradjuri Council of Elders	Jacobs	email
18-Sep-19	Jacobs	Yalmambirra yalmambirra	email
19-Sep-19	Yalmambirra	Jacobs	email
26-Sep-19	Jacobs	Dan Bundadhaany	email
27-Sep-19	Jacobs	Ken Murray	Post
8-Oct-19	Dan Bundadhaany	Jacobs	email
Supply of method document			
8-Oct-19	Yalmambirra	Jacobs	email
8-Oct-19	Wiradjuri Council of Elders	Jacobs	email
8-Oct-19	Ken Murray	Jacobs	Post
16-Oct-19	Jacobs	Office of the Registrar, Aboriginal Land Rights Act 1983	email
17-Oct-19	Albury and District Local Aboriginal Land Council	Jacobs	email
Advising agencies of RAPs			
17-Oct-19	DPIE Southwest	Jacobs	email
17-Oct-19	Albury and District LALC	Jacobs	email
Organising fieldwork logistics			
28-Oct-19	Yalmambirra	Jacobs	Phoncall
28-Oct-19	Wiradjuri Council of Elders	Jacobs	Phoncall
28-Oct-19	Ken Murray	Jacobs	Phoncall
28-Oct-19	Albury and District Local Aboriginal Land Council	Jacobs	Phoncall
28-Oct-19	Albury and District Local Aboriginal Land Council	Jacobs	email
28-Oct-19	Jacobs	Ken Murray	Phoncall
29-Oct-19	Sam Wickman (representative of Ken Murray)	Jacobs	email
29-Oct-19	Yalmambirra	Jacobs	email
30-Oct-19	Jacobs	Albury and District Local Aboriginal Land Council	email
30-Oct-19	Albury and District Local Aboriginal Land Council	Jacobs	email
31-Oct-19	Albury and District Local Aboriginal Land Council; Yalmambirra; Sai	Jacobs	email
1-Nov-19	Albury and District Local Aboriginal Land Council	Jacobs	Phoncall
1-Nov-19	Ken Murray	Jacobs	Phoncall
1-Nov-19	Sam Wickman (representative of Ken Murray)	Jacobs	Phoncall
1-Nov-19	Yalmambirra	Jacobs	Phoncall
1-Nov-19	Jacobs	Sam Wickman (representative of Ken Murray)	Phoncall
5-Nov-19	Jacobs	Yalmambirra	email
5-Nov-19	Yalmambirra	Jacobs	email

Brief Description
supply of 'letter to agencies' document
supply of 'letter to agencies' document
supply of 'letter to agencies' document
supply of 'letter to agencies' document
supply of 'letter to agencies' document
supply of 'letter to agencies' document
supply of 'letter to agencies' document
Response to request for information. Supplied list of possible Aboriginal stakeholders. Mail not received until September 17th
Response to request for information. Supplied list of possible Aboriginal stakeholders.
supply of 'letter to agencies' document
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form. Note: way2deadly@gmail.com email bounced.
Supplied invitation to register letter, and Registration Form
Supplied invitation to register letter, and Registration Form
Supplied notice of registration. Also advised Jacobs contact Yalmambirra, who is also a member of the Wiradjuri Council of Elders.
Acknowledged receipt of registration.
Supplied notice of registration.
Acknowledged receipt of registration.
Expressed the desire to NOT be registered on this project
Supplied notice of registration
Acknowledged receipt of email, stated that no further correspondence would be sent regarding this project.
Supplied method document
Supplied method document
Supplied method document
Responded to 'letter to agencies' document. Advised that a search of the Register of Aboriginal Owners (RAO) database showed that there are not currently any Registered Aboriginal Owners in the project area.
Supplied method document, for the LALC's records and information.
Supplied letter advising of RAPs for the project
Supplied letter advising of RAPs for the project
Contacted to check availability for fieldwork. Monday 4th November identified as a suitable date. Jacobs indicated that an employee details form would be emailed through as soon as possible, along with logistical information about where to meet etc.
Contacted to check availability for fieldwork. Wiradjuri Council of Elders stated that they are happy to be represented by Yalmambirra, and won't supply an additional representative.
Contacted to check availability for fieldwork. Ken was unsure of availability, and plans to call back after checking his diary.
Contacted to check availability for fieldwork. The Land Council anticipate that they will be able to supply a fieldworker to participate. Jacobs will re-send earlier email inviting the LALC to register for the project
Re-sent email of September 18, inviting the LALC to register for the project.
Ken indicated that he won't be available to participate in the fieldwork in person, but would send Sam Wickman as his representative. Sam supplied Jacobs with his contact details. Jacobs informed Sam of the date and time of survey, and that further logistical details and paperwork from the labour hire firm would be sent through as soon as possible.
Supplied Sam with the forms required by Cultural Heritage Solutions Pty Ltd to engage him as an employee for the fieldwork. Asked Sam to confirm his anticipated rate to be charged, and if he anticipates charging for travel, mileage or other ancillary costs.
Supplied Sam with the forms required by Cultural Heritage Solutions Pty Ltd to engage him as an employee for the fieldwork. Asked Sam to confirm his anticipated rate to be charged, and if he anticipates charging for travel, mileage or other ancillary costs.
Indicated that they would supply a Sites Officer, Jim Davis, for the field survey
Supplied the Land Council with forms required by Cultural Heritage Solutions Pty Ltd to engage Jim Davis as an employee for the fieldwork. Asked for an indication of fees that they would charge.
Supplied fieldworkers with confirmation of field date and time.
Informed Albury and District LALC that the planned fieldwork is postponed due to process issues on Jacobs' end
Informed Ken Murray that fieldwork is postponed due to process issues. Ken said that he and Sam were in the same location, and he would pass the news on to Sam.
Left message on Sam's phone to inform him that fieldwork is postponed.
Informed Yalmambirra that fieldwork is postponed due to process issues.
Returning Jacobs' call. Informed Sam that fieldwork is postponed due to process issues.
Asked if the employment paperwork can be filled out in the field on the day of fieldwork.
Informed Yalmambirra that Jacobs will print off copies of the paperwork, to fill out at the start of fieldwork. Stated that fieldwork has not yet been re-scheduled, but that RAPs will be contacted soon to arrange a new date for the survey.

Supply of ACHAR (old project area, document now superseded)				
14-Jan-20	Yalmambirra	Jacobs	email	Supplied draft ACHAR for review and comment
14-Jan-20	Albury and District Local Aboriginal Land Council	Jacobs	email	Supplied draft ACHAR for review and comment
14-Jan-20	Wiradjuri Council of Elders	Jacobs	email	Supplied draft ACHAR for review and comment
14-Jan-20	Wiradjuri Council of Elders	Jacobs	email	Supplied draft ACHAR for review and comment
15-Jan-20	Ken Murray	Jacobs	Post	Supplied draft ACHAR for review and comment
Organising survey of ammended project area				
2-Jun-20	Yalmambirra	Jacobs	Email	Contacted to advise of the need for a second survey, asked if satisfied for the survey to go ahead without issuing a new method document, and asked about availability to participate in the survey.
2-Jun-20	Albury and District Local Aboriginal Land Council	Jacobs	Email	Contacted to advise of the need for a second survey, asked if satisfied for the survey to go ahead without issuing a new method document, and asked about availability to participate in the survey.
2-Jun-20	Ken Murray	Jacobs	Phonecall	Contacted to advise of the need for a second survey, asked if satisfied for the survey to go ahead without issuing a new method document, and asked about availability to participate in the survey.
11-Jun-20	Ken Murray	Jacobs	Phonecall	Discussed the proposed survey, the reasons for the survey being carried out, and the proposed date. Confirmed that Ken is happy for the survey to go ahead following the original method document.
11-Jun-20	Albury and District Local Aboriginal Land Council	Jacobs	email	Informed of the proposed date of the survey (June 26th), as well as meeting time and place
11-Jun-20	Yalmambirra	Jacobs	email	Informed of the proposed date of the survey (June 26th), as well as meeting time and place
15-Jun-20	Jacobs	Albury and District Local Aboriginal Land Council	Phonecall	Confirmed availability of a fieldworker for the proposed survey date
18-Jun-20	Yalmambirra	Jacobs	Phonecall	Confirmed Yalmambirra's availability for the survey date
22-Jun-20	Ken Murray, Sam Wickman, Andom Rendell (Albury and District LA Jacobs)		Phonecall	Discussed the procedures for minimising the risk of Covid-19 transmission proposed to be carried out on the survey. Confirmed that Ken and his representative Sam Wickman are happy with the measures and happy for the survey to go ahead. Andom Rendell, the fieldworker for the Albury and District LALC was also present on the call, and also happy with the measures and for the survey to go ahead.
24-Jun-20	Yalmambirra	Jacobs	Phonecall	Discussed the procedures for minimising the risk of Covid-19 transmission proposed to be carried out on the survey. Confirmed that Yalmambirra is happy with the measures and happy for the survey to go ahead.
Supply of ACHAR (ammended project area)				
13-Jul-20	Yalmambirra	Jacobs	email	Supplied draft ACHAR for review and comment
13-Jul-20	Albury and District Local Aboriginal Land Council	Jacobs	email	Supplied draft ACHAR for review and comment
13-Jul-20	Wiradjuri Council of Elders	Jacobs	email	Supplied draft ACHAR for review and comment
13-Jul-20	Ken Murray	Jacobs	phonecall	Asked if Ken Murray has an email address to send the ACHAR to, confirmed that he would like it to be posted and also emailed to him via Sam Wickman's address
13-Jul-20	Sam Wickman, as a representative for Ken Murray	Jacobs	email	Supplied draft ACHAR for review and comment
13-Jul-20	Ken Murray	Jacobs	post	Supplied draft ACHAR for review and comment
Responses to ACHAR				
26-Jul-20	Jacobs	Yalmambirra	email	Responded to ACHAR draft. Stated that he is happy with the report, and the suggested form of further archaeological investigation (test pit excavations).

Appendix C. Project Information and method document



Hume BESS

Meridian Energy Australia

Project information and method

D1 | R1

October 08, 2019



Hume BESS

Project No: IA213400
 Document Title: Project information and method
 Document No.: D1
 Revision: R1
 Date: October 08, 2019
 Client Name: Meridian Energy Australia
 Client No: Client Reference
 Project Manager: Thomas Muddle
 Author: Oliver Macgregor
 File Name: J:\IE\Projects\04_Eastern\IA213400\21 Deliverables\Heritage\Consultation\Stage 2-3 consultation\Hume BESS Project Information and Method D1R1.0.docx

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Document history and status

Revision	Date	Description	By	Review	Approved
R0	30/9/2019	1 st Draft Project Information and Method	Oliver Macgregor	Rose Overberg	30/09/2019
R1	30/9/2019	Draft following internal heritage review	Oliver Macgregor	Thomas Muddle	30/09/2019

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Executive Summary

Meridian Energy Australia Pty Ltd (Meridian) operate the Hume Dam Hydro Power Station, located approximately 11 kilometres (km) east of Albury, New South Wales (NSW). Meridian are proposing to construct a Battery Energy Storage System (BESS) and associated infrastructure required to link the BESS to the Hydro Power Station and to existing electricity transmission lines. The Hume BESS Project (referred to here as 'the Project') will increase the Hydro Power Station's capacity to supply electricity to the grid and respond to increases and decreases in demand.

This document presents the proposed method for the assessment of Aboriginal cultural heritage. The information and results of the survey will be documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the Project.

The features of the Project are presented in Figure 2-1 and would include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity network distribution feeder connections from the existing switchyard to the BESS
- Construction of fencing around the perimeter of the BESS compound.

The Aboriginal cultural heritage assessment will involve the following tasks:

- Desktop assessment of what is known about the archaeological resource of the project area and its surrounds from previous research.
- Development of a method for archaeological survey (this document).
- Survey of the areas proposed to be impacted by the project.
- Reporting – an ACHAR will be prepared to the requirements of the *Code of Practice* (DECCW 2010b), the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). The report will:
 - Synthesise the results of technical investigations, including the desktop assessment and archaeological survey
 - Include an assessment of the significance of any Aboriginal objects and record any Aboriginal cultural heritage values identified
 - Include an impact assessment and provide management and mitigations measures to inform any AHIP application as required.
- The ACHAR will be reviewed by RAPs. Information, comments and feedback received from RAPs will be incorporated into the final version of the report.
- Site records on the AHIMS database will be updated as necessary.

The field survey will systematically investigate the areas proposed to be impacted. The survey is anticipated to take half a day (4 hours).

This document is provided to all Registered Aboriginal Parties (RAPs) to invite comments and feedback on the proposed Aboriginal cultural heritage assessment process. RAPs are also invited to provide information on the cultural significance and values of Aboriginal objects and places relevant to the area of proposed works.

Abbreviations and acronyms

ACHAR	Aboriginal Cultural Heritage Assessment Report
BESS	Battery Energy Storage System
Meridian	Meridian Energy Australia Pty Ltd
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
DECCW	Department of Environment, Climate Change and Water NSW
DPIE	Department of Planning, Industry and Environment
Jacobs	Jacobs Engineering Group (Australia) Pty Ltd
LGA	Local Government Area
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party

1. Introduction

1.1 Background and purpose of this document

Meridian Energy Australia Pty Ltd (Meridian) operate the Hume Dam Hydro Power Station, located approximately 11 km east of Albury NSW. Meridian are proposing to construct a Battery Energy Storage System (BESS) and associated infrastructure required to link the BESS to the Hydro Power Station and to existing electricity transmission lines. The Hume BESS Project (referred to here as 'The Project') will increase the Hydro Power Station's "dispatchability", which is the effectiveness with which it can supply electricity to the grid and respond to increases and decreases in demand. The BESS will be able to store excess electrical energy produced by the Hydro Power Station during times of low demand. This stored energy will then be available to be released into the grid during periods of high demand.

The Project would be carried out on WaterNSW land located on the northern side of the Murray River, adjacent to the Hume Dam Hydro Power Station, in the Albury City Council Local Government Area (LGA).

Jacobs, on behalf of Meridian, is currently drafting an Environmental Impact Statement (EIS) for the assessment of the Project, in accordance with Division 4.7 of the *Environmental Planning and Assessment Act 1979 (NSW)*.

This document presents the proposed method for the assessment of Aboriginal cultural heritage through the archaeological survey of the area of proposed works (hereafter referred to as the 'project area'). The results of this assessment will be presented in an Aboriginal Cultural Heritage Assessment Report (ACHAR).

This proposed methodology has been designed to conform to the requirements of the following advisory documents and guidelines:

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b)

1.2 Objective of community consultation

Consultation provides the Aboriginal community the opportunity to improve assessment results by:

- Sharing relevant information about the cultural significance and values of Aboriginal object(s) and/or place(s).
- Contributing to the assessment of cultural and scientific significance of Aboriginal object(s) and/or place(s).
- Reviewing and commenting on the proposed methods of assessing cultural heritage within the project area (this document).
- Contributing to the development of cultural heritage management options and recommendations for Aboriginal object(s) and/or place(s) within the subject area. Commenting and providing feedback on the draft Aboriginal Cultural Heritage Assessment Report (ACHAR) before it is submitted to the relevant government agency.

2. Project information

2.1 The Hume Dam BESS

The Hume Dam Hydro Power Station was commissioned in 1957, and comprises two turbines each producing 29MW of electrical power. The Hydro Power Station supplies electricity to both Albury in New South Wales and Wodonga in Victoria. The amount of power the Hydro Power Station can produce is dependent, in part, on the rate at which water flows through the Hume Dam. This rate of water flow is regulated by water release instructions and downstream water level requirements. This means that the Hydro Power Station has a limited capacity to respond to increases and decreases in demand from electricity users.

Construction of a Battery Energy Storage System would increase the Hydro Power Station's capacity to respond to changes in demand for electricity. The BESS would store energy produced by the Hydro Power Station during periods of low demand and supply this energy to the grid during periods of high demand. This would enable the Hydro Power Station to control the rate at which energy is supplied to the grid, and to optimise that rate in response to the needs of electricity users.

The Project aims to showcase the relevance and opportunities offered by coupling a BESS with an existing Hydro Power Station that is subject to water release regulations. By enabling the Hydro Power Station to respond to changes in demand from the grid, The Project will maximise the economic benefits of the electricity the Power Station generates. If proven successful, this project could be replicated at other midscale run-of-river hydropower systems in Australia.

The BESS itself would comprise batteries housed within containers or similar protective structures. These structures would be mounted on concrete footings, and would consequently involve excavation and other ground-disturbance works.

Two areas have been identified as possible locations for the BESS. Both areas will be subject to the assessment process outlined in this document.

An underground electricity cable would be laid to link the BESS with the existing switchyard adjacent to Hume Dam. Other ancillary infrastructure would include upgrades to the existing switchyard, and the construction of fences around the BESS.

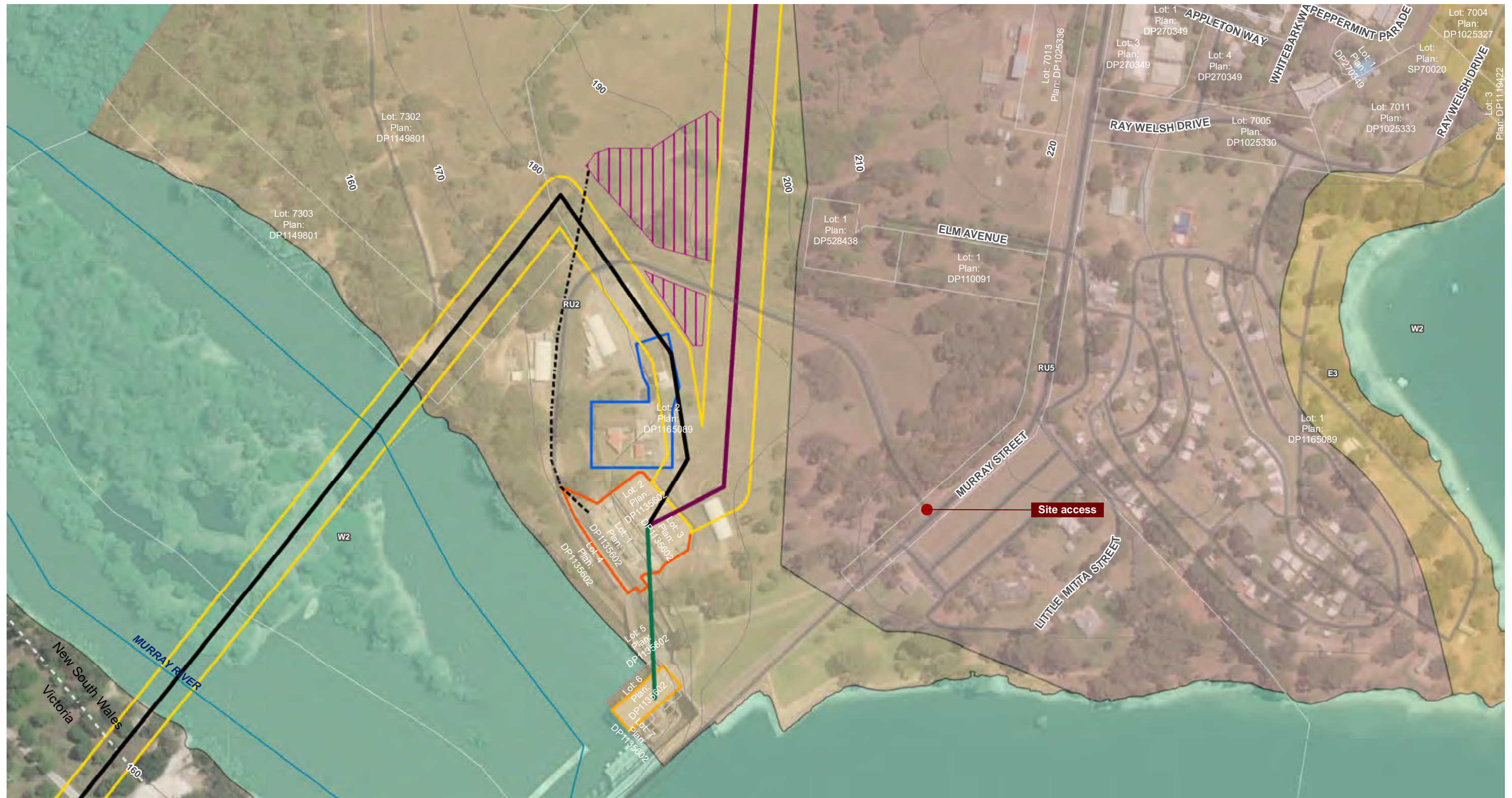
During construction, additional areas would be impacted by construction vehicle movements and equipment laydown areas. The maximum disturbance area for the Project would be less than one hectare. The permanent infrastructure (BESS, underground cable and ancillary upgrades to the switchyard) is anticipated to occupy a footprint of 0.5 hectares.

The BESS is intended to have an operational life of 30 years. Following the end of economic life, above ground components would be removed and land rehabilitated to achieve a safe, stable and non-polluting state.

2.2 What is being proposed

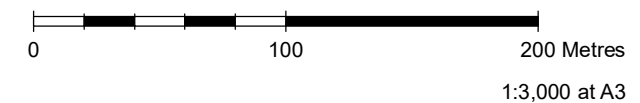
The features of the Project are presented in Figure 2-1 and would include:

- Installation of a 20MW/40MWh BESS
- Ancillary upgrades to the existing substation switchyard
- Underground electricity network distribution feeder connections from the existing switchyard to the BESS
- Construction of fencing around the perimeter of the BESS compound



Legend

- Site access
- Proposed 11kV cable - From switchyard to battery
- ▨ Potential battery locations
- - - - New South Wales/Victoria state boundary
- Contours (10 metres)
- Watercourse
- ▭ Cadastral extent
- NSW LEP zoning**
 - ▭ E3 Environmental Management
 - ▭ RU2 Rural Landscape
 - ▭ RU5 Village
 - ▭ W2 Recreational Waterways
- 132 kV transmission line to Albury (NSW)
- 66 kV transmission line to Wodonga (Victoria)
- Connection from power station to switchyard
- ▭ Existing power station
- ▭ WaterNSW Offices
- ▭ Meridian switchyard
- ▭ Typical easement buffer for the 66kV line (15 m) and the 132 kV line (20 m)



Data sources

Jacobs 2019
 NSW Spatial Services 2019
 Geoscience Australia 2019
 Imagery: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGrid, IGN and the GIS User Community

GDA94 MGA55

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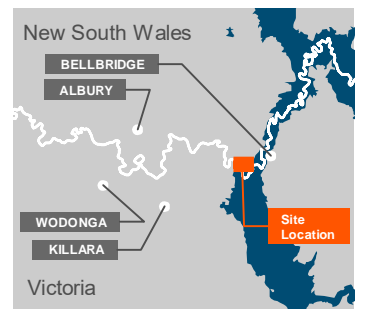


Figure 1 Hume BESS - Site layout

3. Existing cultural heritage information

3.1 Aboriginal context

The Murray River was one of the most densely populated regions in pre-contact Australia, with Aboriginal occupation probably heaviest around the central and lower portions of the river (Mulvaney and Kamminga 1999: 303). The population along the river corridor was sustained by the abundant and diverse plant and animal resources associated with the river, swamps and billabongs. In the upper portion of the Murray, where the Project area sits, Aboriginal people would have had access to a relatively fertile hinterland, with higher rainfall than the semi-arid or arid hinterland found around the central and lower Murray. The hinterland around Albury and further up the Murray also contains hilly and mountainous regions, providing greater variation in altitude and a greater variety of ecological zones. Consequently, terrestrial plant and animal resources would often have been more variable in the upper portion of the Murray than in the central or lower portion, although riverine resources would generally have been less rich.

High population density along the Murray River is likely to have resulted in Aboriginal groups having small territories relative to groups in less resource-rich parts of Australia (Birdsell 1953; Pardoe 1988; 1994; Webb 1995). These densely clustered groups would have had a greater affinity, genetically and culturally, with one another than they had with non-riverine groups living in the hinterland (Clarke 2009; Pardoe 1994; 2006).

Accurately reconstructing pre-contact Aboriginal lifeways in the Murray River region is limited by several factors. A paucity of reliable or comprehensive data from early historic observations of Aboriginal groups is the most important limiting factor. Historical records on the Aboriginal inhabitants of the Albury region are limited (Clark *et al.* 2003).

The impact of disease and violence by European settlers had serious impacts on Aboriginal groups' population numbers, territories, demographics, and capacity to continue traditional practices. Historic records, consequently, generally consist of observations of a people whose lives were different from the pre-contact period (Hiscock 2008: 12-17). The ethnographic picture of Aboriginal groups constructed from historic records should not be assumed to be an accurate representation of pre-contact Aboriginal Australia (Hiscock 2008: 17 - 19).

Tribal boundaries in the region are imperfectly understood, and it is highly probable that many details of tribes and groups that existed prior to European arrival have been lost. Various attempts have been made to map the territorial boundaries of Aboriginal groups along the Murray (Tindale 1940; Tindale 1974). These tribal boundaries are primarily based on the ranges of different language groups, and so do not preserve any finer-grained distinctions between groups that might have existed as different entities while speaking the same language.

The studies cited above place the study area within the boundaries of the Wiradjuri language group, with the Dhudhuroa language group extending from the southern bank of the river into Victoria. A number of different names have been recorded for Aboriginal groups living on the Victorian side of the river in the Albury-Wodonga area: Tindale's (1940) map depicts the Pangeran group occupying this region, while the more recent AIATSIS map depicts the Waveroo and Jaitmatang groups occupying territories southwest and southeast of Albury-Wodonga respectively (Horton 1996). Tindale's (1940) map depicts the Wiradjuri territory extending northwards from the Murray to Mudgee and Dubbo in the northeast, and Ivanhoe in the northwest.

The overall number of different Aboriginal groups and the location of their territorial boundaries were severely affected by a smallpox epidemic beginning in or before 1789. Soon after the first European settlement in NSW, the arrival of smallpox in the local Aboriginal population was recorded. Despite the coincidence of these two events, it is now known that smallpox had originally been contracted by Aboriginal people living in Arnhem Land,

who caught the disease from fishermen from Southeast Asia (Butlin 1985; Campbell 2002; Macknight 1986). The disease had spread across the continent to arrive in NSW.

Mortality rates from the epidemic are difficult to measure precisely, but are likely to have been around 80 percent (Butlin 1983). Mortality could plausibly have been as high as 98 percent based on observations of smallpox's effects on previously unexposed populations in other continents (Hiscock 2008: 14). The epidemic resulted in movements of people across the landscape, and possibly the disappearance of some previously existing groups. Governor Arthur Phillip recorded that, in the Sydney region, many Aboriginal people migrated inland, away from the European settlement, in an attempt to escape the disease (Phillip 1789). Lieutenant-Governor David Collins recorded a group that had been reduced to three survivors negotiating to merge with another group, and also observed a group that had been reduced to a single survivor (Collins 1798). The mortality rates from smallpox are likely to have been particularly high in the dense populations along the Murray River (Mulvaney and Kamminga 1999: 68).

The impact of the smallpox epidemic on the distribution of Aboriginal groups across the landscape is likely to have been severe. Hiscock (2008: 14) sums up the effect of smallpox by stating it would have "altered the operation of Aboriginal life". This alteration resulted from the reduction in population and other effects flowing on from this. The possible disappearance of some groups through mortality and group mergers, the mass migration of people fleeing the disease, the depopulation of areas, and the incursion of groups into abandoned or depopulated lands, would have substantially altered the social landscape of Aboriginal groups that had existed prior to the epidemic. The tribal boundaries mapped by European researchers after contact are those of a population that had survived the epidemic (and further epidemics that followed) and had adapted their occupation of the landscape in response to it. Subsequent disease epidemics of smallpox, measles, influenza, and venereal diseases followed in the years after European settlement.

Violence toward Aboriginal populations from European settlers would probably have had effects similar to disease. Frontier violence was particularly severe along the Murray River in general (Clarke 2009), and at least one massacre occurred near the Project area, at Tabletop Mountain adjacent to the river just above Lake Hume (Smithwick 2003). In this massacre, at least twelve Aboriginal people of the Wiradjuri group were killed by European settlers as a reprisal for the killing of two European stockmen.

The impact of violence on Aboriginal groups and the operation of Aboriginal society was probably substantial (Clarke 2009). Conflict with European settlement would have altered the ways in which Aboriginal society functioned, compared with the pre-contact period. As with disease, conflict caused Aboriginal groups to move off land they had previously occupied, to give up sources of food and other resources that they had previously utilized, and to alter their use of the landscape to avoid the risk of encountering European settlers. Conflict, like disease, would have drastically altered the distribution of Aboriginal groups across the landscape. The areas occupied by groups before European contact, and the overall number of groups, is likely to have differed from the picture we have from post-contact historical records.

3.2 Aboriginal Heritage Information Management System (AHIMS) searches

Andrew Costello of Jacobs carried out searches of the AHIMS on 8th July 2019. The searches were for the area of Lot 2 DP 11665089, with buffer-zone of 200 metres (m).

No previously recorded sites are present within Lot 2 DP1165089.

No previously recorded sites are present within 200m of Lot 2 DP 1165089.

3.3 Previous archaeological assessments in the project area and surrounding region

A large scale systematic archaeological survey was carried out at Lake Hume (National Heritage Consultants 2007), commissioned by Goulburn-Murray Water and overseen by a Steering Committee representing relevant Aboriginal community organisations, government departments and agencies involved in administering Lake Hume, and Victorian and NSW heritage regulatory agencies. The survey recorded a total of 441 sites (including isolated finds) – 289 in Victoria and 152 in NSW. These sites comprised 358 artefact scatters, 79 isolated finds, three possible scarred trees and one Aboriginal historic place. There were approximately 1.86 sites located per kilometre of survey transect within the study area.

Kamminga undertook several interim reports on small areas subject to development works at Lake Hume, including: an assessment of Aboriginal stone artefacts on the bank of Lake Hume (Mitta Mitta Arm) at Tallangatta, Victoria (Kamminga 2002); an examination of Aboriginal heritage sites at Ludlows Reserve (Kamminga 2004a); a study of the Aboriginal heritage sites at the proposed Kurrajong boat ramp site, Lake Hume, Victoria (Kamminga 2006), and; a report on Indigenous heritage sites identified in the vicinity of the Tallangatta town water offtake site, Lake Hume, Victoria (Kamminga 2004b).

O'Halloran (2000) undertook a thesis on submerged heritage, examining threats to archaeological sites on the bottom-lands of Lake Hume.

Witter and Kelly (2002) conducted an archaeological survey of the Lake Hume foreshore, with analysis and risk assessment for proposed changes in the lake level.

3.4 Predictive model

The following predictive model is used to identify areas of archaeological sensitivity. The model is based on a 'land system' or 'archaeological landscape' model of site location. This type of model predicts site location based on known patterns of site distribution in similar landscape regions.

The predictive model is based on:

- A review of previous models developed for the Project area.
- An assessment of the results of the previous archaeological assessments reviewed in Section 3.3.
- The interpretation of the distribution patterns of known sites close to the Project area.
- A study of previous impacts to the Project area and the potential effects of these impacts on the archaeological record.

The following specific predictive model has been developed for the Project area:

- Elevated landforms adjacent to watercourses have high archaeological potential. Existing archaeological data for the Murray River region indicate a strong trend for the presence of open sites along watercourses, specifically, on river and creek banks and elevated 'flats', terraces, and bordering slopes.
- Landforms adjacent to permanent watercourses have a higher archaeological potential than those adjacent to ephemeral watercourses.
- The most common site type will be open sites containing surface or sub-surface scatters of stone artefacts.
- Other site types that may present in the landscape are scarred trees, hearths, quarries, and grinding grooves. It is noted that no hearths or grinding grooves have been recorded to date in the surrounding region, so the occurrence of these sites occurring is presumed to be low.

A number of post-depositional processes can result in disturbance or destruction of archaeological sites. Identifying areas of high disturbance is an important factor in the predictive model. Disturbance can alter the patterns of site location expected from the points above. The following general predictive points relate to the effects of site disturbance:

- Landforms adjacent to watercourses and which have been subject to frequent or high-energy flooding events will have reduced archaeological potential.
- Steep hillslopes have reduced archaeological potential, as sites will be more likely to have been displaced by downslope movement and surface erosion.
- European land-use practises can have a range of impacts to sites. Road corridors will have low archaeological potential, particularly if heavily graded or capped with imported material. Areas that have been excavated, inundated by dammed watercourses, or buried under fill or stockpiled materials will have low to no archaeological potential.

Many post-depositional processes result in the movement of artefacts away from their original location and context, without resulting in damage or destruction to the artefacts themselves. Some post-depositional processes will result in the destruction of some, but not all, artefacts within a site. Only severe impacts will destroy or remove all Aboriginal objects from a landform. Factoring post-depositional disturbance into the assessment of a landform's archaeological potential should consequently take a precautionary approach. A landform should be assumed to retain archaeological potential unless there is compelling evidence for severe disturbance that can be confidently inferred to have removed all sites from the landform.

4. Proposed methodology for the cultural heritage assessment

4.1 Aboriginal Cultural Heritage Assessment

The Aboriginal cultural heritage assessment will involve the following tasks:

- Desktop assessment of what is known about the archaeological resource of the project area and its surrounds from previous research.
- Development of a method for archaeological survey (this document).
- Survey of the areas proposed to be impacted by the project.
- Reporting – an ACHAR will be prepared to the requirements of the *Code of Practice* (DECCW 2010b), the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). The report will:
 - Synthesise the results of technical investigations, including the desktop assessment and archaeological survey
 - Include an assessment of the significance of any Aboriginal objects and record any Aboriginal cultural heritage values identified
 - Include an impact assessment and provide management and mitigations measures to inform any AHIP application as required.
- The ACHAR will be reviewed by RAPs. Information, comments and feedback received from RAPs will be incorporated into the final version of the report.
- Site records on the AHIMS database will be updated as necessary.

4.2 Aboriginal community input points during the assessment process

Input and feedback can be provided by RAPs at any time throughout the assessment process. Jacobs will specifically seek input and feedback from RAPs at several points during the process (following procedures outlined in DECCW 2010a):

- During Stage 2 – Initial presentation of information about the proposed project.
- During Stage 3 - Providing RAPs with the draft proposed method (this document). RAPs are invited to provide feedback on the proposed method, and to identify cultural heritage values associated with the project area.
- During fieldwork.
- During Stage 4 - Providing RAPs with the draft Aboriginal Cultural Heritage Assessment Report. RAPs will be invited to provide feedback on the report, and any further information they wish to be included.

4.3 Archaeological Field Survey

The field survey will systematically investigate the area proposed to be impacted by the project.

The ground survey team will consist of one archaeologist as well as Aboriginal representatives. The field survey aims to identify any Aboriginal objects and areas of Potential Archaeological Deposit (PAD) within the area proposed to be impacted by the Project.

The survey will be carried out on foot and will investigate the proposed impact area in full. No sub-sampling of the area will be employed.

Where archaeological sites or PADs are encountered, the following attributes will be recorded:

- Site location (single point for isolated artefacts, or as a boundary drawn around larger sites such as artefact scatters or areas of PAD);
- Site type;
- Landform context;
- Vegetation type;
- Land use;
- Categories of features and artefacts present on the site;
- Orientation/aspect of the site;
- Observations on individual stone artefacts: stone material type; artefact type; platform surface; platform type; termination type; cross-section category; length, width and thickness in millimetres;
- Observations on modified trees: living status of tree; condition of tree; condition of scar; tree species; length and width of scar; height above ground; presence of regrowth; depth of scar (height of regrowth); shape of scar; orientation of scar; presence/absence of axe marks;
- Observations of other specific site types (grinding groove, art, shell scatter, closed site) following the requirements of DPIE site recording forms;
- Photographs of the site and individual site features/artefacts will be taken as judged necessary by the field team;
- Any other comments or information as judged relevant by the field team.

The survey will also record land disturbance, survey coverage variables (ground exposure and archaeological visibility) and landform types across the project area.

Data will be captured using iPad notebooks, handheld GPS, and compact digital camera. Standard measuring tools such as tape measures and callipers will be used.

4.4 Survey logistics and requirements for Aboriginal participants

At least five days prior to fieldwork, Jacobs will contact RAPs with details of fieldwork schedule, including meeting location, start and finish times, and expected fieldwork duration. Details of relevant inductions and safety regulations applying to the Project area will also be communicated to RAPs at that time.

It is anticipated that the survey will take half a day (four hours) in total.

4.5 Sensitive cultural information and management protocol

RAPs have the opportunity to provide Jacobs with information on the project area and the surrounding region, including information on cultural heritage values. Information will be accepted at any point during the cultural heritage assessment process prior to the finalisation of the ACHAR (see section 4.2).

It is possible that during this consultation process, RAPs will provide sensitive cultural information to which access needs to be restricted.

In the event that such information is supplied, the RAP supplying the information should state to Jacobs how they wish that information to be treated, and how access to the information should be restricted.

Jacobs will follow the stated wishes provided by the RAP group in question when managing and using the information provided to Jacobs. All stated restrictions of access, communication and publication of the information will be followed. These might include:

- Restrictions on reproducing the information (in whole or in part) in reports
- Restrictions on reproducing the information in reports provided to different audiences (for example, the version provided to the client, the version provided to DPIE and the AHIMS database)
- Restrictions on communication of the information in other ways
- Restrictions on the location/storage of the information
- Other required processes relating to handling the information
- Any names and contact details of persons authorised within the relevant Aboriginal group to make decisions concerning the information, and their degree of authorisation.
- Any details of any consent given in accordance with customary law
- Any restrictions on access to and use of the information by RAPs.

4.6 Critical timelines

Critical timelines are outlined in Table 4-1 overleaf. Please note that the following deadlines are estimates at this stage in the process and are provided to allow forward planning of personnel and resources.

Table 4-1: Critical timelines for the Hume BESS project

Project Item	Date
Provision of comments on the proposed methodology presented in this document	Until October 31, 2019
Archaeological survey	November 1, 2019
Provision of the draft ACHAR (which include the proposed management and mitigation measures) to RAPs for review.	November 15, 2019
Provision of comments from RAPs on the draft ACHAR	December 13, 2019
Gathering of information on cultural significance and cultural values associated with Aboriginal objects and places within or relevant to the project area	Until December 13, 2019
Finalisation of the ACHAR in consideration of comments received	December 20, 2019

4.7 Contact details

For more information and to discuss this project, please do not hesitate to contact:

Oliver Macgregor

Senior Archaeologist

Jacobs

Level 1, 64 Allara Street, Canberra ACT 2601

oliver.macgregor@jacobs.com

(02) 6246 2716

5. References

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Appendix D. AHIMS search results

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : IA213400 Hume BESS

Client Service ID : 514807

SiteID	SiteName	Datum	Zone	Context	Site Status	SiteFeatures	SiteTypes	Reports
61-1-0107	WTA-4	AGD	55	Open site	Valid	Artefact : -		102166
	<u>Contact</u>	<u>Recorders</u>	Joan			<u>Permits</u>		
61-1-0238	Thurgoona 001	GDA	55	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	<u>Contact</u>	<u>Recorders</u>	Olive	aeology,Mr.Oliver Brown		<u>Permits</u>		
61-1-0239	Thurgoona 002	GDA	55	Open site	Partially Destroyed	Artefact : 6		
	<u>Contact</u>	<u>Recorders</u>	Olive	aeology,Mr.Oliver Brown		<u>Permits</u>	3941,3957	
61-1-0249	ThurgoonalF03	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0250	ThurgoonalF04	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0251	ThurgoonalF05	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0252	ThurgoonalF08	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0253	ThurgoonalF09	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0254	ThurgoonalF10	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0255	ThurgoonalF11	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	
61-1-0256	ThurgoonalF12	GDA	55	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>		
61-1-0257	ThurgoonalF13	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>		
61-1-0241	Thurgoona003	GDA	55	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>		
61-1-0242	Thurgoona004	GDA	55	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.O			<u>Permits</u>	3941	

Report generated by AHIMS Web Service on 23/06/2020 for Oliver Macgregor for the following area at Datum :GDA, Zone : 55, Eastings : 498970 - 506970, Northings : 6000720 - 6008720 with a Buffer of 0 meters. Additional Info : Aboriginal cultural heritage assessment for proposed development project. Number of Aboriginal sites and Aboriginal objects found is 36

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : IA213400 Hume BESS

Client Service ID : 514807

SiteID	SiteName	Datum	Zone	Context	Site Status	SiteFeatures	SiteTypes	Reports
61-1-0243	Thurgoona005	GDA	55	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>	3941	
61-1-0244	Thurgoona006	GDA	55	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>	3941	
61-1-0245	Thurgoona IF01	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>		
61-1-0246	Thurgoona IF02	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>	3941	
61-1-0247	Thurgoona IF07	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>		
61-1-0248	Thurgoona IF06	GDA	55	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Ol			<u>Permits</u>	3941	
61-1-0001	Galloway Park;Mitta Junction;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1464,102166
	<u>Contact</u>	<u>Recorders</u>	Ms.E			<u>Permits</u>		
61-1-0002	Galloway Park;Mitta Junction;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1464,102166
	<u>Contact</u>	<u>Recorders</u>	Ms.E			<u>Permits</u>		
60-3-0013	Galloway Park;Albury;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	231,742,102166
	<u>Contact</u>	<u>Recorders</u>	Ms.E			<u>Permits</u>		
60-3-0014	Galloway Park;Albury;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	231,102166
	<u>Contact</u>	<u>Recorders</u>	ASRS			<u>Permits</u>		
60-3-0015	Galloway Park;Albury;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	231,102166
	<u>Contact</u>	<u>Recorders</u>	Ms.E			<u>Permits</u>		
60-3-0016	Galloway Park;Albury;	AGD	55	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	231,102166

Report generated by AHIMS Web Service on 23/06/2020 for Oliver Macgregor for the following area at Datum :GDA, Zone : 55, Eastings : 498970 - 506970, Northings : 6000720 - 6008720 with a Buffer of 0 meters. Additional Info : Aboriginal cultural heritage assessment for proposed development project. Number of Aboriginal sites and Aboriginal objects found is 36

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : IA213400 Hume BESS

Client Service ID : 514807

SiteID	SiteName	Datum	Zone	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Ms.E			<u>Permits</u>		
61-1-0102	HB-IF-1;HBIF1;	AGD	55	Open site	Valid	Artefact : -	Isolated Find	102166
	<u>Contact</u>	<u>Recorders</u>	Cent	d Heritage Services Pty Ltd		<u>Permits</u>		
61-1-0161	W1/D4/2	AGD	55	Open site	Valid	Artefact : 3		2495,102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0162	W1/D4/3	AGD	55	Open site	Valid	Artefact : 2		
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0163	W1/D4/4	AGD	55	Open site	Valid	Artefact : 2		102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0164	W1/D4/5	AGD	55	Open site	Valid	Artefact : -		102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0165	W1/D4/6	AGD	55	Open site	Valid	Artefact : -		102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0166	W1/D4/7	AGD	55	Open site	Valid	Artefact : -		102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0160	W1/D4/1	AGD	55	Open site	Valid	Artefact : -		102166
	<u>Contact</u> Searle	<u>Recorders</u>	Doct			<u>Permits</u>		
61-1-0240	RPS ALBIF1	GDA	55	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Mrs.			<u>Permits</u>		
61-1-0271	Hawdon's Lagoon Ring Tree	GDA	55	Open site	Valid	Modified Tree (Carved or Scarred) :		
	<u>Contact</u> Mr.Daniel Clegg	<u>Recorders</u>	Ms.Sophie Richards,WetlandCare Australia			<u>Permits</u>		

Report generated by AHIMS Web Service on 23/06/2020 for Oliver Macgregor for the following area at Datum :GDA, Zone : 55, Eastings : 498970 - 506970, Northings : 6000720 - 6008720 with a Buffer of 0 meters. Additional Info : Aboriginal cultural heritage assessment for proposed development project. Number of Aboriginal sites and Aboriginal objects found is 36

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Appendix E. Unexpected finds protocol

1/64 Allara Street,
Canberra City ACT 2600
PO Box 237, Civic Square ACT 2608
Australia
T +61 2 6246 2700

This protocol is to be followed if a previously unrecorded or unanticipated Aboriginal object (including objects that are suspected to be Aboriginal objects) are encountered during project works.

An Aboriginal object is defined by the National Parks and Wildlife Act 1974 (NSW) 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

This definition includes stone artefacts, midden material, rock art, scarred and carved trees, and burials.

If an Aboriginal object is discovered during project works, the following actions will be taken:

- 1) All ground-disturbing works in the area of the Aboriginal object(s) cease immediately on discovery of the Aboriginal object. The discoverer of the object will notify machinery operators in the area to ensure work is halted.
- 2) The Aboriginal object will not be removed from the area.
- 3) Inform the site supervisor and the development proponent of the discovery.
- 4) Inform the project archaeologist of the discovery. The possibility of obtaining a qualified opinion within a short period of time (from the project archaeologist or similar qualified person) to confirm whether the object is of Aboriginal origin will be considered at this point. A swift assessment of the object can preclude further steps in the protocol being carried out, for objects that are identified as not being of Aboriginal origin. If identification of the object cannot be obtained within a short timeframe, or if the object is confirmed to be an Aboriginal object, proceed to the next step.
- 5) Notify the following organisations:
 - Department of Planning, Industry and Environment (DPIE) - 1300 361 967
- 6) If feasible, leave excavations open (and make safe) so that the location where the Aboriginal object was found can be assessed by the project archaeologist
- 7) Organise the assessment and recording of the finds by a suitably qualified archaeologist. This assessment will determine whether the Aboriginal object is from a new or previously recorded site, and will result in a lodgement of site information with the EESG.
- 8) Clarify and comply with any legal constraints arising from the discovery. This will involve seeking and complying with advice from the EESG. Unless advised otherwise by EESG, constraints will include a halting of all works in the area until a management strategy has been developed and implemented.
- 9) Develop and implement an appropriate management strategy. This will be done in cooperation with the project archaeologist (or other suitably qualified professional) and in consultation with the EESG. The strategy will be developed in consultation with RAPs where appropriate. The strategy must be approved by the EESG prior to being implemented. The strategy developed will

depend on variables that include the assessed significance of the Aboriginal object and the assessed likelihood of further Aboriginal objects being present in the area.

- 10) Where the management strategy for the area involves the resumption of works in the area, with or without salvage of Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) would be required.
- 11) Development works in the area can commence when stipulated by the management strategy.