Technical Report – Aboriginal Cultural Heritage Assessment Report

Virya Energy

Yanco Delta Wind Farm
27 September 2022

Executive summary

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project area is defined as the property boundaries of Project landowners (i.e. landowners that have entered into agreements with Virya Energy to have wind turbine generators (WTGs) or associated infrastructure on their properties). For the purposes of this assessment, the study area is defined as a 100 metre buffer from the disturbance footprint.

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 WTGs, a battery energy storage system (BESS) and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW).

Existing environment

The Project would be located within Murrumbidgee Council Local Government Area (LGA) and Edward River Council LGA, north-west of the Jerilderie township, around the localities of Moonbria and Mabins Well. The Project would be located within the proposed South-West Renewable Energy Zone (REZ), in New South Wales. The Project is located across the boundaries of the Griffith Local Aboriginal Land Council (LALC) and the Cummeragunja LALC area.

A search of the AHIMS database was completed on 1 October 2021. Two previously identified Aboriginal sites are located within the Project area:

- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

An archaeological survey of the study area was undertaken on between 11 and 15 July 2022, which resulted in the identification eight known sites, including:

- Yanco Delta potential archaeological deposit (PAD) 01
- Yanco Delta AS PAD 01
- Yanco Delta AS PAD Hearth 01
- Yanco Delta AS PAD 02
- Yanco Delta AS Hearth 01
- Yanco Delta AS Hearth 02
- Yanco Delta AS 01
- Yanco Delta Hearth 01.

Overview of Aboriginal heritage impacts

Based on the proposed disturbance footprint for the Project, Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 would not be harmed. However, there is the potential for the other four sites to be partially harmed resulting in a partial loss of value. The two registered AHIMS sites PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053) would be harmed, resulting in total loss of value.

Management measures

The following recommendations have been made:

- Where harm to Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01 is unavoidable, a program of preliminary excavation would occur at each location, which would allow management and mitigation measures to be determined. These measures may include salvage excavation or surface collection of artefacts. This program and any associated measure should be completed under the authorisation of the Minister's Conditions of Approval
- Where harm to PEC-E-G2, and PEC-E-43 is unavoidable surface collection of artefacts would be completed under the authorisation of the Minster's Conditions of Approval
- No further action is required for Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 as it will not be impacted by the proposed works
- A Cultural Heritage Management Plan (CHMP) will be developed to provide guidance on the proposed archaeological excavations, as well as a procedure for the identification of unexpected Aboriginal objects and the long-term management of Aboriginal objects retrieved from archaeological excavations
- If suspected human remains are located during any stage of the Project, work should stop immediately, and the NSW police and Coroner's Office should be notified. NSW Heritage should be notified if the remains are found to be Aboriginal ancestor remains
- If changes are made to the Project to include impacts outside the disturbance area as delineated in this document, further archaeological investigation must be conducted.

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Glossary and terms

Term	Definition
AHIMS	Aboriginal Heritage Information Management System
DECCW	Department of Environment, Climate Change & Water
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NPW Act	*National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
SHI	State Heritage Inventory
SHR	State Heritage Register
SSD	State Significant Development

1. Introduction

1.1 Project overview

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW). The Project would be located within the South-West Renewable Energy Zone (REZ), 10 kilometres north-west of the town of Jerilderie, within the Murrumbidgee Council and Edward River Council Local Government Areas (LGAs) (refer to **Figure 1-1**).

The Project area is defined as the property boundaries of Project landowners (i.e. landowners that have entered into agreements with Virya Energy to have WTGs or associated infrastructure on their properties). The Project area is located across the boundaries of the Griffith Local Aboriginal Land Council (LALC) and the Cummeragunja LALC area.

1.2 Project description

The Project would include the following key features:

- Up to 208 WTGs to a maximum tip height of 270 metres
- Generating capacity of approximately 1500 MW
- BESS, approximately 800 MW/800 megawatt hours (MWh) (type yet to be determined)
- Permanent ancillary infrastructure, including operation and maintenance facility, internal roads, hardstands, underground and overhead cabling, wind monitoring masts, central primary substation and up to eight collector substations
- Temporary facilities, including site compounds, laydown areas, stockpiles, gravel borrow pit(s) and concrete batch plants

An indicative Project layout is provided in **Figure 1-2**.

For the purposes of this assessment, the study area is defined as a 100 metre buffer from the disturbance footprint (refer to **Figure 1-3**).

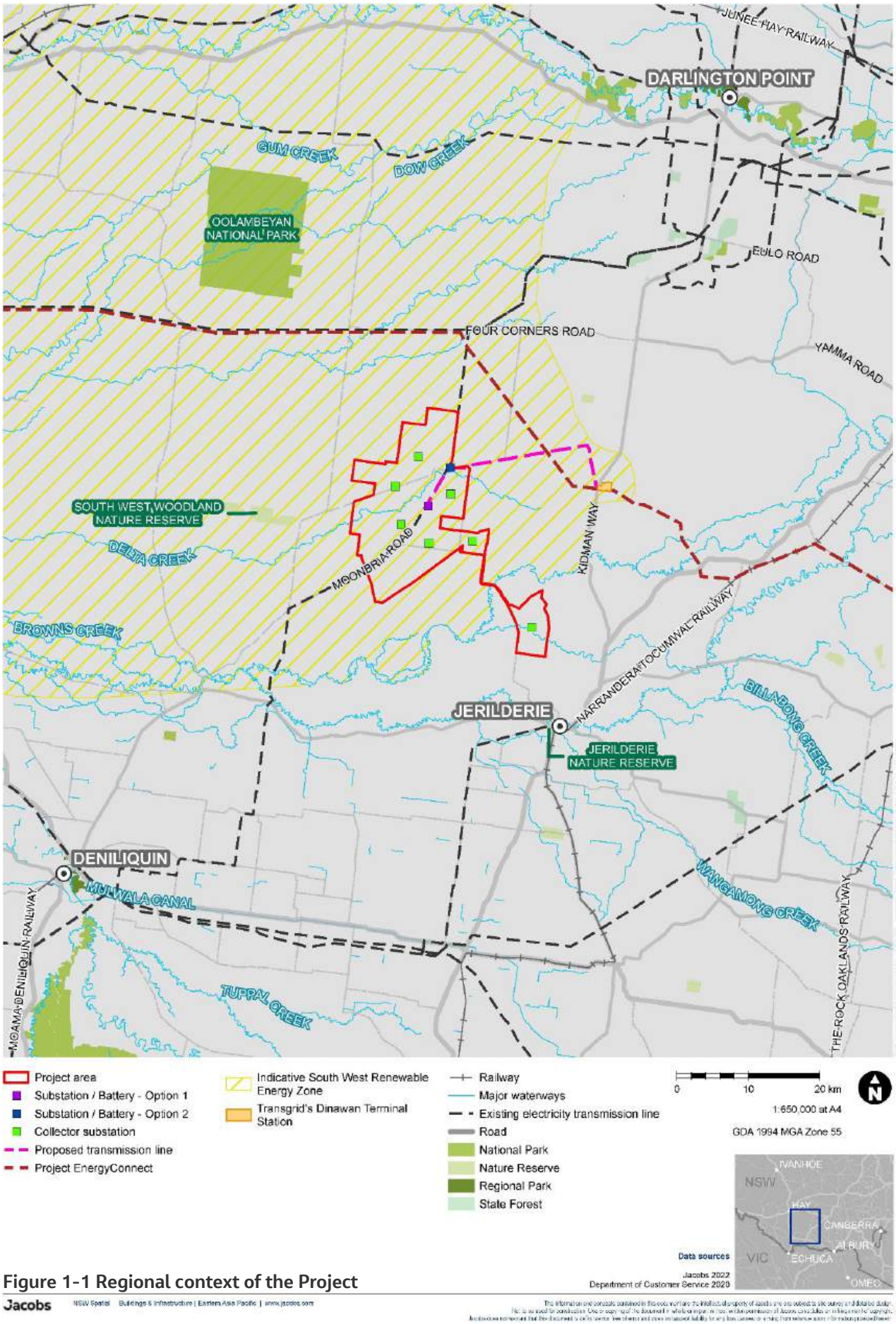

Figure 1-1 Regional context of the Project

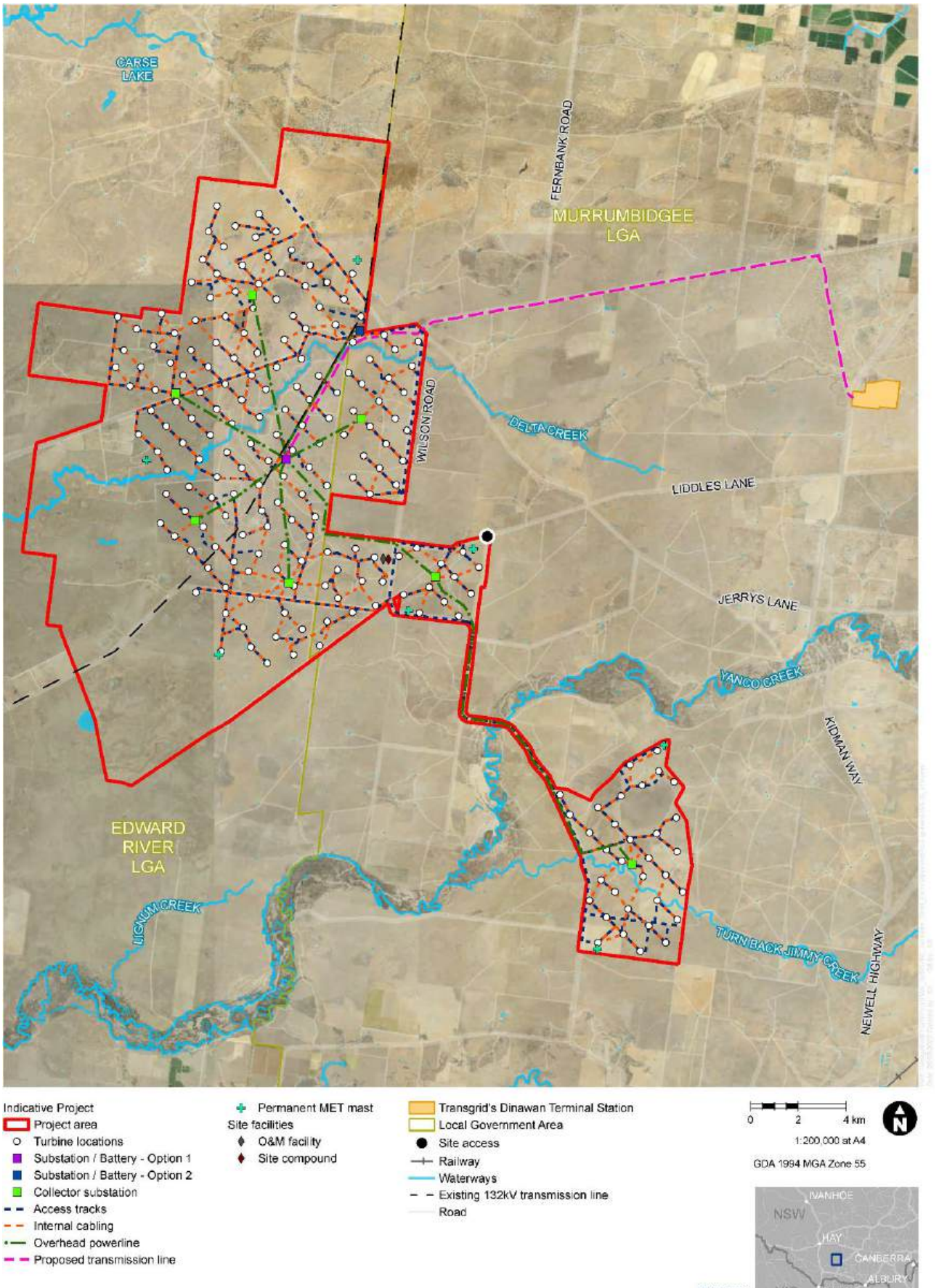

Figure 1-2 Indicative Project layout

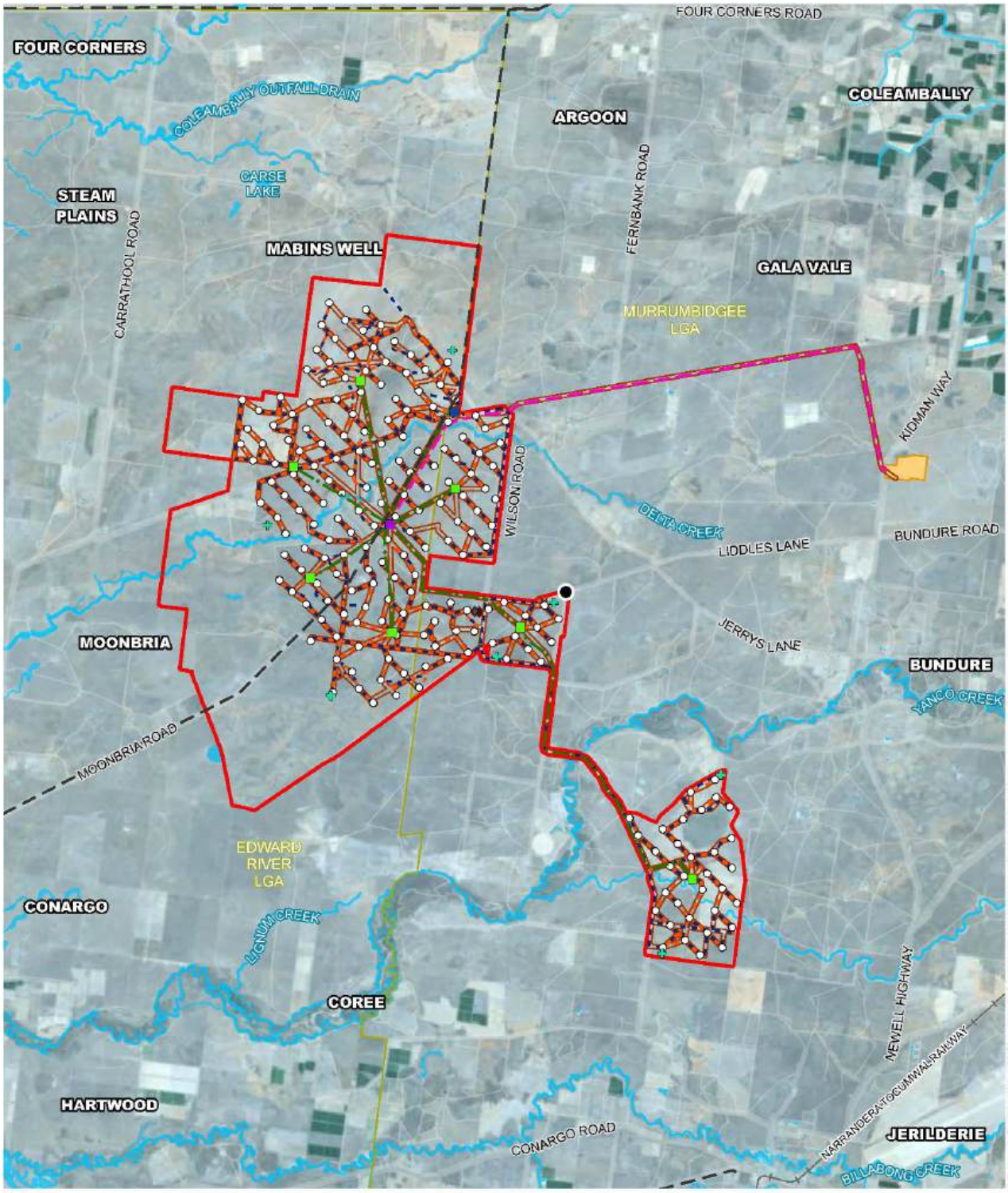

Figure 1-3 Study area

1.3 Secretary's Environmental Assessment Requirements

This assessment forms part of the environmental impact statement (EIS) for the Project. The EIS has been prepared under Division 5.2 of the EP&A Act. This assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD-41743746) relating to Aboriginal impacts and will assist the Minister for Planning to make a determination on whether or not to approve the Project.

Table 1-1 outlines the SEARs relevant to this assessment along with a reference to where these are addressed.

Table 1-1 SEARs relevant to Aboriginal impacts

Secretary's requirement	Where addressed in this report
Heritage - including	
• an assessment of the impact to Aboriginal cultural heritage items (cultural and archaeological) in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010), including the results of archaeological test excavations (if required);	This report is an ACHAR and serves to satisfy this requirement.
• Provide evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (OEH, 2010); and	**Chapter 3**
• An assessment of the impacts to historic heritage having regard to the NSW Heritage Manual;	This requirement is regarding non-Aboriginal heritage values and is covered in the Non-Aboriginal heritage technical report (Jacobs, 2022).

1.4 List of investigators and contributors

This report was prepared by Ryan Taddeucci (Senior Archaeologist, Jacobs), with technical review and management input from Fran Scully (Principal Archaeologist, Jacobs). Archaeological survey was undertaken by Meaghan Aitchison (Project Archaeologist, Jacobs) and Pauline Ramsey (Project Archaeologist, Jacobs). Mapping was prepared by Sarah Ryan (Graduate Spatial Consultant, Jacobs).

1.5 Structure of this report

An overview of the structure and content of this report is outlined in **Table 1-2**.

Table 1-2 Structure of this report

Chapter	Description
Chapter 1 Introduction	Outlines key elements of the Project, SEARs, list of contributors and the structure of this report (this Chapter).
Chapter 2 Legislative and policy context	Provides an outline of applicable legislation, guidelines, plans and strategies relevant to this assessment at both a Commonwealth and state level.
Chapter 3 Summary of Aboriginal stakeholder consultation	Provides a summary of consultation to date with Aboriginal stakeholders
Chapter 4 Environmental context	Provides an overview of desktop research completed prior to field investigations
Chapter 5 Summary of archaeological survey	Provides an overview of the outcomes of the Aboriginal archaeological survey
Chapter 6 Cultural heritage values	Provides a summary of cultural values identified through Aboriginal stakeholder engagement and consultation as well as desktop research.
Chapter 7 Significance assessment	Assessment of the historic, aesthetic, socio/cultural and scientific value of the sites identified during the completion of this assessment.
Chapter 8 Impact assessment	Presents the outcomes of the operational impact assessment
Chapter 9 Management and mitigation measures	Presents the Aboriginal heritage management measures applicable for the project
Chapter 10 Conclusion and recommendations	Summarises the findings of this report and provides recommendations for minimising impacts to Aboriginal heritage
References	Presents details of information sources used in this assessment
Appendix A Aboriginal archaeological report	Provides the details of the archaeological survey for the Project
Appendix B Consultation records	Provides the records of consultation with Aboriginal stakeholders for the Project

2. Legislative and policy context

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 and Water.

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 (NHL) (for items of National heritage significance) or the Commonwealth Heritage List (CHL) (for items of heritage significance on land owned or managed by the Commonwealth). The EPBC Act also enhances the management and protection of Australia's heritage places, including World Heritage properties listed on the World Heritage List (WHL).

The NHL is a list of places with outstanding heritage value to Australia, including places overseas. Any proposed actions on NHL places must be assessed for their impact on the heritage values of the place in accordance with Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (Department of Sustainability, Environment, Water, Population and Communities 2013). The guidelines require the proponent to undertake a self-assessment process to decide whether or not the action is likely to have a significant impact on a MNES, including the national heritage value of places. If an action is likely to have a significant impact an EPBC Act referral must be prepared and submitted to the Minister for approval.

The CHL is established under the EPBC Act. The CHL is a list of properties owned by the Commonwealth that have been assessed as having significant heritage value. Any proposed actions on CHL places must be assessed for their impact on the heritage values of the place in accordance with Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies (Department of Sustainability, Environment, Water, Population and Communities 2013). The guidelines require the proponent to undertake a self-assessment process to decide whether or not the action is likely to have a significant impact on the environment, including the heritage value of places. If an action is likely to have a significant impact an EPBC Act referral must be prepared and submitted to the Minister for approval.

There are no Aboriginal places or items within or near the study area that are listed on the NHL, the CHL or the WHL.

2.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act), deals with Aboriginal cultural property (intangible heritage) in a wider sense. Such cultural property intangible heritage includes any places, objects and folklore that "are of particular significance to Aboriginals in accordance with Aboriginal tradition". These values are not currently protected under the *National Parks and Wildlife Act 1974* (NPW Act). In most cases, archaeological sites and objects registered under the state NPW Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over state cultural heritage legislation where there is conflict. The Commonwealth Minister who is responsible for administering the ATSIHP Act can make declarations to protect these areas and objects from specific threats of injury or desecration. The responsible Minister may make a declaration under Section 10 of the ATSHIP Act in situations where state or territory laws do not provide adequate protection of intangible heritage places.

2.1.3 Native Title Act 1993

The *Native Title Act 1993* (Cth) recognises and protects Native Title in Australia. The National Native Title Tribunal (NNTT) maintains the following registers:

- National Native Title Register
- Register of Native Title Claim
- Unregistered claimant applications
- Register of Aboriginal land use agreements.

The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010a) stipulates that consultation must be conducted with Native Title holders or registered Native Title claimants.

The Project would not be undertaken in an area covered by any identified Native Title claims.

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. If the Project is declared to be SSD, the consent authority will be the Minister for Planning. An Aboriginal Heritage Impact Permit (AHIP) under section 90 of the NPW Act is not required for development for which an 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 Secretary's Environmental Assessment Requirements (SEARs) issued for the project include may requiring the assessment of Aboriginal heritage.

2.2.2 National Parks and Wildlife Act 1974

The 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 or omission 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 Native Title Act 1994

The *Native Title Act 1994* was introduced to ensure that the laws of NSW are consistent with the Commonwealth Native Title Act 1993. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

A search of the National Native Title Tribunal database, on 8 October 2021, found that there are no Native Title claims currently registered in the study area.

2.2.4 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* (ALR Act) established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the ALR Act to:

> *(a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and*
>
> *(b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.*

The study area is located across the boundaries of the Griffith LALC and the Cummeragunja LALC area.

2.3 Regulatory policies/relevant guidelines

Guidelines and standards were established by Heritage NSW, to guide the assessment, conservation and mitigation of Aboriginal heritage in New South Wales. Many of the guidelines are designed to obtain permits and approvals under the NPW Act.

Not all guidelines are applicable for Division 4.7 project approvals; however, they are useful documents to guide the general direction of assessment of the significance of heritage sites; and their conservation and mitigation. Relevant guidelines include:

- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (Department of Environment Climate Change and Water [DECCW] 2010a) [the Due Diligence Code].
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b) [the Code of Practice].
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010c) [the Consultation Requirements].
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) [the Guide].

3. Summary of Aboriginal stakeholder consultation

3.1 Compliance with consultation requirements

3.1.1 Stage 1

3.1.1.1 Agency letters

In accordance with Stage 4.1.2 of the Consultation Requirements, the following organisations have been consulted to obtain the names of Aboriginal people who may hold cultural knowledge of the study area:

- Griffith LALC
- Cummeragunja LALC
- Edward River Council
- Murrumbidgee Council
- Murray - Local Land Services
- Riverina - Local Land Services
- Heritage NSW
- Native Title Service Corp
- National Native Title Tribunal
- Office of the Registrar.

3.1.1.2 Advertisement

In accordance with Step 4.1.3 of the Consultation Requirements, an advertisement was placed in the Rural on 2 December 2021 inviting Aboriginal individuals or organisations to register an interest in the Project by 16 December 2021

3.1.1.3 Development of stakeholder list

Following the receipt of responses from the agencies listed above, a list of potential Aboriginal stakeholders was compiled. An invitation to register interest in the Project was sent to all potential Aboriginal stakeholders on 1 December 2021, requesting a response by 15 December 2021.

Table 3-1 List of potential Aboriginal stakeholders

Organisation	Contact Person
Bangerang Aboriginal Corporation	Not nominated
Miyagan Culture & Heritage	Robert Carroll
Individual	Will Carter
Yarkuwa Indigenous Knowledge Centre	Jeanette Crew
Individual	John Jackson

3.1.1.4 Establishment of RAPs for the project

The Aboriginal stakeholder consultation described above, resulted in the identification of four Registered Aboriginal Parties (RAPs), summarised in **Table 3-2.**

Table 3-2 Summary of RAPs identified through Stage 1

Organisation	Contact Person
Individual	John Jackson
Bundyi Cultural Tours	Mark Saddler
Individual	Roley Williams
Bidya Marra Consultancy	James Ingram

3.1.2 Stage 2

Stage 2 of the consultation process is to provide RAPs with information about the scope of the proposed Project and the proposed cultural heritage assessment process.

The RAPs were provided with a letter outlining the Project, and a copy of the archaeological methodology on 12 January 2022. Comments were received from the RAPs, and they were invited to contact Jacobs and Virya Energy at any time throughout the assessment process to discuss the Project.

One RAP (Mark Saddler, Bundyi Cultural Tours) provided a response to the methodology. Suggesting clarification of sections within the methodology and noted the presence of song lines throughout the landscape. These comments were considered and this report has been prepared with consideration of the feedback.

Site Officers were selected for the archaeological survey and were issued information to ensure safety and preparedness for work.

3.1.3 Stage 3

Stage 3 consultation facilitates a process whereby RAPs can contribute to culturally appropriate information gathering and the research methodology, provide information that will enable the cultural significance of Aboriginal objects and/or places on the proposed Project area to be determined, and have input into the development of any cultural heritage management options.

3.1.3.1 Sensitive cultural information and management protocol

It is possible that during the consultation process, the RAPs will provide sensitive cultural information to which access needs to be restricted. In the event that such information was supplied, the RAP supplying the information would state to Jacobs how they wish that information to be treated, and how access to the information should be restricted. Jacobs would 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 would 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 Department of Planning and Environment (DPE) and the Aboriginal Heritage Information Management System (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.

3.1.4 Stage 4

Stage 4 of the consultation process is to prepare and finalise an ACHAR with input from RAPs. As outlined in the ACHCRP (DECCW 2010a), a copy of this ACHAR was provided to all RAPs for the Project for review and comment on 22 August 2022. In line with the consultation requirements, a review period of at least 28 days was allowed (closing date 19 September 2022). During this period, Jacobs made phone calls to all RAPs to discuss the report and Project more generally on 7 September 2022.

Table 3-3 summarises the responses received from RAPs following the phone calls.

Table 3-3 Responses from RAPs following phone calls

Date	Organisation	Name	Response
7 September 2022	Bundyi Cultural Tours	Mark Saddler	Did not answer, was left a message
	Bidya Marra Consultancy	James Ingram	Has had a brief look and is ok with it so far. Will have a more detailed look in the morning, has a few comments he would like to pass on, but does not have capacity at the moment
	Individual	John Jackson	Not yet reviewed, but will do and thinks he will have a few comments to provide
	Individual	Roley Williams	Not yet reviewed, will review tonight and respond

A response was received from James Ingram on 8 September 2022. As part of his response, Mr Ingram drew attention to the cultural significance of Dry Lake, in particular the Dry Lake ancestral burial site (refer to **Appendix B**). He stated that the burials at Dry Lake are not the only ancestral burial sites in the area and requested that the Project be mindful of this. He also identified highly significant Boundary and Ceremonial trees that are located near and around Morundah. Given the potential for items of cultural significance to be present within the Project area, Mr Ingram requested that members of the Bidya Marra Consultancy be present to monitor the excavation of any structures. This is discussed further in **Section 6**.

The Project will do everything to ensure that no ancestral remains or other culturally significant items will be harmed as a result of the Project and will endeavour to work with all RAPs to ensure that this is the case.

No other responses have been received to date (29 September 2022) on the draft ACHAR from other RAPs. However, any future responses will be addressed as they are received.

3.2 Participation in assessment process

All RAPs were invited to participate in the completion of an archaeological survey. A list of organisations that participated in field investigations is included in **Table 3-4**.

Table 3-4 Survey and Site Inspection Attendance

Group	Role	Name	Date/s
Bidya Marra Consultancy	Sites Officer	Bruce Crowe	2 – 8 May 2022 and 11 – 15 July 2022
Griffith LALC	Sites Officer	Jordan Marr	13 – 15 July 2022
Griffith LALC	Sites Officer	Cody Dean Cosson	2 – 8 May 2022
Individual	Sites Officer	Roley Williams	5 – 6 May 2022

4. Environmental context

4.1 Landscape

Soil landscape mapping indicated that the study area predominantly contains grey, brown and red clays with discreet areas of siliceous sands. The red-brown earths soil landscape may also be present within the study area but are not mapped within the boundaries of the current study area. Siliceous sands landform is suspectable to wind erosion but may contain deposits up to 1.4 metres deep. The siliceous sands are likely associated with former paleochannels (Czs) and has the potential to contain Aboriginal objects dating to the Pleistocene period. The grey, brown and red clays are likely to be a shallow deposit of soil and are likely to be of low potential to contain subsurface Aboriginal material. However, the grey, brown and red clays are likely to feature surface artefacts.

4.2 Historic land disturbance

From 1835 the land encompassing the study area was utilised for pastoral purposes. Initially for cattle, the primary industry in the region, with a number of squatters establishing stations or runs along Billabong Creek by 1840. By the 1860s, sheep had become more economically prominent. Consequently, vegetation clearance would have occurred which would have resulted in ground disturbance that would likely compromise the archaeological integrity of any Aboriginal objects. This is unlikely to have impacted the survivability of Aboriginal objects made of stone but would have resulted in the destruction of scarred trees.

4.3 Aboriginal Heritage Information Management System data

A search of the AHIMS database was completed on 1 October 2021 for an area of land at datum GDA, zone 55, eastings 343764.83 - 396348.52, northings 6089153.64 - 6144064.62 with a buffer of 0 meters.

There are three AHIMS registered sites located within the study area (**Figure 4-1**):

- Tooleybuc Bridge PAD (AHIMS ID 55-1-0038)
- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

The site card for Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) lists the location of the site at the corner of Lea Street and Murray Street, Tooleybuc, which is 181 kilometres to the west of the study area. The coordinated listed on the AHIMS data for Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) is different to the coordinates on the site card, and it is likely that the site coordinates were incorrectly entered into the AHIMS database. Therefore, Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) is not located within the study area and does not pose a constraint to the Project.

Both PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053) comprise of flaked and flaked pieces, identified on an area of sheet erosion adjacent to Mclennons Bore Road. The site cards for both sites indicate that there is only one site that has been recorded twice, although the description of the raw material is different on both cards – quartz and quartzite for PEC-E-G2 (AHIMS ID 55-1-0052) and silcrete for PEC-E-43 (AHIMS ID 55-1-0053). However, both the location and photographs of the artefacts are the same on both site cards. Neither site was relocated during the survey, likely as a result of their position on an area of sheet erosion adjacent to Mclennons Bore Road.

4.4 Predictive model

Background research has identified that all soil landscapes are considered to have sensitivity to contain Aboriginal objects. The siliceous sands are considered to have high potential to contain Aboriginal objects, the red-brown earth soils are considered to have low potential, and the grey, brown and red clays have moderate potential to include Aboriginal objects. Areas where native vegetation is present have been assessed as having moderate potential to contain Aboriginal objects as this may be an indicator of location where old trees with cultural modification may be present. These areas may also indicate less ground disturbance and high potential for Aboriginal objects to be present. Locations with non-native vegetation have low potential to contain Aboriginal objects. All land located within 200 metres of a water source is considered to have high potential to contain Aboriginal objects. Based on these criteria, Spatial Multi-Criteria Analysis (MCA) has been completed to develop a visual representation of the predicted archaeological potential of the study area (refer to **Figure 4-2**). The model indicates that the majority of the impacts will avoid locations that are of high predicted archaeological potential.

Background research completed for this assessment (outlined in **Appendix A**) resulted in the development of several predictive statements that should be verified by field investigation:

- It is likely that scarred trees will be present within the study area at locations where native vegetation has not been subject to historic land clearance
- Stone artefacts will likely be identified within close proximity to existing roads due to increased surface visibility and exposure facilitating high survey efficiency
- Aboriginal objects will likely be located within 200 metres of major/permanent waterways
- Locations associated with the siliceous sands landscape are likely to contain deep (1.4 metres) deposits that have the potential to contain Aboriginal objects dating to the Pleistocene
- Locations associated with the grey, brown and red clays landscape are unlikely to feature subsurface artefact deposits but are likely to feature Aboriginal objects on the ground surface.

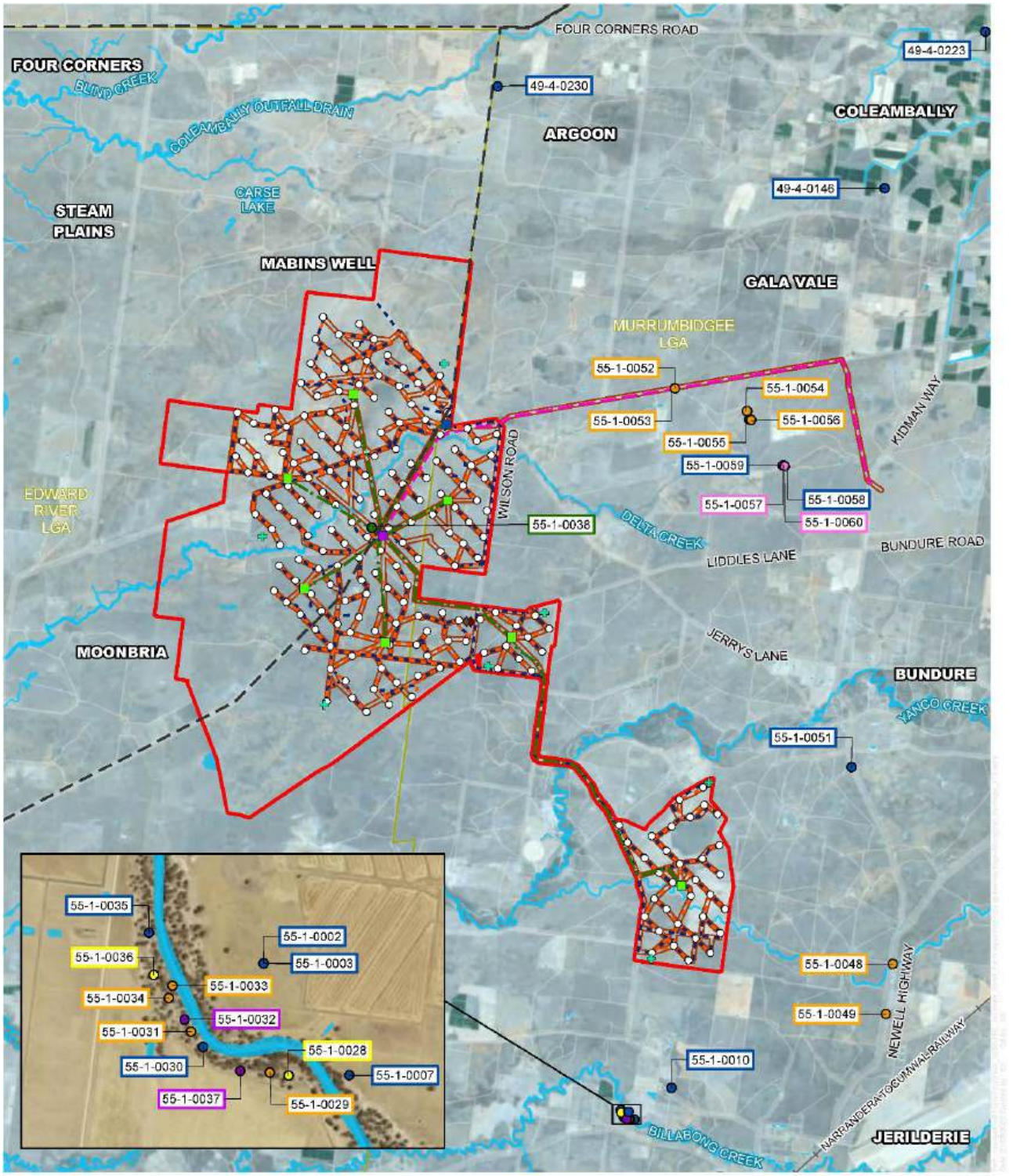

Figure 4-1 AHIMS

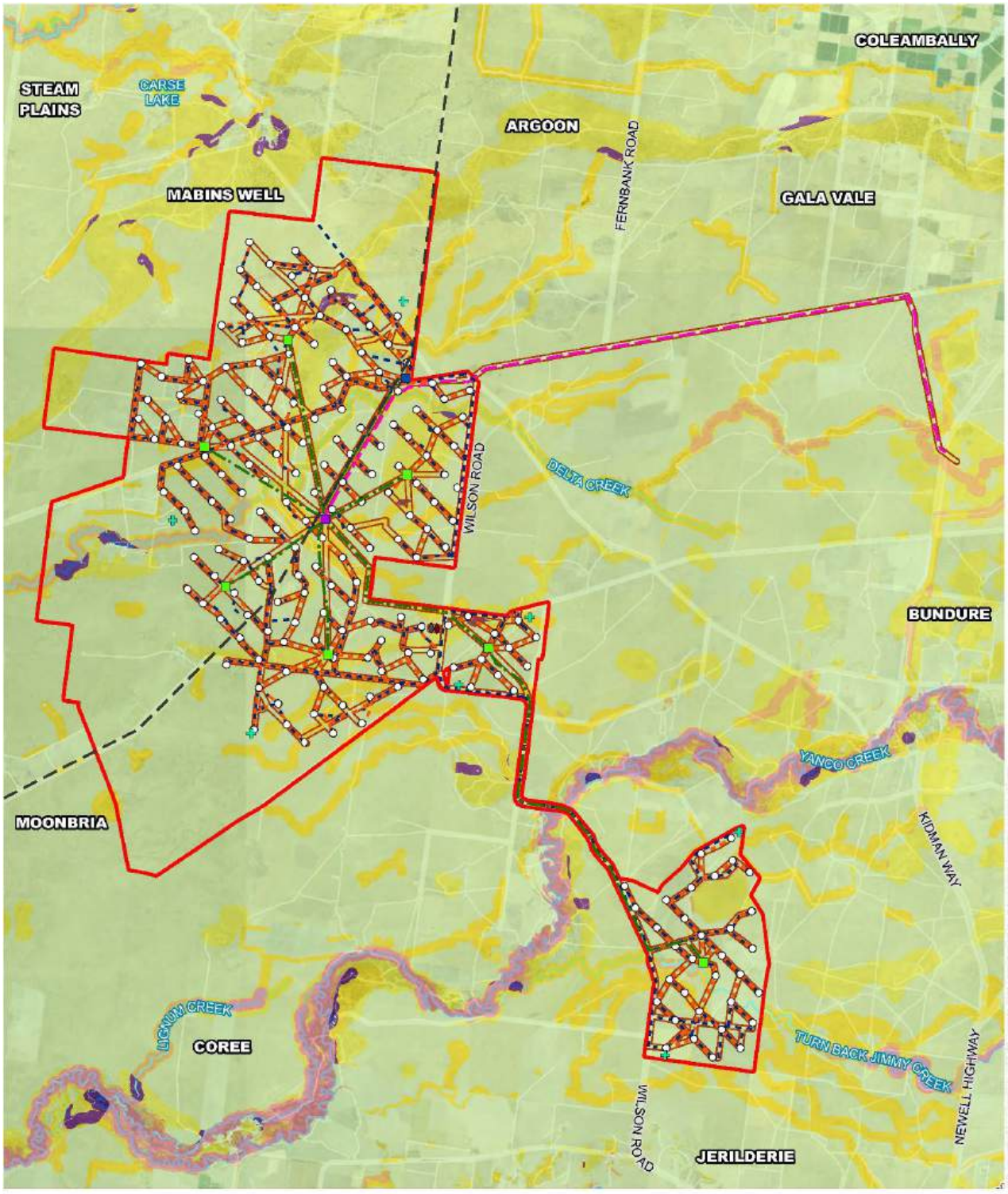

Figure 4-2 Predictive heritage constraints

5. Summary of archaeological survey

5.1 Aims

A preliminary site inspection was conducted within the study area in order to inspect where impacts would occur, and to identify where whether or not Aboriginal objects are, or are likely to be, present, and whether or not the Project is likely to harm Aboriginal objects. The site inspection had the following objectives:

- Inspect areas of higher visibility and soil exposures
- Inspect elevated areas near waterways, water bodies and creek lines
- Inspect all rock shelters within the Project area
- Inspect all mature trees in the Project area for cultural modification or scarring.

The archaeological survey was undertaken in consultation with the registered Aboriginal parties (RAPs).

5.1.1 Survey personnel

The archaeological survey was undertaken from 11 – 15 July 2022. The following personnel were in attendance for the survey:

Table 5-1 Survey attendance

Group	Role	Name	Date/s
Jacobs	Project Archaeologist	Meaghan Aitchison	11 – 15 July 2022
Jacobs	Project Archaeologist	Pauline Ramsey	11 – 15 July 2022
Bidya Marra Consultancy	Sites Officer	Bruce Crowe	11 – 15 July 2022
Griffith LALC	Sites Officer	Jordan Marr	13 – 15 July 2022

5.1.2 Survey strategy and approach

The study area was divided into four survey units, based on landform elements identified during the generation of the predictive model (refer to **Figure 4-2**). A sample survey is acceptable, with justification, under the Code of Practice. Full coverage survey of each survey unit was not practicable due to dense, impenetrable vegetation and safe access constraints. As a result, portions of each survey unit, marked in **Figure 5-1** were subject to survey.

The survey was carried out on foot by a team of archaeologists and Aboriginal representatives. A handheld Global Positioning System (GPS) was used to track the path of the survey team and record the coordinates of identified features and disturbances. Detailed aerial maps marked with grid coordinates for the survey unit was carried by the survey team. The coordinate system projection used for all data recording was GDA94 MGA 56. A photographic record was kept during the survey. Photographs were taken to record aspects of each survey unit including disturbance and recorded Aboriginal sites. Scales were used for photographs where appropriate.

Survey effectiveness was generally low across the study area due to low surface visibility and exposure (see **Table 5-2** for a summary of survey coverage).

Further information on the archaeological survey methodology is provided in **Appendix A**.

Table 5-2 Survey coverage summary

Survey Unit	Sub-locations	Landform	Survey Unit Area (Sqm)	Visibility (%)	Exposure (%)	Effective Coverage Area (Sqm)	Effective Coverage (%)
Survey Unit 1	C Bull area 2 C Bull area 4 R Wells area 3 R Wells area 4	Flat	1,648,245	10	90	148,342.05	9
Survey Unit 2	C Bull area 1 D Bull area 1 D Bull area 2 D Bull area 3 D Bull area 4 K Robertson area 1 C Hearth area 1 P Robertson area 1 K Robertson area 2 Delta area 3 R Wells area 1	Flat	5,009,462	10	90	450,851.58	9
Survey Unit 3	C Bull area 3 R Wells area 2	Terrace	931,733	10	90	83,855.97	9
Survey Unit 4	K Robertson area 3 Delta area 2 Delta area 1 Delta area 4	Terrace	1,992,128	10	90	179,291.52	9

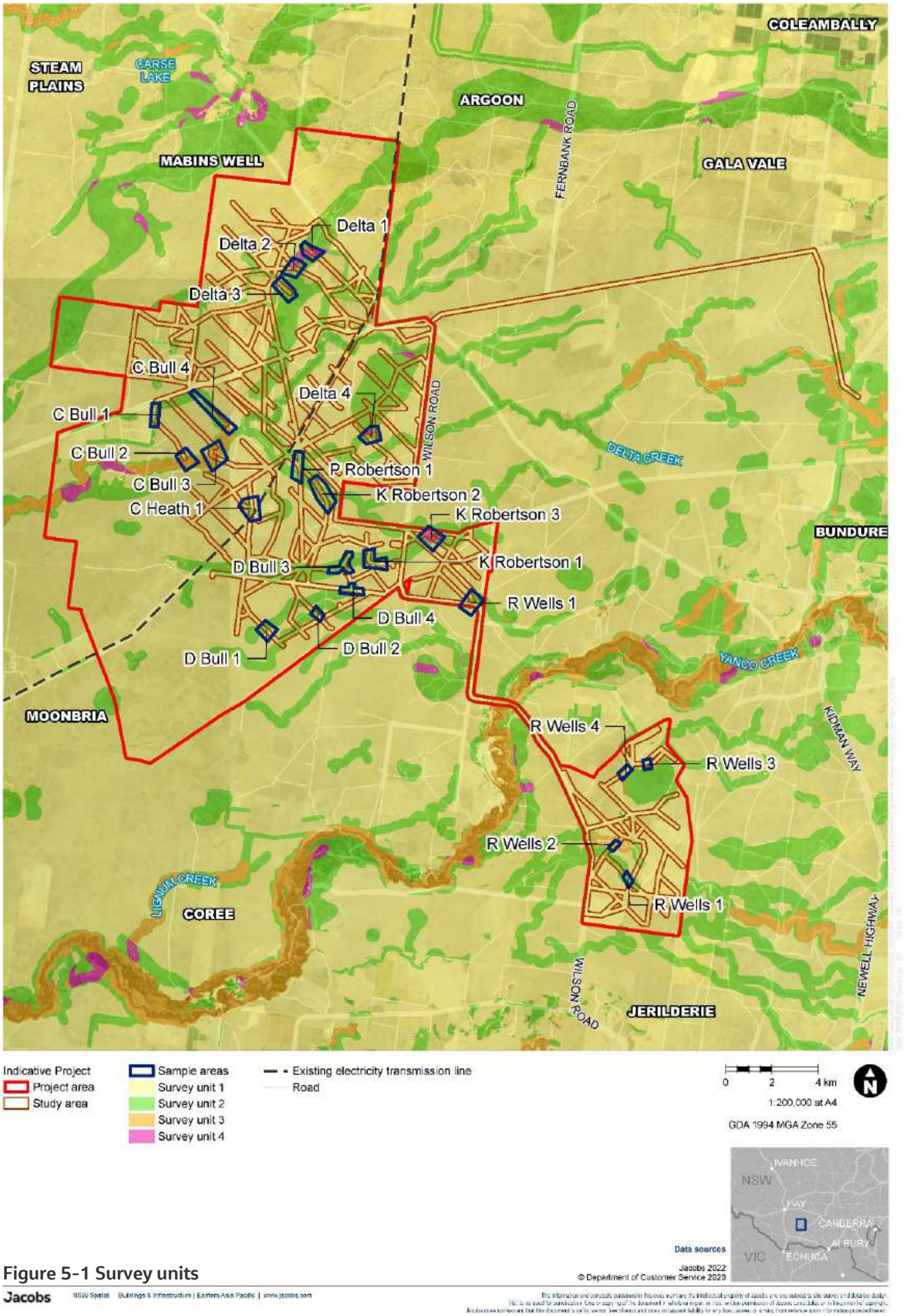

Figure 5-1 Survey units

5.2 Results

A total of eight previously unregistered sites were identified during the completion of the archaeological survey. A summary of Aboriginal sites identified, in accordance with the Code of Practice, is outlined in **Table 5-3** below.

The location of each unregistered site is shown in **Figure 5-2**, alongside the two registered AHIMS sites within the study area, PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053).

Table 5-3 Results summary

Site number (refer to Figure 5-2)	Location (refer to Figure 5-1)	Feature(s)	Survey unit	Landform
Yanco Delta PAD 01	C Bull area 2 (outside study area)	PAD	1	Flat
Yanco Delta AS PAD 01	D Bull area 3	Artefact, PAD	2	Flat
Yanco Delta AS PAD Hearth 01	K Robertson area 1	Artefact, PAD, Hearth	2	Flat
Yanco Delta AS PAD 02	C Hearth area 1	Artefact, PAD	2	Flat
Yanco Delta AS Hearth 01	P Robertson area 1	Artefact, Hearth	2	Flat
Yanco Delta AS Hearth 02	K Robertson area 2	Artefact, Hearth	2	Flat
Yanco Delta AS 01	C Bull area 3	Artefact	3	Terrace
Yanco Delta Hearth 01	Delta area 2	Hearth	4	Terrace

Figure redacted due to sensitivity of Aboriginal sites

Figure 5-2 Location of registered AHIMS sites and unregistered sites within the study area

Data sources

Jacobs 2022

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6. Cultural heritage values

General discussions with RAPs on site have led to the identification of various key elements that make up cultural values within the landscape of the Project area. Added to this, Mr James Ingram of Bidya Marra Consultancy provided the following information about cultural values in an email dated 8 September 2022 (refer to **Appendix B**):

> *During my time employed with Riverina Local Land Services I was responsible for the rehabilitation of a area known as Dry Lake. Dry Lake is located on the Maude Road between the Sturt Hwy and the township of Moulmein. Dry Lake was traditionally fed by the Abercrombie Creek and was the traditional homeland of the Kerrie Kerrie , Jothi Jothi , Cre Cre clans of the Great Nation of Wiradyuri. The Dry Lake boundary is between the borders of the Murray LS & Riverina LS boundaries and it is upon this boundary that exist between 30 to 35 skeletons of Wiradyuri people.*
> *The Hay Aboriginal Working Party carried out the rehabilitation on the Riverina LS side of what is a Travelling Stock Reserve (Dry Lake TSR Maude Road)*
> *It is unknown what rehabilitation works were carried out by the Murray LS.*
>
> *Given the location of the proposed Delta Windfarm to Dry Lake I cannot stress the importance of being vigilant as the Dry Lake burial site is not the only ancestral burial site in and around this area. It is a well know fact almost the Wiradyuri the the township of Coleambally is built on a burial site. Highly significant Boundary & Ceremonial trees are located near and around Morundah designating Mens & Women areas.*

The identified cultural heritage values from the Project area are identified in the **Table 6-1**.

Table 6-1 Identified Aboriginal cultural heritage values from the Project area

Cultural heritage values	Description
Resource gathering locations and techniques	Indigenous communities note that fish, plants and other foods are still collected throughout the region. The primary resource gathering locations, and the techniques used, are known and passed down through the generations.
Campsites	Indigenous people identify campsites as culturally significant as they provide a link to the ancestral past. Identifying significant resource zones, pathways taken by their ancestors through the landscape and communication between other groups. The identification of hearths indicates that people were camping and cooking within the Project area.
Culturally modified or scarred trees	Scarred trees are of great importance to knowledge holders as they are of sacred and ceremonial importance. European land use and agricultural practices has resulted in scarred trees can often be the only remaining markers for ceremonial sites and burials in the landscape. It is also noted that scarred trees may be located at junctions, ceremonial sites or other significant points in the landscape. Although no scarred trees were identified within the Project area, the existence of boundary and ceremonial trees around Morundah attest to the fact that they would likely have been present in, or close to, the Project area in the past.
Transit routes/pathways through the landscape and songlines	Aboriginal people place cultural value through the pathways and routes that their ancestors would have taken. These pathways connect ceremonial and spiritual sites as well as a connection route for trading and meeting with neighbouring tribes. No comments have been provided by Aboriginal stakeholders as to potential transit routes / pathways or songlines relevant to the Project area, however, this does not mean that they do not exist.

Cultural heritage values	Description
Water courses, water holes, springs, and waterfalls	Permanent water bodies are culturally significant as a central location for the gathering of people, resource collection and camping.
Plants and animals	Flora and fauna are not only seen as resources but hold cultural significance in spiritual and ceremonial values. No commentary has been received from Aboriginal stakeholders on significant fauna/ floral resources relevant to the Project area.
Burial sites	Burial sites are of great importance and their protection is a high concern to Aboriginal people as the locations of burials are rarely documented. There have been no known locations that have been identified within the confines of the Project area, however, the presence of ancestral burials at Dry Lake and Coleambally is noted.
Post contact sites	Post-contact sites are places that have gained significance to Aboriginal people since the arrival of European settlers. Defined an as an area where Indigenous people would of have had deep interaction with settlers. Contact sites predominantly depict an altering and destructive process, as European settlers left destruction and death in their wake. No post-contact sites are known to occur within the Project area.
Massacre sites	These sites are highly significant and share great importance to Aboriginal people. No massacres sites are known to be within, or within close proximity to the Project area.
Astronomy	Indigenous Australians are the world's oldest astronomers, presenting an unprecedented knowledge of the stars over the span of thousands of years of observation. Astronomy was used by indigenous Australians to develop calendars and navigate the land. Each tribe lived according to the cycle of the stars, which influenced what they hunted and ate, and where they travelled.

7. Significance assessment

7.1 Overview

The cultural values assessment includes cultural information collected during consultation, desktop research, and during field survey. The below information provides a summary of cultural values information to inform the Project.

7.2 Cultural significance

Cultural significance is associated, or attached to any place, places, and objects by any individual, group or groups of people. Cultural significance is representative in the place itself; its fabric, setting, use, associations, meanings, records, connected places and objects. 'Place' is a geographically defined area and may include tangible features that embody the physically identifiable landscape; as well as intangible features such as conceptual ideas or spiritual beliefs held over places or landscapes irrespective of observable physical evidence (NSW Heritage Office 2001).

Australia ICOMOS (2013) defines cultural significance as:

> *'Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.'*

7.3 Cultural landscape

The understanding and perception of the landscape expressed by the knowledge holders and the community is an area traversed by an interconnecting network of physical, social and spiritual places. The World Heritage Convention of United Nations Educational, Scientific and Cultural Organization (UNESCO) define an associative cultural landscape as one which has 'powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent' (UNESCO 1991). The relationship between Aboriginal Australians and the land can often be conceived in spiritual terms rather than primarily in material terms (Andrews et al. 2006).

Aboriginal cultural knowledge has been defined as:

> *'Accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment and the sustainable use of natural resources, and, relationships between people, which are reflected in language, narratives social organisation, values, beliefs and cultural laws and customs.' (Andrews et al. 2006).*

Aboriginal cultural knowledge was traditionally bequeathed through oral traditions from generation to generation. Within all Aboriginal communities there was a time of dislocation and upheaval associated with the arrival of European settlers. This widespread disruption resulted in the loss of varying degrees of detailed knowledge and understanding of many of the elements of the cultural landscape from Aboriginal communities.

No explicit concerns were raised by Aboriginal stakeholders regarding this loss of knowledge of the cultural landscape and the meanings embedded in the landscape.

It should be noted that Indigenous communities across Australia are extremely diverse, and generally defy generalisation. The above descriptions are common conceptions of Aboriginal cultural landscapes and values; however, a large range of beliefs and practices are evident across Australia and uniformity should not be assumed.

7.4 Assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (DECCW 2011) provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013) for significance assessment with assessments being required to consider the following criteria:

- Social values – does the area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- Historic values – is the area important to the cultural or natural history of the local area and/or region and/or state
- Scientific values – does the area have the potential to yield information that will contribute to an understanding of the cultural and natural history of the local area and/or region and/or state
- Aesthetic values – is the area important in demonstrating aesthetic characteristics in the local area and/or region and/or state.

Scientific values should be considered in light of the following criteria:

- Research potential – does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness – how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity – is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential – does the subject area contain teaching sites or sites that might have teaching potential?

It is important to note that heritage significance is a dynamic value.

7.5 Results of the significance assessment

7.5.1 Historic value

The guidelines to the *Burra Charter* include the following discussion of historic significance:

> *A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment. (Australia ICOMOS 2013)*

In relation to Aboriginal cultural heritage, many post-contact places and sites would have historic value. Pre-contact places and items may also be significant according to this criterion, although the association with historic figures, events, phases or activities may be more difficult to establish. Places of historic significance may include sacred or ceremonial sites, sites of resistance battles and massacres, places associated with Aboriginal communities after colonisation and the more recent past, and archaeological sites with evidence of technological developments.

No specific information regarding historic values in the Project area have been provided by RAPs, however, if information is provided in the future, it will be included in the report.

7.5.2 Aesthetic value

This criterion refers to aspects of sensory perception and the ability of the site to elicit emotional responses referred to as sensory or sensori-emotional values. The guidelines to the *Burra Charter* note that assessments may include consideration of the form, scale, colour, texture and material of the item or place, as well as sounds and smells. With regard to pre-contact Aboriginal cultural heritage sites, the placement within the landscape would be considered under this criterion as would memoryscapes and the ability of the site to transmit such memories. It is important to consider that sensori-emotional values are not always equated with 'beauty'; for example, massacre sites or sites of incarceration may have value under this criterion. Individual artefacts, sites and site features may also have aesthetic significance.

No specific information regarding aesthetic values in the Project area have been provided by RAPs, however, if information is provided in the future, it will be included in the report.

7.5.3 Socio/cultural value

Socio/cultural value concerns the relationship and importance of sites to the contemporary Aboriginal community. Aspects of socio/cultural value include people's traditional and contemporary links with a place or object as well as an overall concern by Aboriginal people for sites and their continued protection. Aboriginal cultural values may partially reflect or follow on from archaeological values, historic values, aesthetic values or be tied to values associated with the natural environment. This criterion requires the active participation of Aboriginal people in the assessment process as it is their knowledge and values that must be articulated.

No specific information regarding socio/cultural values in the Project area have been provided by RAPs, however, if information is provided in the future, it will be included in the report.

7.6 Scientific values

7.6.1 Yanco Delta PAD 01

The scientific value of Yanco Delta PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As no Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the identification of Aboriginal objects.

7.6.2 Yanco Delta AS PAD 01

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.6.3 Yanco Delta AS PAD Hearth 01

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological

knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.6.4 Yanco Delta AS PAD 02

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.6.5 Yanco Delta AS Hearth 01

Yanco Delta Hearth 01 is a hearth and is likely to contain datable material such as charcoal. The site also contains Aboriginal objects and dating of any recovered charcoal could yield further information on the chronologies of artefact assemblages. As a result, the site considered to be of moderate research value. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.6.6 Yanco Delta AS Hearth 02

Yanco Delta Hearth 02 is a hearth and is likely to contain datable material such as charcoal. The site also contains Aboriginal objects and dating of any recovered charcoal could yield further information on the chronologies of artefact assemblages. As a result, the site considered to be of moderate research value. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.6.7 Yanco Delta AS 01

Yanco Delta AS 01 is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.6.8 PEC-E-G2 (AHIMS ID 55-1-0052)

PEC-E-G2 (AHIMS ID 55-1-0052) is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.6.9 PEC-E-43 (AHIMS ID 55-1-0053)

PEC-E-43 (AHIMS ID 55-1-0053) is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low

research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.6.10 Yanco Delta Hearth 01

Yanco Delta 01 is a hearth and is likely to contain datable material such as charcoal. As a result, the site considered to be of moderate research value for the potential to further research site chronologies. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.6.11 Summary

A summary of scientific significance for the study area is provided in **Table 7-1**.

Table 7-1 Summary of scientific values

Site name (AHIMS ID)	Research potential	Representativeness	Rarity	Education potential	Overall significance assessment
Yanco Delta PAD 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD Hearth 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD 02	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS Hearth 01	Moderate	Moderate	High	Moderate	Moderate
Yanco Delta AS Hearth 02	Moderate	Moderate	High	Moderate	Moderate
Yanco Delta AS 01	Low	Low	Low	Low	Low
PEC-E-G2 (AHIMS ID 55-1-0052)	Low	Low	Low	Low	Low
PEC-E-43 (AHIMS ID 55-1-0053)	Low	Low	Low	Low	Low
Yanco Delta Hearth 01	Moderate	Moderate	High	Moderate	Moderate

7.6.12 Statement of significance

Based on the aesthetic, historic and social context of the identified Aboriginal objects; the study area is considered to be of moderate cultural heritage significance. The Aboriginal objects present within the study area are tangible expressions of Aboriginal life prior to contact and have potential to connect the contemporary community with traditional practices that have been disrupted by colonial activity.

8. Impact assessment

8.1 Description of likely impacts

Construction of the Project would involve the following elements stated in **Section 1.2**, including the construction and operation of up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. Construction would involve a range of activities including vegetation clearing, earthworks, trenching, concrete works and the establishment of a construction compound.

Other activities that may cause impacts include upgrading and maintenance of access tracks, internal and overhead cabling. Where possible, existing access tracks will be used, upgrading and maintenance will comprise gravelling. Overhead cabling will have limited, discrete impacts, only in the areas where posts are inserted. Impacts from internal cabling will either involve insertion of underground cables or posts for overhead cabling.

Potential impacts to Aboriginal heritage associated with ground disturbance activities are provided in the sections below.

8.2 Potential impacts to Aboriginal heritage

Yanco Delta PAD 01 is not located within the study area and would not be harmed by the Project. Based on the current design plans, the following sites partially overlap with the current design plans and are likely to be partially impacted by the proposed works (refer to **Figure 8-1**):

- Yanco Delta AS PAD 01
- Yanco Delta AS PAD Hearth 01
- Yanco Delta AS PAD 02
- Yanco Delta AS Hearth 01
- Yanco Delta AS Hearth 02
- Yanco Delta AS 01
- Yanco Delta Hearth 01
- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

Design updates will be made to avoid harm to all areas of PAD, as a result Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01 and Yanco Delta AS PAD 02 will not be harm by the Project. **Table 8-1** provides information on the potential causes of harm to the remaining sites within the Project area.

Table 8-1 Potential causes of harm

Site name (AHIMS ID)	Cause of harm	Comment
Yanco Delta AS Hearth 01	Overhead powerline	Disturbance would be in discrete locations for the power line poles. Detailed design will aim to avoid this site through micro-siting pole locations
Yanco Delta AS Hearth 02	Internal cabling and access track	Existing access track will be used where possible to minimise or avoid harm. Detailed design will aim to avoid this site through micro-siting of access tracks/ internal cabling.

Site name (AHIMS ID)	Cause of harm	Comment
Yanco Delta AS 01	Internal cabling and access track	This location seeks to utilise the existing access track over Delta Creek at this location. The existing track will be to minimise or avoid harm.
Yanco Delta Hearth 01	Access track	Existing access track will be used where possible to minimise or avoid harm. Detailed design will aim to avoid this site through micro-siting of access tracks.
PEC-E-G2 (AHIMS ID 55-1-0052)	Transmission line	Disturbance would be in discrete locations for the transmission line poles. Detailed design will aim to avoid this site through micro-siting transmission line pole locations. However, the site was unable to be relocated during survey, as a result of erosion activities
PEC-E-43 (AHIMS ID 55-1-0053)	Transmission line	Disturbance would be in discrete locations for the transmission line poles. Detailed design will aim to avoid this site through micro-siting transmission line pole locations. However, the site was unable to be relocated during survey, as a result of erosion activities

Please note, test excavations were not undertaken as part of this assessment. Final design decision about access tracks, cabling and power line/ transmission line poles meant that it was not clear if impacts would occur to Yanco Delta AS Hearth 01; Yanco Delta AS Hearth 02; Yanco Delta AS 01; and Yanco Delta Hearth 01 and it was preferred to avoid any harm unless absolutely necessary. Similarly, as PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053) were recorded on an area of sheet erosion and could not be relocated due to erosion activities, it was decided that testing was not necessary in this area.

A summary of the assessed impacts in accordance with the Code of Practice is included in **Table 8-2** below.

Table 8-2 Summary of potential impacts

Site name (AHIMS ID)	Type of harm	Degree of harm	Consequence of harm
Yanco Delta PAD 01	None	None	None
Yanco Delta AS PAD 01	None	None	None
Yanco Delta AS PAD Hearth 01	None	None	None
Yanco Delta AS PAD 02	None	None	None
Yanco Delta AS Hearth 01	Direct	Partial	Partial loss of value
Yanco Delta AS Hearth 02	Direct	Partial	Partial loss of value
Yanco Delta AS 01	Direct	Partial	Partial loss of value
Yanco Delta Hearth 01	Direct	Partial	Partial loss of value
PEC-E-G2 (AHIMS ID 55-1-0052)	Direct	Total	Total loss of value
PEC-E-43 (AHIMS ID 55-1-0053)	Direct	Total	Total loss of value

Figure redacted due to sensitivity of Aboriginal sites

Figure 8-1 Location of Aboriginal sites and Project design (Sheet 1)

Figure redacted due to sensitivity of Aboriginal sites

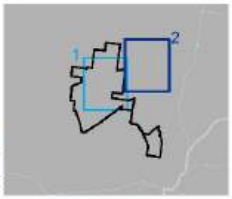

Figure 8-1 Location of Aboriginal sites and Project design (Sheet 2)

8.3 Ecological Sustainable Development principles

The Guide (OEH 2011) specifies that Ecological Sustainable Development (ESD) principles must be considered when assessing harm and recommending mitigation measures in relation to Aboriginal objects. The following relevant ESD principles are outlined in Section 3A of the Commonwealth EPBC Act 1999:

- Decision-making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations (the 'integration principle')
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the 'precautionary principle')
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the 'principle of intergenerational equity').

8.3.1 The integration principle

The Project would comply with the integration principle in regard to Aboriginal heritage. The Aboriginal heritage values of the study area have been considered as part of the planning process for the proposed works. The design will be modified to avoid impact to all areas of PAD, which demonstrates the integration of archaeological results into the design.

8.3.2 The precautionary principle

Where harm to areas of unknown scientific value is unavoidable further investigations will occur to ensure full scientific confidence. As a precaution against the loss of archaeological knowledge, all areas of PAD will be avoided.

8.3.3 The principle of intergenerational equity

The proposed works would adhere, as close as possible, to the principle of intergenerational equity by collating scientific and cultural information on former Aboriginal occupation of the study area through the previous investigations and this ACHAR. The design will be modified to avoid impact to PADs and preserve those sites for future generations.

8.4 Cumulative impacts

Cumulative impacts have the potential to occur when impacts from a project interact or overlap with impacts from other projects and can potentially result in a larger overall effect (positive or negative) on the environment, businesses or local communities. Cumulative impacts may occur during construction stages when projects are constructed concurrently or consecutively. Projects constructed consecutively (or sequentially) can result in construction activities occurring over an extended period of time with little or no break in construction activities, potentially causing increased impacts and construction fatigue for local communities.

The extent to which another development or activity could interact with the construction of the proposal would depend on its scale, location and/or timing of construction. Generally, cumulative impacts would be expected to occur where multiple long-duration construction activities are undertaken close to, and over a similar timescale to, construction activities for the proposal, or where consecutive construction occurs in the same area.

The overall effect of cumulative benefits or impacts could be positive or negative, depending on the nature of the projects and the nearby communities and environment.

There is one previous development in proximity to and traversing the Project area, the eastern section of EnergyConnect. This project comprises the construction of a high voltage interconnector incorporating an area that includes NSW, NW Victoria and SA. The assessment focussed on a linear corridor from Buronga to Wagga Wagga over approximately 540 kilometres.

A total of 142 sites were identified as a result of this assessment, including PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053). Of those 142 sites, direct harm would, or was likely to, occur to 94. Design refinements occurred to minimise harm where possible.

8.4.1 Summary

It has been identified that the proposal will pose harm to archaeological sites. Archaeological sites are a non-renewable resource and harm to any Aboriginal object constitutes irreversible cumulative harm. However, the Project area is located in a district that has been largely undeveloped to date. In addition, the nature of this development will result in a low level of impact to the environment.

A total of 10 sites are located within the Project area. Removal of structures and infrastructure has resulted in avoidance of harm to 4 of those, with opportunities to further refine the design to minimise harm to the other sites (where possible) through micro-siting during detailed design. If harm to those sites cannot be avoided, the harm will be partial in nature and will not result in the total destruction of the sites and their values. While harm to PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053) is unavoidable, those sites have been subject to erosion activities which have nullified their scientific integrity.

It is acknowledged that all sites have an inherent cultural value, however, harm as a result of this project is minimal and will not detrimentally affect the cultural and scientific values across the Project area. Further, it is highly likely that for those sites that may be harmed, there will be similar sites in similar landforms that will be conserved within and adjacent to the Project area.

For the reasons outlined above, it is assessed that cumulative impacts as a result of this project are low.

9. Management and mitigation measures

9.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites would be conserved. If conservation is not practical, measures would be taken to mitigate against impacts to Aboriginal sites.

Where unavoidable impacts occur then measures to mitigate and manage impacts are proposed. Mitigation measures primarily concern preserving the heritage values of sites beyond the physical existence of the site. The most common methods involve detailed recording of Aboriginal objects, archaeological salvage excavations, artefact analysis and, where appropriate, reburial of Aboriginal objects in a location determined by the RAPs.

Mitigation measures vary depending on the assessment of archaeological significance of a particular Aboriginal site and are based on its research potential, rarity, representatives and educational value. In general, the significance of a site would influence the choice of preferred conservation outcomes and appropriate mitigation measures, usually on the following basis:

- Unknown scientific value - Conservation where possible. Further investigation under the Code of Practice will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure.
- Low scientific value - Conservation where possible, but usually no mitigation required if impacts are unavoidable
- Moderate scientific value - Conservation where possible. If conservation is not practicable, salvage excavations or similar mechanisms (surface collection) determined in consultation with the Aboriginal community may be necessary
- High scientific value - Conservation as a priority. Only if all practicable alternatives have been exhausted would impacts be considered justified. Comprehensive salvage excavations or similar mechanisms (surface collection) may be necessary.

9.2 Management and mitigation measures for this Project

Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 will not be impacted by the Project, and no mitigation is required.

Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, and Yanco Delta Hearth 01 have been assessed as having moderate scientific value. Impacts to these sites should be avoided, to allow them to be conserved *in situ*. Where conservation is not practical, preliminary excavation should be completed at each site to allow appropriate management and mitigation measures to be determined prior to any impact through the proposed works.

Where impact can be avoided, RAPs should be offered the opportunity to undertake surface collection of artefacts. Surface collection is considered harm under the NPW Act; therefore, the Minister's Conditions of Approval will be required as the approval mechanism to authorise harm through salvage and the proposed works.

Yanco Delta AS 01, PEC-E-G2 (AHIMS ID 55-1-0052), and PEC-E-43 (AHIMS ID 55-1-0053) have been assessed as demonstrating low scientific value. Conservation should be considered if practical. If conservation is not practical, surface collection of artefacts should be considered as a mitigation measure for harm. This should be conditioned through the Minister's Conditions of Approval.

These measures are summarised in **Table 9-1.**

9.3 Preliminary excavations

Where harm to Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01 is unavoidable, a program of preliminary excavation should occur at each location, which would allow management and mitigation measures to be determined. These measures may include salvage excavation. This program and any associated measure should be completed under the authorisation of the Minister's Conditions of Approval.

The methodology for any excavations should be included in a CHMP.

9.4 Surface collection of artefacts

In order to mitigate the Aboriginal heritage impact of the Project, it is recommended that RAPs are offered the opportunity to collect any visible surface artefacts at the location of:

- Yanco Delta AS Hearth 01
- Yanco Delta AS Hearth 02
- Yanco Delta AS 01
- Yanco Delta Hearth 01
- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

Surface collection will be undertaken using the following method:

- Artefact collection will be undertaken by a team comprising an archaeologist and RAP representatives.
- Survey the location of each site (including a 10 m buffer) to identify any previously identified or unidentified Aboriginal objects
- Artefact locations will be marked on the ground with a flag, photographed and recorded with a hand-held GPS prior to collection
- Collected artefacts will be catalogued on site by the team, with recorded attributes as listed for the artefact analysis
- Artefacts will be labelled and bagged with location information, and then managed with the assemblage retrieved from salvage excavation.

9.5 Cultural Heritage Management Plan and unexpected finds procedure

A Cultural Heritage Management Plan (CHMP) and accompanying unexpected finds procedure will provide a method to manage potential heritage constraints and unexpected finds during construction works and any preliminary excavations, if required.

The long-term storage of any recovered Aboriginal objects will be developed during the completion of the CHMP, in consultation with the RAPs, but is likely to include (in preferential order):

- Re-burial on site, in an appropriate location in the vicinity of the Project
- Lodged with a RAP under a Care and Control Agreement
- Deposition with the Australian Museum.

9.6 Discovery of human remains

If any human remains are discovered and/or harmed in, on or under the land, the following actions must be taken:

- Do not further move or disturb these remains
- Immediately cease all works at the particular location

- Secure the area so as to avoid further harm to the remains
- Notify the NSW police
- Notify Heritage NSW on the Environment Line (131 555) as soon as practicable and provide any available details of the remains and their location
- Not to recommence any work at the particular location unless authorised in writing by Heritage NSW.

9.7 Changes to the Project

Advice provided within this report is based upon the most recent information provided by the Proponent at the time of writing. Any changes made to the Project should be assessed by an archaeologist in consultation with the RAPs. Any changes that may impact on Aboriginal sites not assessed as part of the Project may warrant further investigation and result in changes to the recommended management and mitigation measures.

Table 9-1 Summary of management and mitigation measures

Measure No	Site name (AHIMS ID)	Scientific value	Type of harm	Measure
1	Yanco Delta PAD 01	Unknown	None	No mitigation required
	Yanco Delta AS PAD 01	Unknown	None	
	Yanco Delta AS PAD Hearth 01	Unknown	None	
	Yanco Delta AS PAD 02	Unknown	None	
2	Yanco Delta AS Hearth 01	Moderate	Direct	Impacts avoided where possible If impacts cannot be avoided, preliminary excavations should occur to determine appropriate management and mitigation measures Where impacts can be avoided, RAPs should be provided with the opportunity to undertake surface collection of artefacts All works should be conditioned through the Minister's Conditions of Approval
	Yanco Delta AS Hearth 02	Moderate	Direct	
	Yanco Delta Hearth 01	Moderate	Direct	
	Yanco Delta AS 01	Low	Direct	
3	PEC-E-G2 (AHIMS ID 55-1-0052)	Low	Direct	Impacts avoided where possible If impacts cannot be avoided, surface collection of artefacts should occur prior to impact occurring Surface collection of artefacts should be conditioned through the Minister's Conditions of Approval
	PEC-E-43 (AHIMS ID 55-1-0053)	Low	Direct	

9.8 Summary of environmental management measures

A summary of the environmental management measures listed in the previous sections to mitigate impacts to Aboriginal cultural heritage is provided in **Table 9-2**.

Table 9-2 Aboriginal cultural heritage environmental management measures

Impact	Reference	Environmental management measure	Responsibility	Timing
Impacts on Aboriginal sites	AH01	A Cultural Heritage Management Plan (CHMP) will be developed to provide guidance on the procedure for the identification of unexpected Aboriginal objects, the long-term management of Aboriginal objects retrieved from surface collection of artefacts and any preliminary excavations that may need to occur	Contractor	Prior to construction
Impacts on Aboriginal sites	AH02	Where harm to Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01, PEC-E-G2, and PEC-E-43 is unavoidable salvage should be completed under the authorisation of the Minster's Conditions of Approval	Contractor	Prior to construction
Human remains	AH03	If suspected human remains are located during any stage of the Project, work should stop immediately, and the NSW police and Coroner's Office should be notified. NSW Heritage should be notified if the remains are found to be Aboriginal	Contractor	Construction, operation, decommissioning
Impacts on unknown Aboriginal sites	AH04	If changes are made to the Project to include impacts outside the disturbance area as delineated in this document, further archaeological investigation will be conducted.	Contractor	Prior to construction, construction

10. Conclusion and recommendations

10.1 Conclusion

The following recommendations are based on consideration of:

- Statutory requirements under the NPW Act
- The requirements of SEARs SSD-41743746
- The results of this ACHAR and the Aboriginal archaeological report (**Appendix A**).

Key findings include:

- A search of the AHIMS database was undertaken on 1 October 2021 for an area of land at datum GDA, zone 55, eastings 343764.83 - 396348.52, northings 6089153.64 - 6144064.62 with a buffer of 0 meters. Two previously identified Aboriginal sites are located within the study area:
  - PEC-E-G2 (AHIMS ID 55-1-0052)
  - PEC-E-43 (AHIMS ID 55-1-0053).
- The archaeological survey was undertaken between 11 and 15 July 2022, which resulted in the identification of eight additional sites:
  - Yanco Delta PAD 01
  - Yanco Delta AS PAD 01
  - Yanco Delta AS PAD Hearth 01
  - Yanco Delta AS PAD 02
  - Yanco Delta AS Hearth 01
  - Yanco Delta AS Hearth 02
  - Yanco Delta AS 01
  - Yanco Delta Hearth 01.
- Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 will not be harmed however the remaining six sites would be partially harmed resulting in a partial loss of value.

Based on the proposed disturbance footprint for the Project, Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 would not be harmed. However, there is the potential for the other four sites to be partially harmed resulting in a partial loss of value. The two registered AHIMS sites PEC-E-G2 (AHIMS ID 55-1-0052) and PEC-E-43 (AHIMS ID 55-1-0053) would be harmed, resulting in total loss of value.

10.2 Recommendations

The following recommendations have been made:

- Where harm to Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01 is unavoidable, a program of preliminary excavation should occur at each location, which would allow management and mitigation measures to be determined. These measures may include salvage excavation or surface collection of artefacts. This program and any associated measure should be completed under the authorisation of the Minister's Conditions of Approval
- Where harm to PEC-E-G2, and PEC-E-43 is unavoidable surface collection of artefacts should be completed under the authorisation of the Minster's Conditions of Approval
- No further action is required for Yanco Delta PAD 01, Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 as it will not be impacted by the proposed works
- A Cultural Heritage Management Plan (CHMP) should be developed to provide guidance on the proposed archaeological excavations, as well as a procedure for the identification of unexpected Aboriginal objects and the long-term management of Aboriginal objects retrieved from archaeological excavations
- If suspected human remains are located during any stage of the Project, work should stop immediately, and the NSW police and Coroner's Office should be notified. NSW Heritage should be notified if the remains are found to be Aboriginal ancestor remains
- If changes are made to the Project to include impacts outside the disturbance area as delineated in this document, further archaeological investigation must be conducted.

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Office of Environment and Heritage [now Heritage NSW] 2011 Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW: Part 6 National Parks and Wildlife Act 1974.

Appendix A. Aboriginal Archaeological Report

Technical Report – Aboriginal Archaeological Report

Virya Energy Pty Ltd

Yanco Delta Wind Farm
19 August 2022

LGA: Murrumbidgee Local Government Area and the Edward River

Executive summary

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS), and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW).

The Project area is defined as the property boundaries of Project landowners (i.e. landowners that have entered into agreements with Virya Energy to have WTGs or associated infrastructure on their properties). For the purposes of this assessment, the study area is defined as a 100 metre buffer from the disturbance footprint

Existing environment

The Project would be located within Murrumbidgee Council Local Government Area (LGA) and Edward River Council LGA, north-west of the Jerilderie township, around the localities of Moonbria and Mabins Well. The Project would be located within the proposed South-West Renewable Energy Zone (REZ), in New South Wales. The Project is located across the boundaries of the Griffith Local Aboriginal Land Council (LALC) and the Cummeragunja LALC area.

A search of the AHIMS database was completed on 1 October 2021. Two previously identified Aboriginal sites are located within the study area:

- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

An archaeological survey of the study area was undertaken on between 11 and 15 July 2022, which resulted in the identification eight known sites, including:

- Yanco Delta potential archaeological deposit (PAD) 01
- Yanco Delta AS PAD 01
- Yanco Delta AS PAD Hearth 01
- Yanco Delta AS PAD 02
- Yanco Delta AS Hearth 01
- Yanco Delta AS Hearth 02
- Yanco Delta AS 01
- Yanco Delta Hearth 01.

Overview of Aboriginal heritage impacts

Based on the proposed disturbance footprint for the Project, Yanco Delta PAD 01 would not be harmed however the remaining eight sites would be partially harmed resulting in a partial loss of value.

Management measures

The following recommendations have been made:

- An Aboriginal cultural heritage assessment report (ACHAR) should be prepared in compliance with the Secretary's Environmental Assessment Requirements application (SSD-41743746)
- The ACHAR should demonstrate any actions or plans to avoid harm to identified Aboriginal sites
- Where harm to areas of PAD (Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02) is unavoidable further assessment should be completed in accordance the Code of Practice. Harm to these sites cannot be authorised by the Minister's Conditions of Approval without the completion of test excavations, significance assessment and the development of mitigation measures in consultation with the registered Aboriginal parties (RAPs)
- Where harm to sites of known significance is unavoidable (Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01, PEC-E-G2, and PEC-E-43) salvage should be completed under the authorisation of the Minster's Conditions of Approval
- To keep consultation current, the RAPs should be sent an update on the Project every six months, until Project approval has been obtained.

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Tables

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Glossary and terms

Term	Definition
AHIMS	Aboriginal Heritage Information Management System
DECCW	Department of Environment, Climate Change & Water
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NPW Act	*National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
SHI	State Heritage Inventory
SHR	State Heritage Register
SSD	State Significant Development

1. Introduction

1.1 Background

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW). The Project would be located within the South-West Renewable Energy Zone (REZ), 10 kilometres north-west of the town of Jerilderie, within the Murrumbidgee Council and Edward River Council Local Government Areas (LGAs) (refer to **Figure 1-1**).

The Project area is defined as the property boundaries of Project landowners (i.e. landowners that have entered into agreements with Virya Energy to have WTGs or associated infrastructure on their properties).

The Project area is located across the boundaries of the Griffith Local Aboriginal Land Council (LALC) and the Cummeragunja LALC area.

1.2 Project description

The Project would include the following key features:

- Up to 208 WTGs to a maximum tip height of 270 metres
- Generating capacity of approximately 1500 MW
- BESS, approximately 800 MW/800 megawatt hours (MWh) (type yet to be determined)
- Permanent ancillary infrastructure, including operation and maintenance facility, internal roads, hardstands, underground and overhead cabling, wind monitoring masts, central primary substation and up to eight collector substations
- Temporary facilities, including site compounds, laydown areas, stockpiles, gravel borrow pit(s) and concrete batch plants

An indicative Project layout is provided in **Figure 1-2**.

For the purposes of this assessment, the study area is defined as a 100 metre buffer from the disturbance footprint (refer to **Figure 1-3**).

1.3 List of investigators and contributors

This report was prepared by Ryan Taddeucci (Senior Archaeologist, Jacobs), with technical review and management input from Fran Scully (Principal Archaeologist, Jacobs). Archaeological survey was undertaken by Meaghan Aitchison (Project Archaeologist, Jacobs) and Pauline Ramsey (Project Archaeologist, Jacobs). Mapping was prepared by Sarah Ryan (Graduate Spatial Consultant, Jacobs).

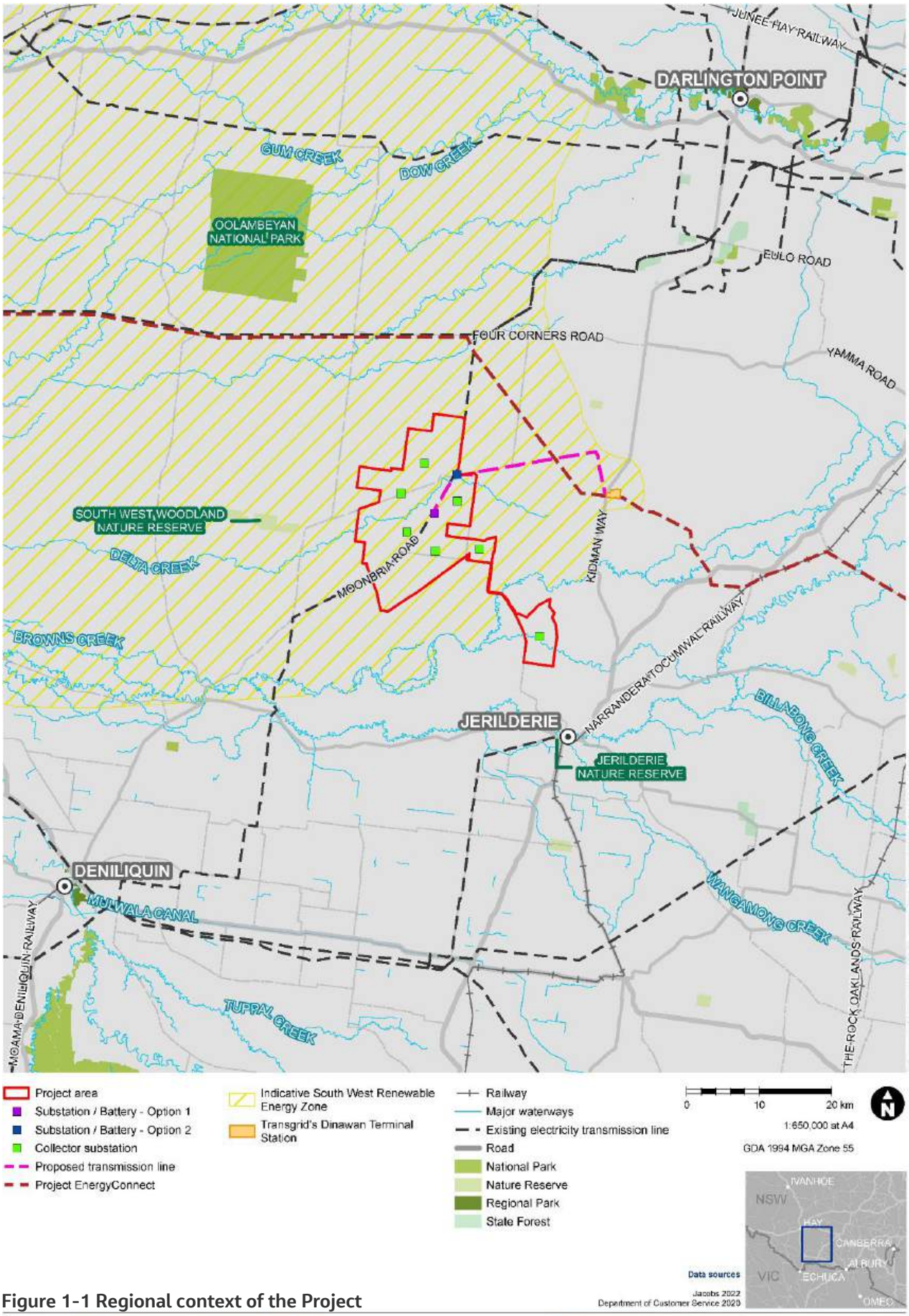

Figure 1-1 Regional context of the Project

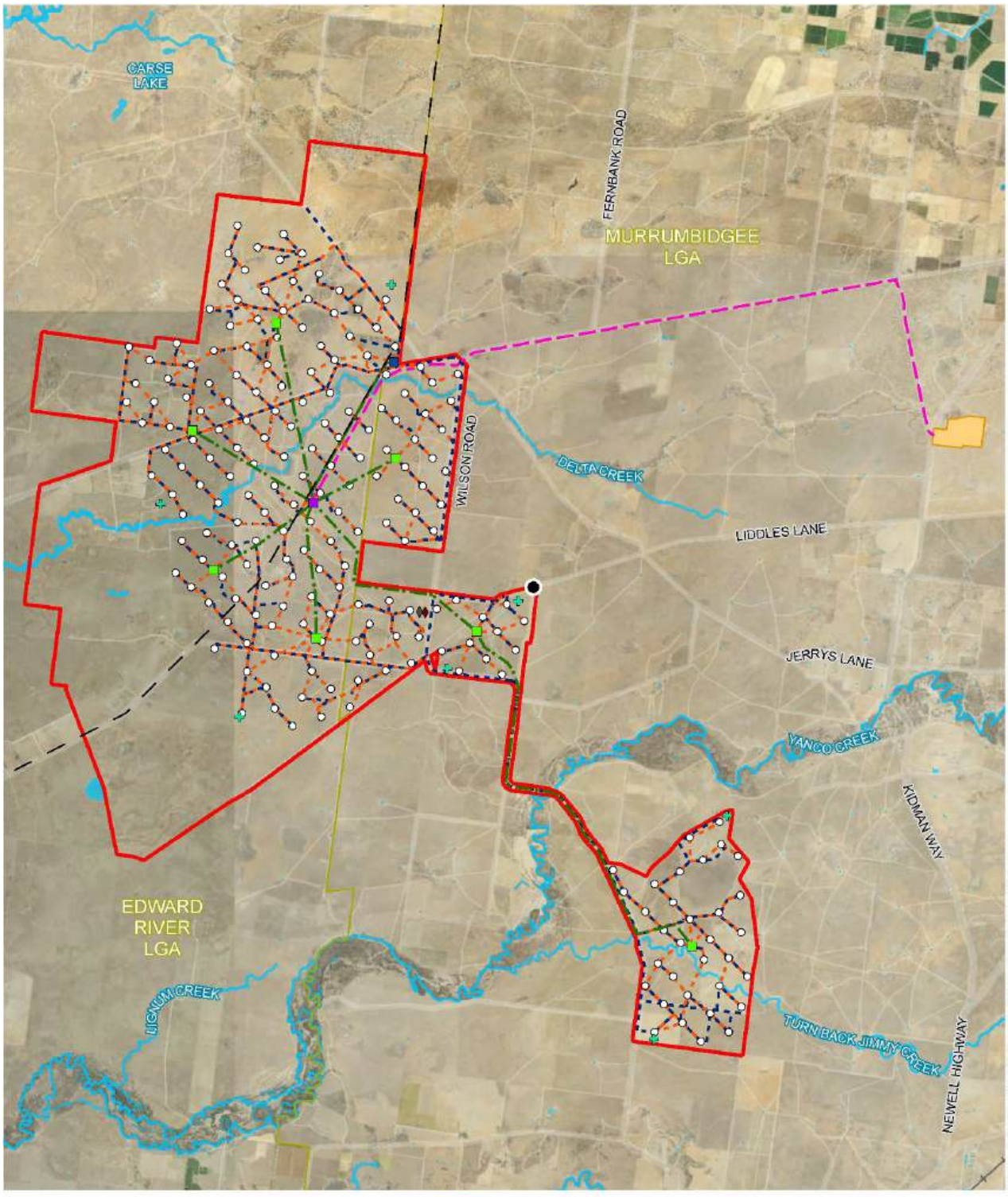

Figure 1-2 Indicative Project layout

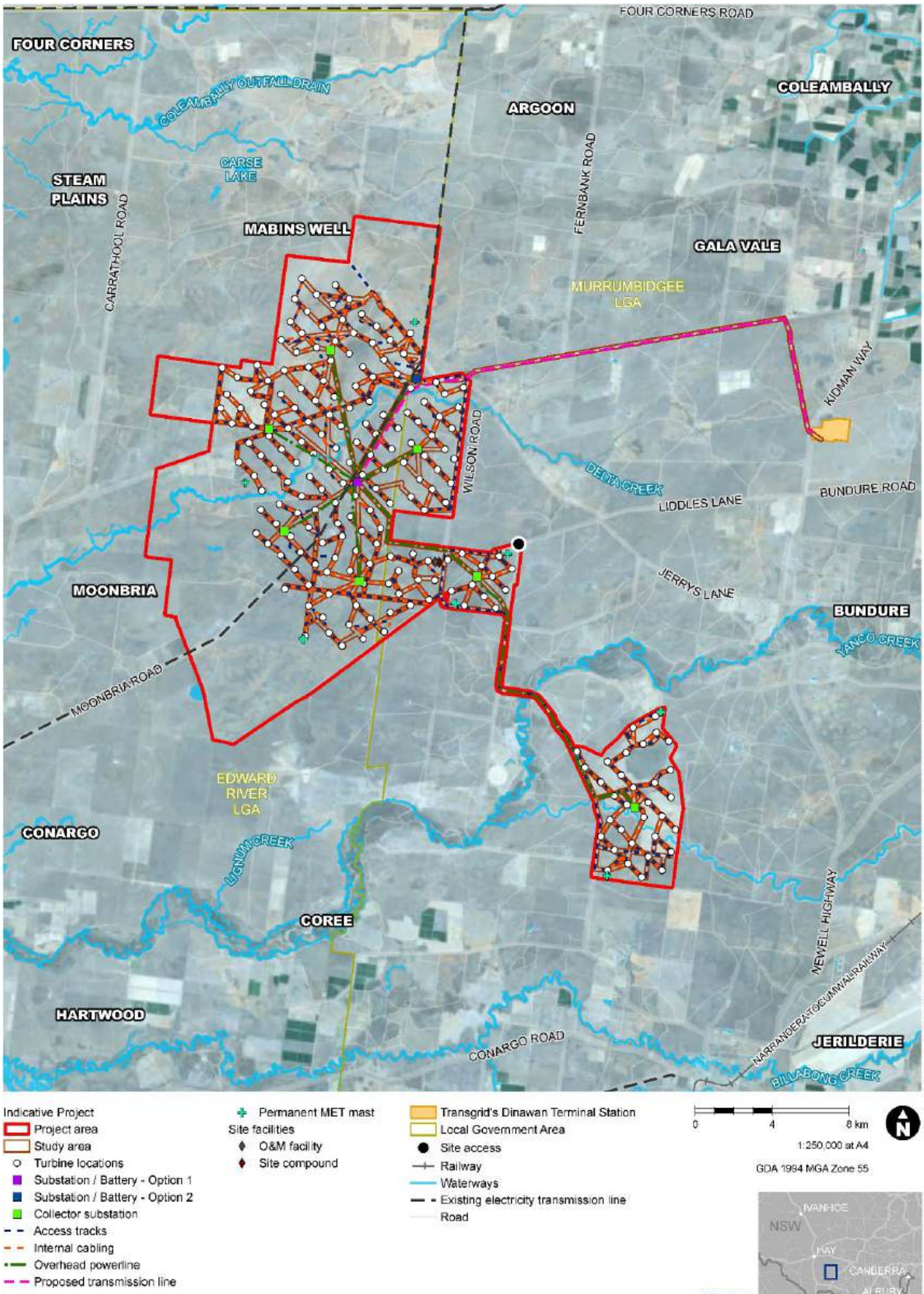

Figure 1-3 Study area

2. Environmental context

2.1 Landscape

The study area is located within the NSW Riverina Bioregion. Bioregions are extensive, geographically distinct areas within the landscape that exhibit similar characteristics such as climate, landform patterns, underlaying geology, ecological features and floral and faunal communities. The Riverina Bioregion extends from the Murray Darling Depression at Ivanhoe in the north to Bendigo, Victoria in the south and from east to west between Narrandera and Balranald. The boundaries of the Riverina Bioregion encompass the townships of Coleambally, 35 kilometres north-west of the study area and Jerilderie, 10 kilometres south-east of the study area. The study area sits within the stagnant, level, alluvial Riverine Plains of this bioregion.

The Riverina Bioregion encompasses the alluvial fans of the Lachlan, Murrumbidgee and Murray Rivers to the west of the Great Diving Range. The landscape of the upper catchment area consists of a series of low gradient, overlapping alluvial fans. The lower catchment tract is primarily floodplain with overflow lakes (such as the Salt Lake, Lake Urana, 30 kilometres to the east of the study area). The discharge from current and past streams controls patterns of sediment distribution which in turn determines the landscape including which soils and vegetation are present. The initial desktop survey indicates that the study area has limited topographic variation and consists primarily of low relief alluvial floodplain and drainage lines (named and unnamed waterways and flood-runners). Aboriginal sites are expected to be identified largely in close association with water sources and along the edges of drainage lines, particularly on areas of elevated ground.

The study area is located across several geological formations (refer to **Figure 2-1**), the larger and more extensive of these being the Shepparton Formation (Czs), deriving from sediments deposited during the Plio-Pleistocene Epoch (5,000,000 to12,000 years ago). These deposits represent the most recent infilling of the Tertiary Murray Basin and consist of alluvial sands, silts and clays (The Geological Society of America 2012). The sediments within the Shepparton Formation form the subsurface component to the Riverine Plain and range from poorly sorted gravels to clay. These sediments were primarily deposited by alluvial action and are mantled by a thin layer of parna (wind-blown calcareous clay). The older alluvial plains, comprising of Shepparton Formation sediments, are typically dominated by a level topography with distinct shallow drainage depressions (Pels 1971, Cupper, White et al. 2003, Stone 2006, p. 772). Traces of the distributary channels that built the Riverine Plain are preserved upon the surface of the Shepparton Formation. These are leveed or prior streams that bear little resemblance to the modern drainage system.

Soil landscape mapping indicated that the study area predominantly contains grey, brown and red clays with discreet areas of siliceous sands (refer to **Figure 2-2**). The red-brown earths soil landscape may also be present within the study area but are not mapped within the boundaries of the current study area. Siliceous sands landform is suspectable to wind erosion but may contain deposits up to 1.4 metres deep. The siliceous sands are likely associated with former paleochannels (Czs) and has the potential to contain Aboriginal objects dating to the Pleistocene period. The grey, brown and red clays are likely to be a shallow deposit of soil and are likely to be of low potential to contain subsurface Aboriginal material. However, the grey, brown and red clays are likely to feature surface artefacts.

2.2 Climate

The Riverina Bioregion is dominated by a persistently dry, semi-arid climate with hot summers and cool winters. The mean annual temperature is between 15 and 18 degrees Celsius, the minimum monthly temperature between 2.2 and 4.6 degrees. Maximum monthly temperatures range between 30.6 and 33.7 degrees.

During the Pleistocene/Early Holocene the climate was significantly different, and the area was less arid, which is indicated by the extensive paleochannels throughout the region. Over time, these watercourses have

morphed and changed. These paleochannels are associated with the Siliceous Sands illustrated in **Figure 2-2**. Changes to associated resources influenced the mobility of past Aboriginal patterns which is reflected in the distribution and location of cultural remains in the landscape (Watson and Anderson 2014).

2.3 Historic land disturbance

From 1835 the land encompassing the study area was utilised for pastoral purposes. Initially for cattle, the primary industry in the region, with a number of squatters establishing stations or runs along Billabong Creek by 1840. By the 1860s, sheep had become more economically prominent. Consequently, vegetation clearance would have occurred which would have resulted in ground disturbance that would likely compromise the archaeological integrity of any Aboriginal objects. This is unlikely to have impacted the survivability of Aboriginal objects made of stone but would have resulted in the destruction of scarred trees.

As indicated by the land zoning map (refer to **Figure 2-3**), the entire study area has been zoned as RU1 – Primary Production under the Conargo Local Environmental Plan 2013 and Jerilderie Local Environmental Plan 2012, for agricultural activity and is likely to have been subject to vegetation clearance which would have destroyed scarred trees and compromised the archaeological integrity of surviving Aboriginal objects. However, vegetation mapping (refer to **Figure 2-4**) indicated that the northern portion of the study area is predominantly comprised on riverine plain grasslands and riverine sandhill woodlands (native vegetation). This may be the result of regrowth following vegetation clearing activities.

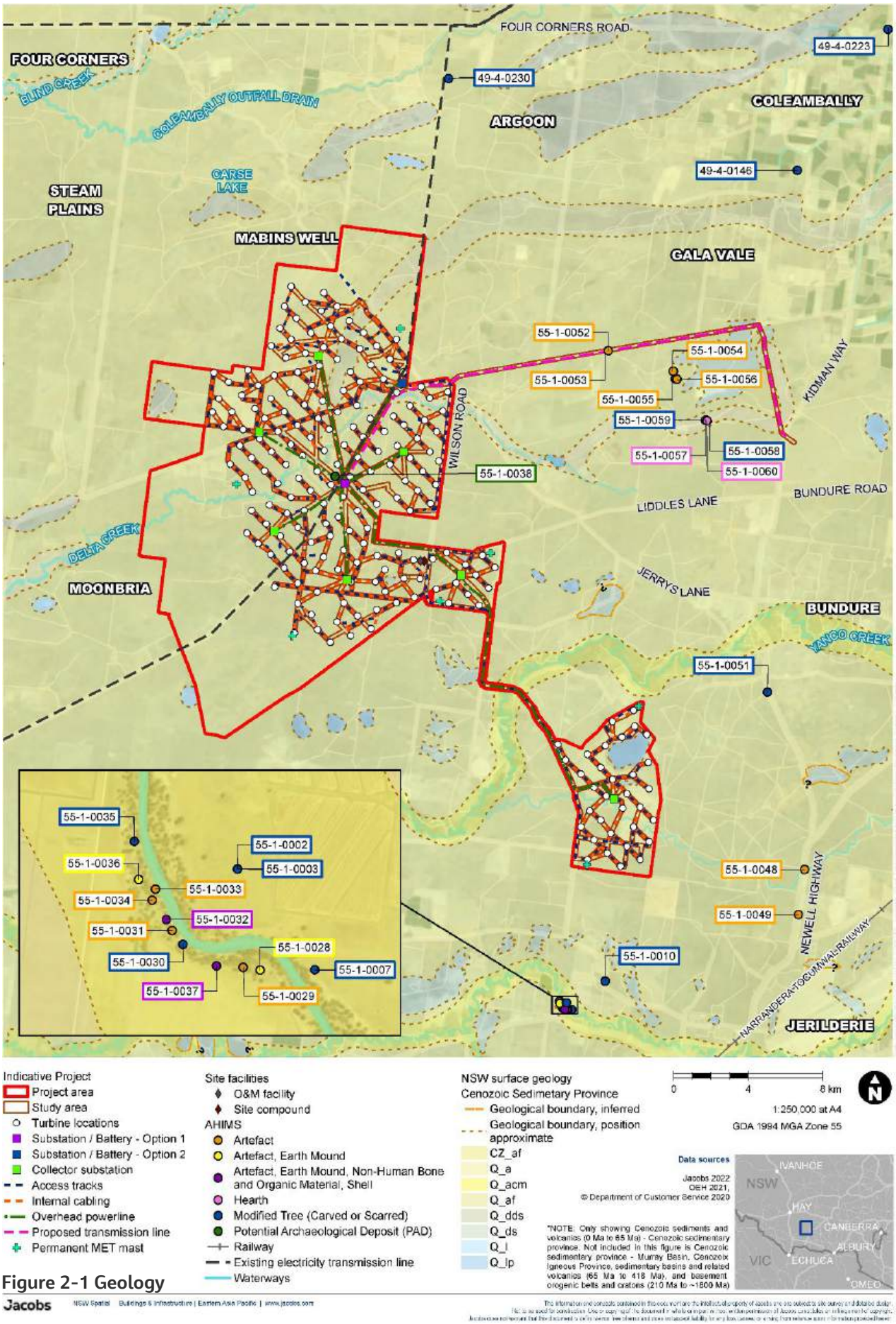

Figure 2-1 Geology

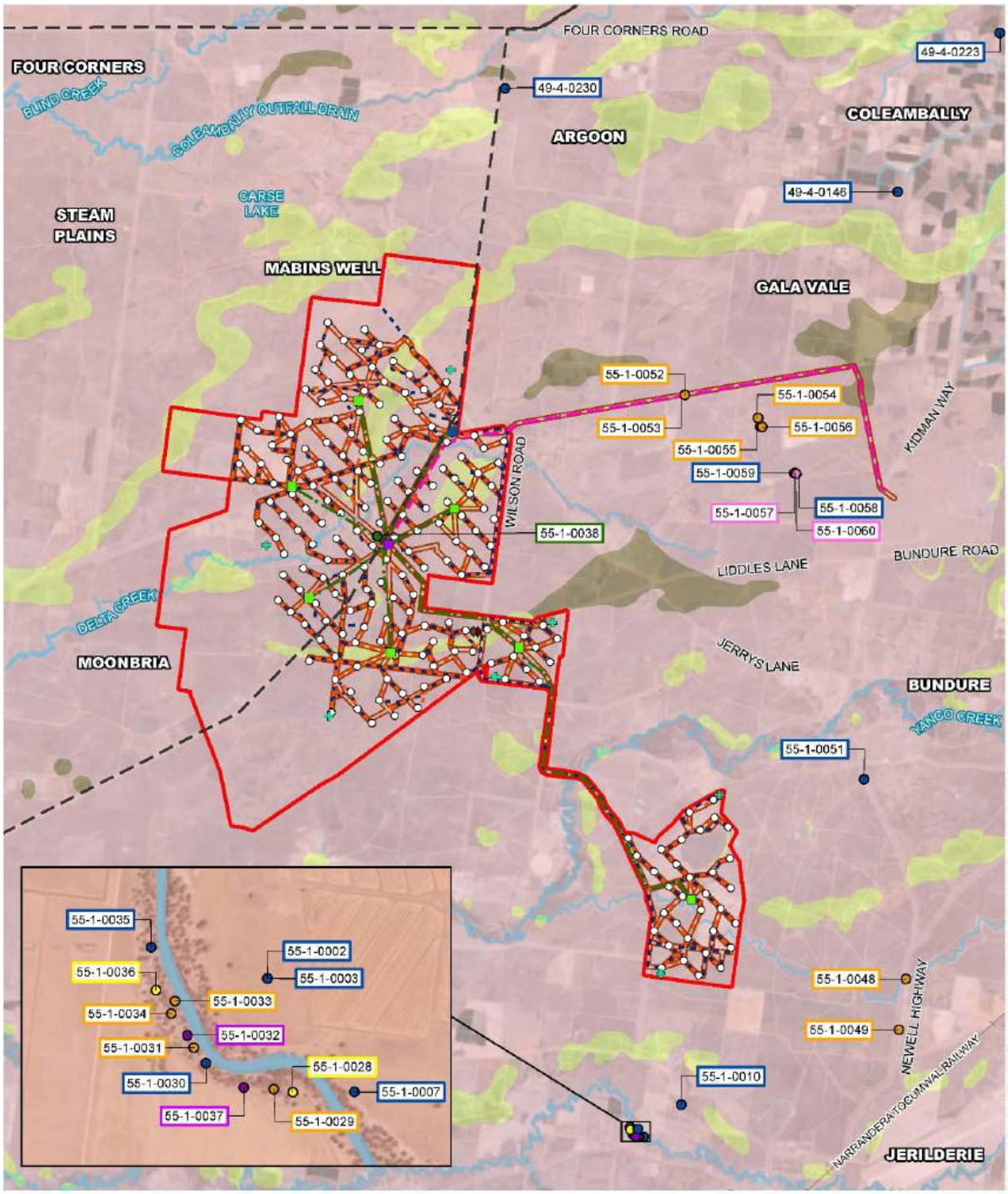

Figure 2-2 Soil landscape

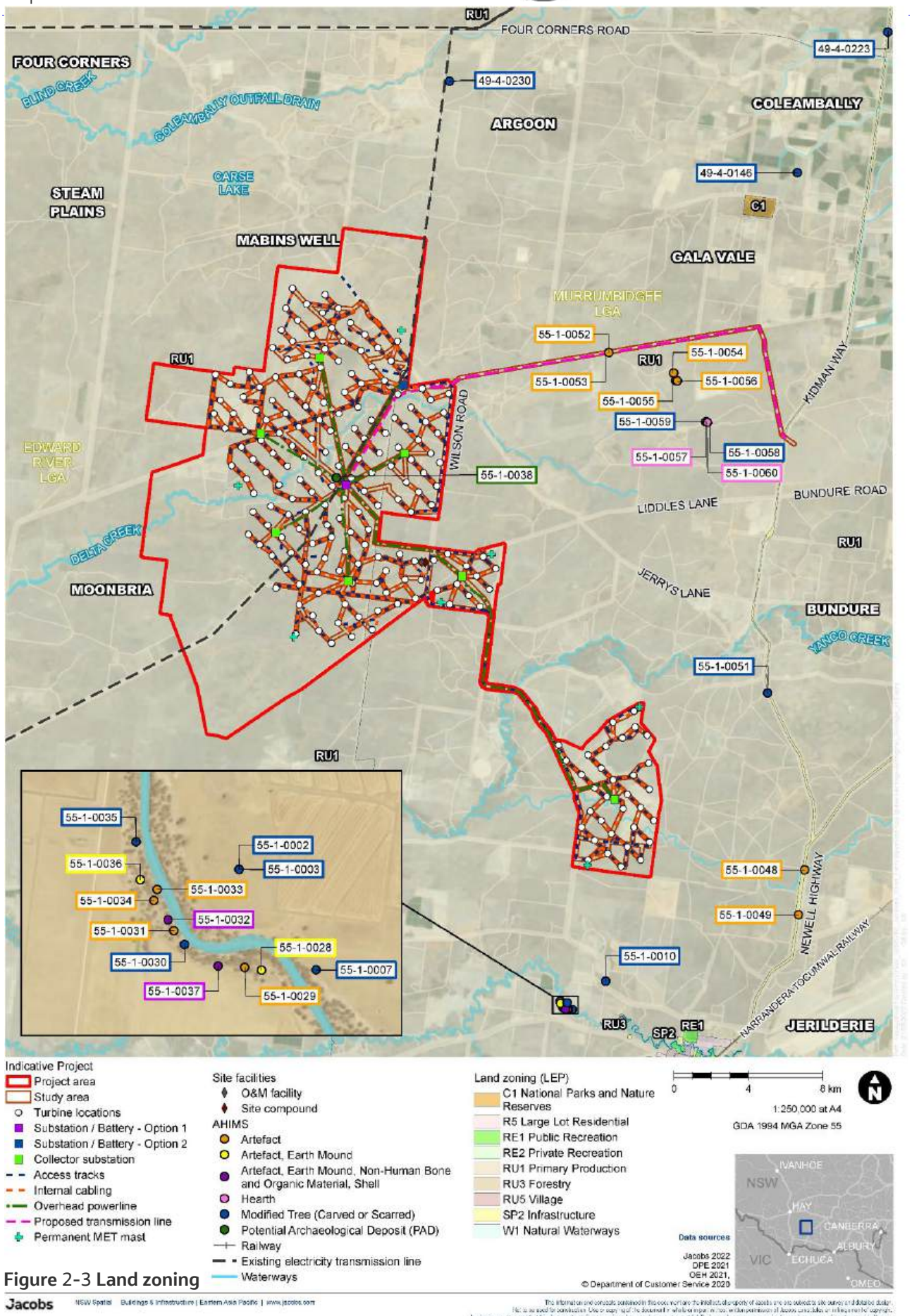

Figure 2-3 Land zoning

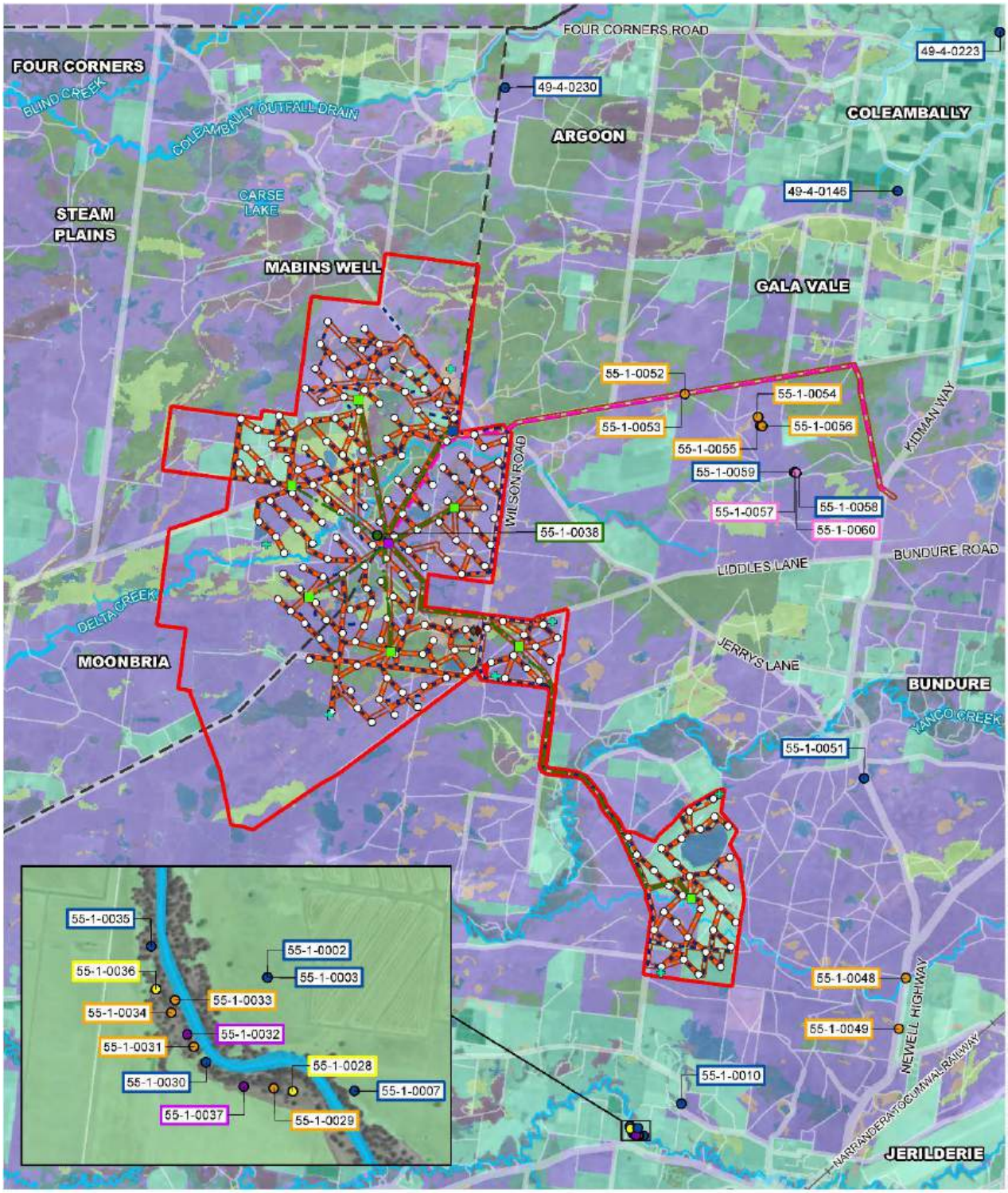

Figure 2-4 Vegetation

3. Archaeological background

3.1 Historical descriptions of Aboriginal material culture

Early mapping of Aboriginal tribal boundaries by Tindale (1940) identified the study area as being occupied by the Pangerang (Bpangerang) peoples. Subsequent mapping by Tindale (1974), however placed the boundaries of the Pangerang to the south of the Murray and the study area within the boundaries of the Jethi language group, bordered to the south-west by the Wiradjuri. Later mapping removed the Pangerang peoples from the region altogether (Horton 1994). There remains some conjecture regarding the accuracy of tribal boundary mapping with some suggestion that Bpangerang country extends across the Murray River, from Albury in the east, to Moama in the west and as far north as Coleambally (to the north-east of the study area).

Many small clans and bands speaking a number of similar dialects lived in close proximity to each other, the Yorta Yorta language group is bordered by the Wiradjuri, Waveroo, Ngurraiillam and Baraba Baraba peoples (Horton 1994). This likely resulted in people speaking multiple languages and dialects through contact and movement across the landscape associated with seasonal droughts and resource abundance (Howitt 1904; Tindale 1940; MacDonald 1983; Horton 1994).

The small clans would have been highly mobile, moving across the landscape and engaging in resource utilisation. Evidence of these activities may be present within the study area and would likely take the form of stone artefacts in various densities. High concentrations of stone artefacts located near former resource zones may be interpreted as evidence of camping, while low density or isolated artefact may be interpreted as evidence of transient land use. Locations that were visited repeatedly would likely contain extremely high numbers of stone artefacts which would likely be broken due to trampling associated with repeated occupation by larger numbers of people.

In 1836, Mitchell documented mounds in the Murray River system that were used to cook Typha in the lower Lachlan and Murrumbidgee Rivers (Mitchell 1839). Beveridge also recorded mound use in the Murray River area below Swan Hill from the 1850s (Beveridge 1883). Beveridge noted that the continued use of these ovens resulted in the build-up of debris and the formation of the mounds, with new clay being introduced each use due to crumbling of the clay heat retainers (Martin 2006, 2010). Mitchell also observed the way Aboriginal people of the Murrumbidgee and Murray buried the dead noting that a small, thatched hut was erected over a burial and the huts were enclosed by two or three low ridges of dirt in the shape of an ellipse with pointed ends (Mitchell 1839). As a result, the study area has the potential to contain mounds, hearths and burial huts.

Historic observations identified that Aboriginal people carried wooden weapons and tools such as spears, spear throwers, clubs, shields, boomerangs, digging sticks, bark vessels and canoes (Bennet 1834; Beveridge 1889; Oxley 1820; White 1986). Digging sticks were used by women to collect vegetable foods while small wooden spades were used to dig up grubs, ants and Mallee (Eyre 1845). Wooden troughs were placed over coals and used for cooking (Beverage 1883) while flint blades, mussel shells, kangaroo bones and split reeds were used for cutting and skinning animals during food preparation (Lawrence 1967). Water was carried in bark troughs or bags made of animal hide (Beveridge 1889; Lawrence 1967). These items are unlikely to be identified within an archaeological context due to the vulnerability of organic materials to decay in an open environment. However, evidence of timber sourcing, such as modified trees, may be identified where remnant native vegetation has not been impacted by historic land clearance.

European people began arriving in the area in the 1840s which resulted in conflict with Aboriginal people. The 1843 flood resulted in Aboriginal people abandoning the river flats and relocating to higher ground that had been occupied by European people (AECOM Australia Pty Ltd 2015). As a result, there may be evidence of contact archaeological or conflict sites within the study area. Aboriginal people were relocated to missions like Warangesda (60 kilometres north-east of the study area), the Brungle Reserve between Gundagai and

Tumut (230 km east of the study area), or Moonahcullah (70 kilometres south-west of the study area) (AECOM Australia Pty Ltd 2015).

3.2 Aboriginal Heritage Information Management System data

The AHIMS database is managed by Heritage NSW and includes spatial and compositional information of Aboriginal sites recorded through academic and compliance-based cultural resource management projects associated with modern various developments. The nature and location of the registered sites reflects the past Aboriginal occupation from which they derive, but is also influenced by historical land-use, and the nature and extent of previous archaeological investigations. Although Aboriginal occupation covered the whole of the landscape, the availability of fresh water, and associated resources, was a significant factor in repeated and long-term occupation of specific areas within the landscape. Certain site types, such as culturally modified trees, are particularly vulnerable to destruction through historical occupation, while others, such as stone artefacts, are more resilient.

A search of the AHIMS database was completed on 1 October 2021 for an area of land at datum GDA, zone 55, eastings 343764.83 - 396348.52, northings 6089153.64 - 6144064.62 with a buffer of 0 meters (**Appendix A**). Land surrounding the study area was included within the search parameters to gain information on the regional archaeological context and inform predictive statements regarding the archaeological potential of the study area.

The AHIMS search identified 28 Aboriginal sites. There are three sites which have been recorded as D D #6, all with the same co-ordinates and site feature, and it is assumed that they are duplicate recordings of a single site. Four sites have been recorded as Billabong Creek. However, there are two sets of coordinates and three site features associated with Billabong Creek (see **Table 3-1**). Therefore, it is assumed that there is only one duplicate co-ordinate.

There are three AHIMS registered sites located within the study area (**Figure 3-1**):

- Tooleybuc Bridge PAD (AHIMS ID 55-1-0038)
- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

The site card (**Appendix B**) for Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) lists the location of the site at the corner of Lea Street and Murray Street, Tooleybuc, which is 181 kilometres to the west of the study area. The coordinated listed on the AHIMS data (**Appendix A**) for Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) is different to the coordinates on the site card, and it is likely that the site coordinates were incorrectly entered into the AHIMS database. Therefore, Tooleybuc Bridge PAD (AHIMS ID 55-1-0038) is not located within the study area and does not pose a constraint to the project. As a result, the revised number of AHIMS sites would be 24 in total.

Table 3-1 Summary of duplicated AHIMS data

Site name	Site feature	AHIMS ID
D D #6	Modified Tree (Carved or Scarred)	54-3-0010
		54-3-0012
		54-3-0013
Billabong Creek	Modified Tree (Carved or Scarred)	55-1-0002
		55-1-0003
	Artefact	55-1-0007
	Modified Tree(Carved or Scarred)	55-1-0009

In NSW, there are 20 standard AHIMS site features and a site can include more than one feature. The breakdown of AHIMS site features is included in **Table 3-2** below. The majority of the AHIMS sites (n=14) are located in the southern portion of the search area, associated with Billabong Creek (**Figure 3-2**). The remaining sites appear to be associated with existing roads and were likely identified due to the ease of access and the high visible and exposure that is associated with roads. As a result, the AHIMS data indicates that Aboriginal objects will likely be identified near the roads located within the study area due to increased survey efficiency. However, additional Aboriginal objects may also be present, likely associated with major waterways such as Delta Creek and its associated tributaries as well as the wetlands identified in **Figure 3-3**.

Table 3-2 Summary of AHIMS site features

Site feature	Number of occurrences	Percentage (%)
Artefact	8	33.33
Modified Tree (Carved or Scarred)	12	50.00
Artefact, Earth Mound, Non-Human Bone and Organic Material, Shell	2	8.33
Artefact, Earth Mound	2	8.33
Total	24	100.00
Site feature	Number of occurrences	Percentage (%)

As discussed in **Section 3.1** historic observations of Aboriginal people identified that wooden objects such as spears, spear throwers, clubs, shields, boomerangs, digging sticks, bark vessels and canoes were prominently utilized by Aboriginal people (Bennet 1834; Beveridge 1889; Oxley 1820; White 1986). However, these items had not been identified within an archaeological context due to the vulnerability of organic materials to decay in an open environment. However, the majority of the site types within the parameters of the AHIMS search are modified trees, supporting early observations of Aboriginal people utilising timber. As a result, areas of remnant native vegetation have the potential to include modified trees which would provide information of Aboriginal timber utilisation.

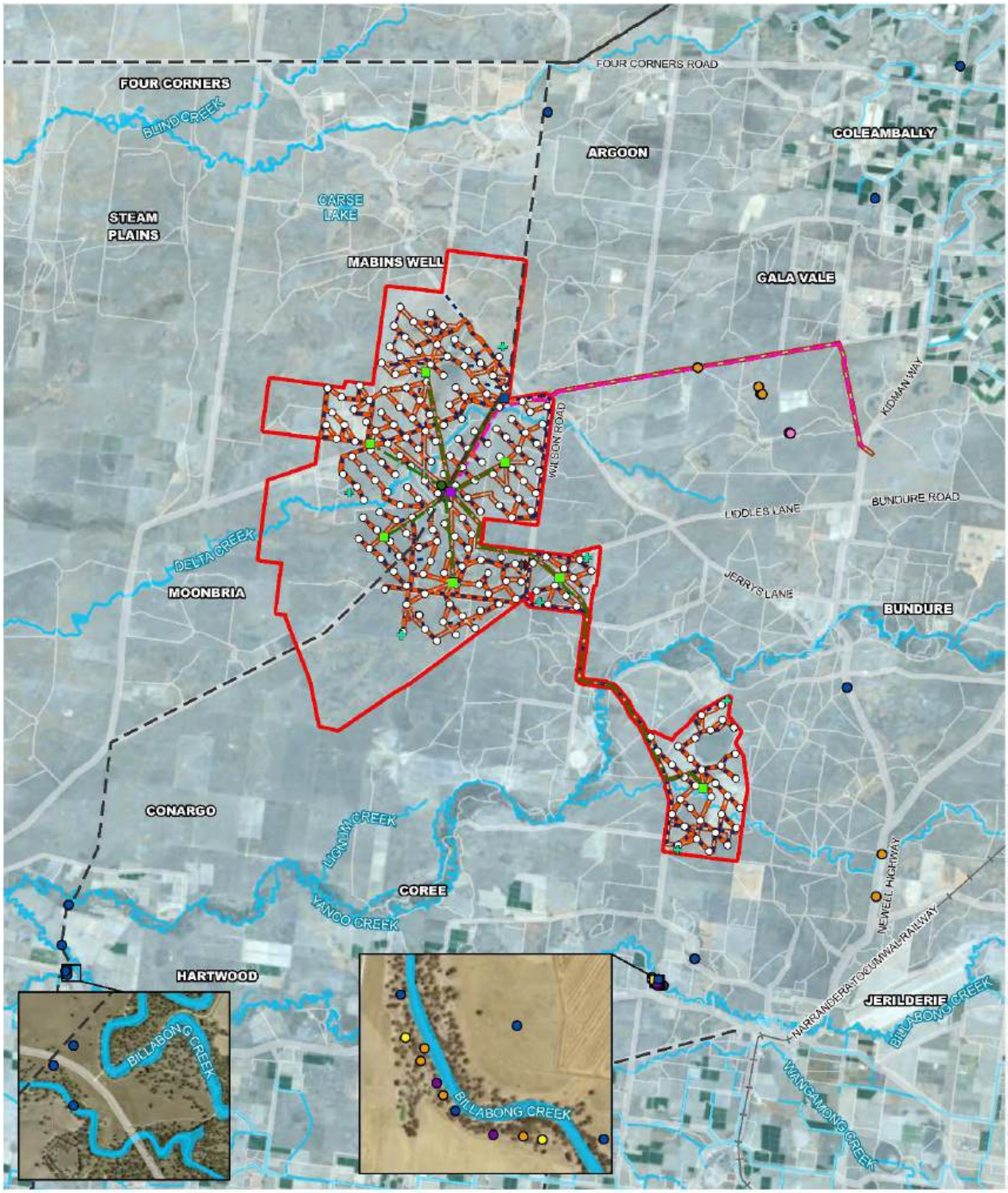

Figure 3-1 Extensive AHIMS results

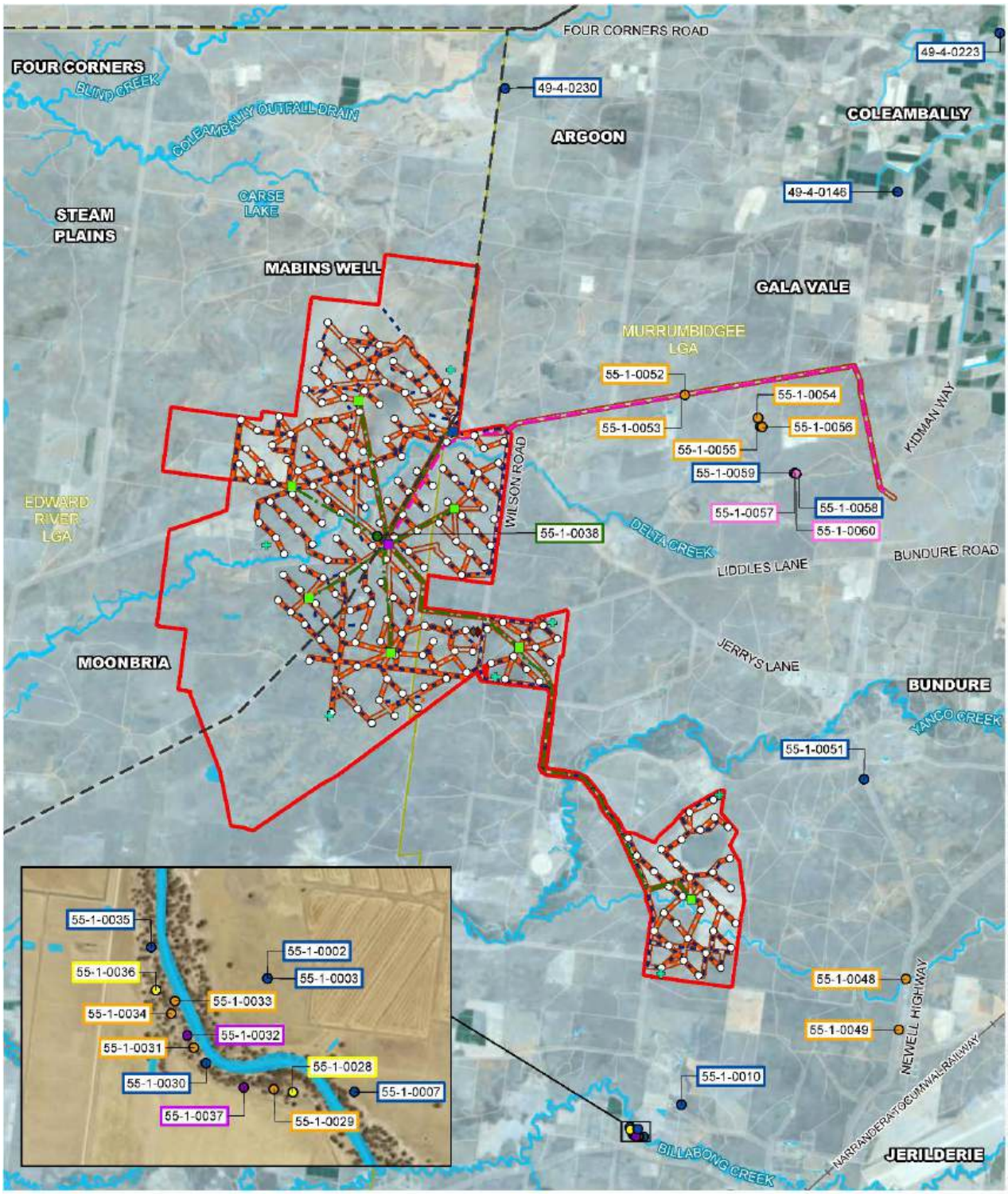

Figure 3-2 AHIMS registered sites within the vicinity of the study area

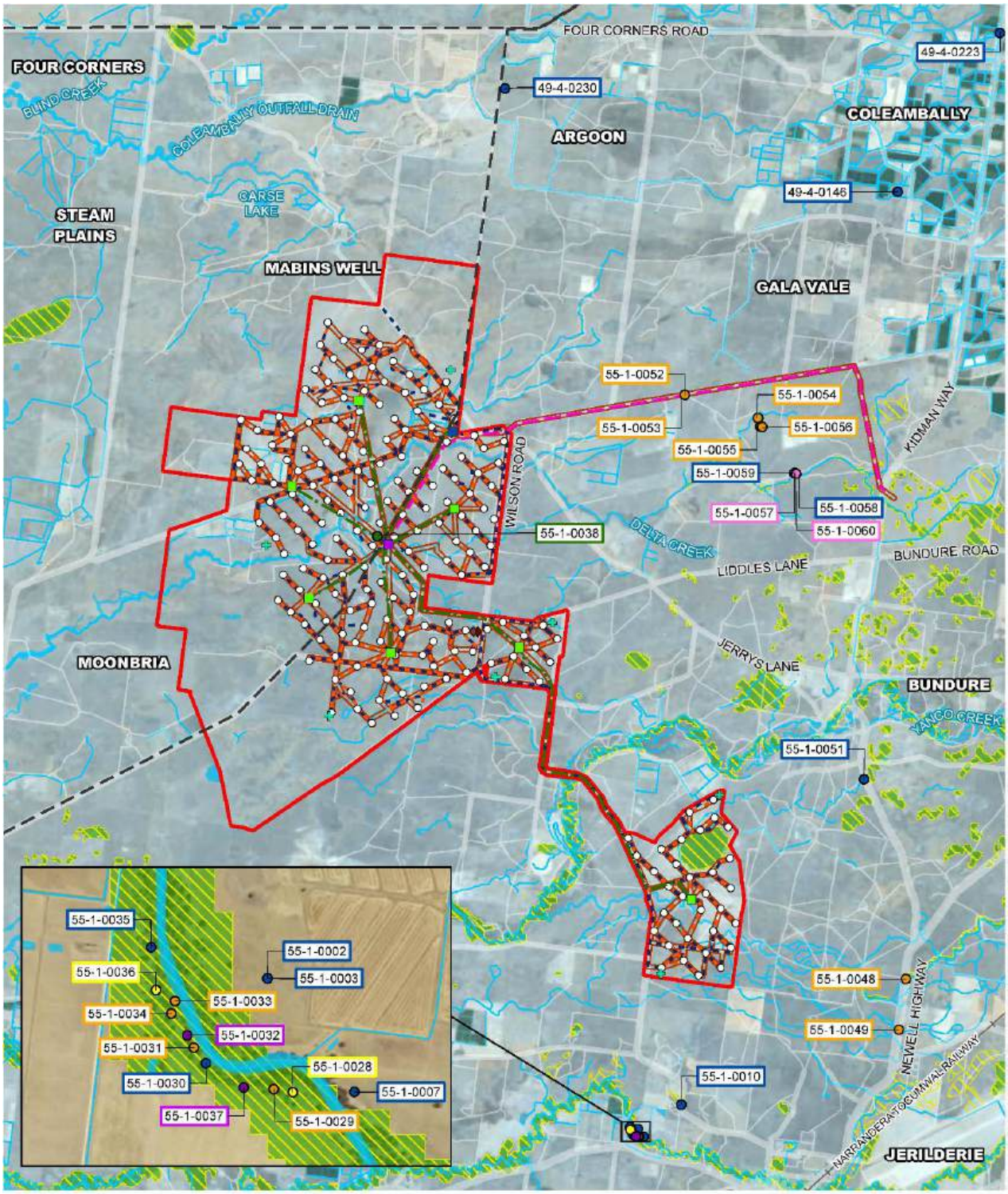

Figure 3-3 Hydrology

3.3 Archaeological context

3.3.1 Regional

Aboriginal occupation within the Murray-Darling Basin dates back to the late Pleistocene epoch, with the Willandra Lakes (located 250 kilometres north-west of the study area) yielding some of the oldest dates. The Willandra Lakes region and Mungo National Park are located approximately 250 kilometres north-west of the current study area. Archaeological excavations in the region have produced Late Pleistocene dates from midden material and Aboriginal ancestral remains (Lawrence 2006). The oldest confirmed dates for Aboriginal occupation along the Murray River are between 18,000 to17,000 years before present (Hope 2000; Lance 1993).

The results of previous archaeological investigation and the search of the AHIMS database, has identified that there are Aboriginal sites present throughout the regional area. There is a dominance of scarred trees, especially in areas which have not been subject to historic land clearance, where there are remnant stands of native trees are present. Scarred trees are particularly frequent along water courses, indicating that additional scarred trees would likely be located where remnant vegetation is located in close proximity to watercourses.

Burials have been found to be predominantly associated with sand hills while floodplains association with ephemeral drainage lines, swamps and lagoons are likely to be associated with earth mounds. Site densities in close proximity to the study area is low. This may suggest the seasonal occupation of the area by Aboriginal people, though it is more likely that there has been a lack of archaeological investigations in the area or that historic land use has impacted the survivability of Aboriginal objects.

3.3.2 Local

There have been several archaeological surveys focused on mounds and burials conducted across the wider Murray Valley and Murrumbidgee Region. These studies summarised below, contribute to an understanding of the nature of Aboriginal occupation in the region.

Buchan (1974) undertook an extensive survey of an area of land 48 kilometres north of the Murray River, extending from Albury to Mildura. The survey resulted in the identification of 198 Aboriginal sites. Based on the site distribution data, Buchan noted that ovens, scarred trees, and middens were typically located on the banks of rivers or creeks which suggested the camps were generally located close to a water and food source. Most of the burials were found to be located within sand dunes. Based on the results of the survey, Buchan developed a predictive model which found that any areas near a water source were likely to contain sites.

Simmons (1980) completed a survey of the Murray Floodplain and channels which resulted in the identification of 75 earth mounds,17 scarred trees as well as lesser numbers of artefact scatters, hearths, middens and burials. The mounds generally contained clay nodules, burned shell and bone fragments. All scarred trees were found to be mature Red Gum species tress. All sites were located on or in association with floodplains, anabranches and lake systems.

McIntyre (1985) completed a survey of a 167 km transmission line between Darlington Point and Deniliquin. The survey resulted in the identification of a total of 27 Aboriginal archaeological sites, one of which was associated with historic features. The site types recorded were primarily scarred trees with artefact scatters, with lesser numbers of hearths and earth mounds. Stone artefacts were found to have been manufactured from silcrete, quartz, basalt, siltstone, and chert. All scarred trees recorded during the survey were found to be Grey Box species trees. Consistent with the predictive model developed by Buchan (1974), McIntyre found that most sites were located near existing water courses.

Hamm (1995) completed a survey of a 117-kilometre-long optical fibre cable to link telephone exchange networks from Darlington Point, Coleambally, Finley and Jerilderie. The survey resulted in the identification of

a total of 20 Aboriginal sites, all scarred trees. In contrast to the findings of McIntyre, all scars were on Yellow Box species trees rather than Grey Box species tress.

Edmonds (1996a) completed a pedestrian and vehicular survey along the Edwards River. Based upon previous archaeological research in the region Edmonds predicted that scarred trees, mounds and burials would be the prominent site types located by the study. Edmonds also predicted that mounds and scarred trees would occur predominantly on the high and low alluvial plains however, while burials would be restricted to sand bodies on the low alluvial plain. The survey resulted in the identification of nine scarred trees and a single burial in a source bordering dune. All scarred trees were found to be River Red Gum species trees, associated with the river and creek banks and Black Box species trees, occurred within the floodplain. The absence of mound sites in the survey area was attributed by Edmonds to a combination of disturbance by rural development and lack of suitable land.

Edmonds (1996b) also completed a pedestrian and vehicular survey for a proposed drainage channel through the Pinelea Drainage Basin, near Finley. This was similar to the previous study in that it was expected that mounds, scarred trees and burials would be the sites most likely to occur. Six scarred trees were recorded during survey on Grey Box associated with swamps, depressions and floodplains, river red gum associated with creek banks and Callitris pine associated with a sandhill. Edmonds noted that that site densities recorded during the survey were lower than other areas on the riverine plain and suggested that prior to European settlement there was likely a greater number and variety of sites in the area.

OzArk (2008) surveyed the 68 kilometres proposed 132 kV transmission line upgrade route proposed from Finley to Mulwala. The survey did not identify any sites and it was assessed that there was low potential for intact, sub-surface archaeological deposits within the study area given the clay soils, lack of permanent water, scale of tree clearing and agricultural developments and absence of rock outcrops in the assessment corridor.

Navin Officer (2009) surveyed the proposed 132 kV transmission line route from Deniliquin to Moama. The route was approximately 69 kilometres long. Nine modified trees and two historic sites were recorded along the proposed transmission line corridor.

NGH Environmental (2016) conducted a Due Diligence assessment of Kyalite Stables for rezoning and residential development for the Edward River Council. The area was located between the Riverina Highway and the Edward River on the eastern edge of the township of Deniliquin. While previous archaeological surveys and modelling for the area suggested that the most archaeologically sensitive areas were relatively intact tracts of riverine Red Gum Forest along the floodplains of the major active rivers and creeks, and Black Box fringed depressions no sites were identified.

3.4 Predictive model

Predictive models are important and provide assessments on the most likely areas of archaeological potential within a given subject site. These models also indicate the likely types of archaeological evidence, if present, with a given locations and / or subject site.

The predictive model for this assessment comprises a series of statements about the nature and distribution of evidence of Aboriginal land use that is expected in the subject site. These statements are based on the information gathered regarding:

- Landscape context and landform units
- Historical descriptions of Aboriginal land use
- Historical disturbance and landscape modification
- Results of previous archaeological work in the vicinity of the subject site
- Historical accounts of Aboriginal occupation, and landscape character
- Predictive modelling proposed in previous archaeological investigations.

Based on the results of desktop assessment the most common Aboriginal site types likely to be identified in the study area include:

- Stone artefacts – are present across the entire landscape, in varying densities. As Aboriginal people traversed the landscape for thousands of years, such finds can occur anywhere and indicate the presence of isolated activity, dropped or discarded artefacts from hunting or gathering expeditions or the ephemeral presence of short term camps
- Burials – are generally found in elevated sandy contexts or in association with rivers and major creeks. No such features exist with the study area and therefore such sites are unlikely to occur. Burials are unlikely to be detected through surface survey
- Scarred Trees – these require the presence of mature trees and are likely to be concentrated along major waterways and around swamps areas. There are patches of remnant vegetation and isolated old growth trees within the study area. Therefore, this feature is likely to occur
- Hearths/Ovens – are identified by burnt clay used for heat retainers. Some are recorded in the district in association with resource locations. However, they could occur either independently or in association with other Aboriginal cultural features such as campsites. While it is possible for this feature to occur, such places are not obvious within the study area and would likely be disturbed or previously destroyed by farming and irrigation activities
- Shell Middens – are the accumulation of shell material disposed of after consumption. Such places are found along the edges of significant waterways, swamps and billabongs. No such natural undisturbed features occur and therefore this site type is unlikely to exist in the study area.

The lack of topographic, environmental or landscape features within the study area means that there are few loci that could potentially be attractive to Aboriginal people to concentrate activity and therefore increasing the chance of leaving archaeological traces. Nonetheless, given that Aboriginal people have lived in the region for tens of thousands of years, there is some potential for archaeological evidence to occur. This is most likely to be in the form of stone artefacts and scarred trees.

Background research has identified that all soil landscapes within the study area are considered to have some sensitivity to contain Aboriginal objects. The siliceous sands are considered to have high potential to contain Aboriginal objects, the red-brown earth soils are considered to have low potential, and the grey, brown and red clays have moderate potential to include Aboriginal objects.

Areas where native vegetation is present have been assessed as having moderate potential to contain Aboriginal objects as this may be an indicator of location where old trees with cultural modification may be present. These areas may also indicate less ground disturbance and high potential for Aboriginal objects to be present. Locations with non-native vegetation have low potential to contain Aboriginal objects.

All land located within 200 metres of a water source is considered to have high potential to contain Aboriginal objects.

Based on these criteria, Spatial Multi-Criteria Analysis (MCA) has been completed to develop a visual representation of the predicted archaeological potential of the study area (refer to **Figure 3-4**). The model indicates that the majority of project impacts will avoid locations that are of high predicted archaeological potential.

Background research completed for this assessment resulted in the development of several predictive statements that should be verified by field investigation:

- It is likely that scarred trees will be present within the study area at locations where native vegetation has not been subject to historic land clearance
- Stone artefacts will likely be identified within close proximity to existing roads due to increased surface visibility and exposure facilitating high survey efficiency
- Aboriginal objects will likely be located within 200 metres of major/permanent waterways

- Locations associated with the siliceous sands landscape are likely to contain deep (1.4 metres) deposits that have the potential to contain Aboriginal objects dating to the Pleistocene
- Locations associated with the grey, brown and red clays landscape are unlikely to feature subsurface artefact deposits but are likely to feature Aboriginal objects on the ground surface.

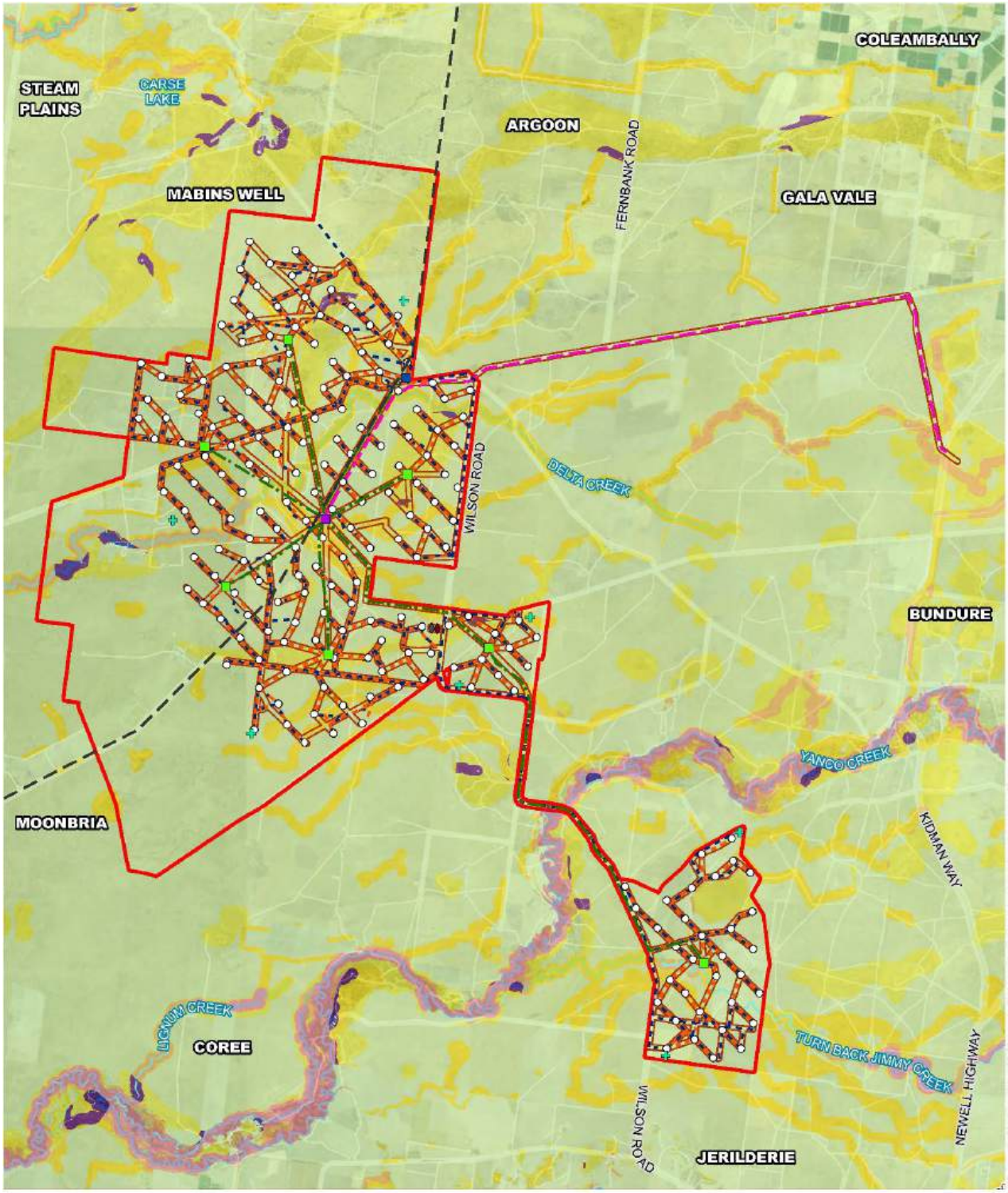

Figure 3-4 Predictive heritage constraints

4. Archaeological survey

4.1 Methodology

4.1.1 Aims

A preliminary site inspection was conducted within the study area in order to inspect where impacts would occur, and to identify where whether or not Aboriginal objects are, or are likely to be, present, and whether or not the proposal is likely to harm Aboriginal objects. The site inspection had the following objectives:

- Inspect areas of higher visibility and soil exposures
- Inspect elevated areas near waterways, water bodies and creek lines
- Inspect all rock shelters within the study area
- Inspect all mature trees in the study area for cultural modification or scarring.

The archaeological survey was undertaken in consultation with the registered Aboriginal parties (RAPs).

4.1.2 Survey personnel

The archaeological survey was undertaken from 11 – 15 July 2022. The following personnel were in attendance for the survey:

Table 4-1 Survey attendance

Group	Role	Name	Date/s
Jacobs	Project Archaeologist	Meaghan Aitchison	11 – 15 July 2022
Jacobs	Project Archaeologist	Pauline Ramsey	11 – 15 July 2022
Bidya Marra Consultancy	Sites Officer	Bruce Crowe	11 – 15 July 2022
Griffith LALC	Sites Officer	Jordan Marr	13 – 15 July 2022

4.1.3 Survey strategy and procedure

The study area was divided into four survey units, based on landform elements identified during the generation of the predictive model (refer to **Figure 4-1**). A sample survey is acceptable, with justification, under the Code of Practice. Full coverage survey of each survey unit was not practicable due to dense, impenetrable vegetation and safe access constraints. As a result, portions of each survey unit, marked in **Figure 4-1** and described in **Section 5.1** were subject to survey. The survey was carried out on foot by a team of archaeologists and Aboriginal representatives, in accordance with the Code of Practice.

A handheld Global Positioning System (GPS) was used to track the path of the survey team and record the coordinates of identified features and disturbances. Detailed aerial maps marked with grid coordinates for the survey unit was carried by the survey team. The coordinate system projection used for all data recording was GDA94 MGA 56.

A photographic record was kept during the survey. Photographs were taken to record aspects of each survey unit including disturbance and recorded Aboriginal sites. Scales were used for photographs where appropriate.

Where archaeological sites or areas of potential archaeological deposit (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 clusters or middens)
- 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 cultural features
- 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 (burials, ceremonial sites) 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
- Any other comments or information as judged relevant by the field team.

Where sites or places in the landscape were found to be associated with intangible cultural heritage, the information provided by RAPs in the field was recorded.

When an Aboriginal object was found within the proposal area, the area was then recorded as an Aboriginal site. Aboriginal Site Recording Forms for these sites are in the process of being completed by Jacobs and will be lodged with AHIMS as soon as is practicable.

During the survey, RAPs were given the opportunity to provide Jacobs with any relevant information on the proposal area and the surrounding region, including information on cultural heritage values. It should be noted that RAPs have the opportunity to provide any information relating to the cultural significance of the study area at any point during the cultural heritage assessment process prior to the finalisation of the Aboriginal cultural heritage assessment report (ACHAR).

4.1.4 Site recording definitions

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

The Requirement 6 of the Code of Practice state that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location
- Obvious physical boundaries where present, e.g., mound site and middens (if visibility is good), a ceremonial ground
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this assessment, sites and feature extents were defined by recording the spatial extent of visible traces or the direct evidence of their location.

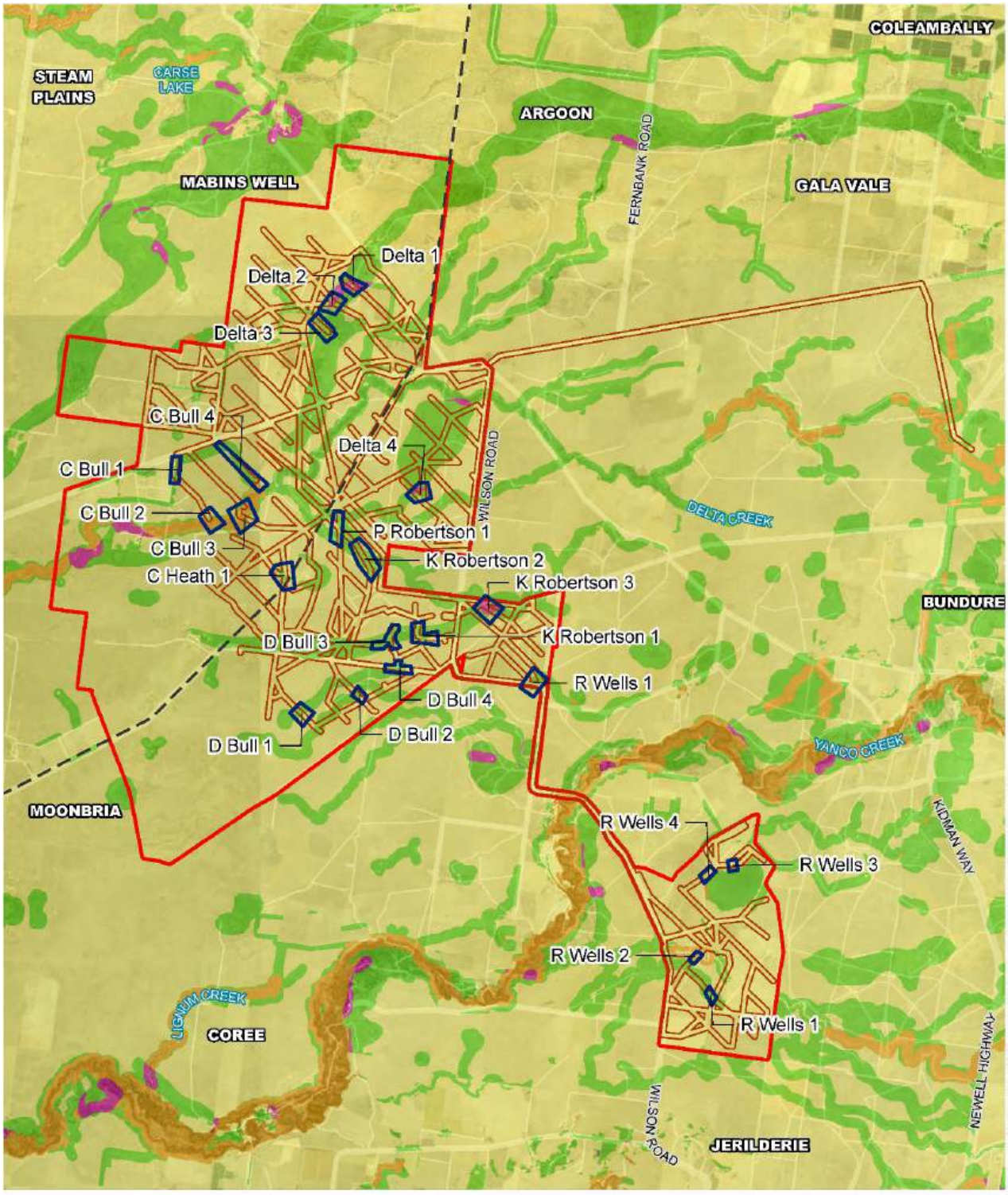

Figure 4-1 Survey units

5. Survey results

5.1 Description of survey units

5.1.1 Survey unit 1

Survey unit 1 was defined as the land that featured the Grey, Brown, and Red Clays and was more than 200 metres from a waterway in land that had likely been subjected to vegetation clearance. Sample survey of this area was completed at four locations:

- C Bull area 2
- C Bull area 4
- R Wells area 3
- R Wells area 4.

Survey unit 1 was characterised by cropped paddocks with sparse woodland and frequent lignum. One area of PAD, Yanco Delta PAD 01, was identified within C Bull area 2.

5.1.2 Survey unit 2

Survey unit 2 was defined as the land that featured the Siliceous Sands and was within 200 metres of a minor waterway. Sample survey of this area was completed at 11 locations:

- C Bull area 1
- D Bull area 1
- D Bull area 2
- D Bull area 3
- D Bull area 4
- K Robertson area 1
- C Hearth area 1
- P Robertson area 1
- K Robertson area 2
- Delta area 3
- R Wells area 1.

Survey unit 2 was characterised by a flat plain, with occasional areas of slight undulation and floodplains. Ground surface visibility was generally low and was associated with the base of shrubberies. Some ground disturbance was evidence, the result of ploughing and rabbit burrowing. A total of five sites were identified within survey unit 2:

- Yanco Delta AS PAD 01 (D Bull 3)
- Yanco Delta AS PAD Hearth 01 (K Robertson 1)
- Yanco Delta AS PAD 02 (C Hearth 1)
- Yanco Delta AS Hearth 01 (P Robertson 1)
- Yanco Delta AS Hearth 02 (K Robertson 2)

5.1.3 Survey unit 3

Survey unit 3 was defined as the land within 200 metres of a major waterway. Sample survey of this area was completed at two locations:

- C Bull area 3
- R Wells area 2.

Survey unit 3 was characterised by an open grassy plain, with low ground surface visibility. One area of site, Yanco Delta AS 01, was identified within C Bull area 3.

5.1.4 Survey unit 4

Survey unit 4 was defined as the land that featured the Siliceous Sands and was within 200 metres of a major waterway. Sample survey of this area was completed at four locations:

- K Robertson area 3
- Delta area 2
- Delta area 1
- Delta area 4.

Survey unit 4 was characterised by sandy terraces, with low ground surface visibility. Vegetations consisted of sparse grassland and pine trees. One area of site, Yanco Delta Hearth 01, was identified within Delta area 2.

5.1.5 Survey coverage

A summary of survey coverage, in accordance with the Code of Practice, is outlined in **Table 5-1** and **Table 5-2** below.

Table 5-1 Survey coverage summary.

Survey Unit	Landform	Survey Unit Area (Sqm)	Visibility (%)	Exposure (%)	Effective Coverage Area (Sqm)	Effective Coverage (%)
Survey Unit 1	Flat	1,648,245	10	90	148,342.05	9
Survey Unit 2	Flat	5,009,462	10	90	450,851.58	9
Survey Unit 3	Terrace	931,733	10	90	83,855.97	9
Survey Unit 4	Terrace	1,992,128	10	90	179,291.52	9

Table 5-2 Landform survey coverage

Landform	Landform Area (sq m)	Area effectively surveyed (sq m)	% of landform effectively surveyed	Number of sites
Flat	6,657,707	599,193.63	9	6
Terrace	2,923,861	263,147.49	9	2

5.2 Aboriginal sites

A summary of Aboriginal sites identified, in accordance with the Code of Practice, is outlined in **Table 5-3** below.

Table 5-3 Results summary

Site number	Feature(s)	Survey unit	Landform
Yanco Delta PAD 01	PAD	1	Flat
Yanco Delta AS PAD 01	Artefact, PAD	2	Flat
Yanco Delta AS PAD Hearth 01	Artefact, PAD, Hearth	2	Flat

Site number	Feature(s)	Survey unit	Landform
Yanco Delta AS PAD 02	Artefact, PAD	2	Flat
Yanco Delta AS Hearth 01	Artefact, Hearth	2	Flat
Yanco Delta AS Hearth 02	Artefact, Hearth	2	Flat
Yanco Delta AS 01	Artefact	3	Terrace
Yanco Delta Hearth 01	Hearth	4	Terrace

5.2.1 Yanco Delta PAD 01

Yanco Delta PAD 01 was identified within C Bull area 2 as an elevated landform comprised of reddish alluvial loam. While the area has been disturbed by livestock, it is located close to a hydro depression and contains evidence of a buried hearth. The surface clay had been subject to baking and a hearth may be present.

Figure 5-1 Yanco Delta PAD 01 ground surface

Figure 5-2 Yanco Delta PAD 01 view across PAD

5.2.2 Yanco Delta AS PAD 01

Yanco Delta AS PAD 01 was identified within D Bull area 3 and featured a quartzite proximal flake fragment measuring 100mm x 11mm x 1mm. The site also includes an area of PAD.

Figure 5-3 Yanco Delta AS PAD 01 quartzite flake

Figure 5-4 Yanco Delta AS PAD 01 ground surface

5.2.3 Yanco Delta AS PAD Hearth 01

Yanco Delta AS PAD Hearth 01 was identified within K Robertson area 1 on a sandy rise. The site included a clay mound and three hearth features. Four stone artefacts were also identified:

- Complete flake of quartz measuring 23mm x 11mm x 4.5mm
- Complete flake of quartz measuring 38mm x 13mm x 7mm with usewear on the distal margin
- Multiplatform core of quartz with 3 scars, measuring 18mm x 20mm x 19.7mm
- Complete flake of quartz measuring 9mm x 7mm x 0.3mm with usewear on one longitudinal margin.

Figure 5-5 Yanco Delta AS PAD Hearth 01 artefact

Figure 5-6 Yanco Delta AS PAD Hearth 01 area of PAD

5.2.4 Yanco Delta AS PAD 02

Yanco Delta AS PAD 02 was identified within C Hearth area 1 on a scoured landscape adjacent. An access track cuts through the area of PAD exposing silty clay soils. The site features five stone artefacts:

- A flaked stone measuring 33.31mm x 32.2mm x 18mm
- An angular fragment of silcrete measuring 27.27mm x 17.82mm x 5.24mm
- A complete flake of silcrete measuring 18.66mm x 17.91mm x 5.84mm
- Silcrete flake measuring 16.81mm x 9.21mm x 3.53mm
- Silcrete flake measuring 14.72mm in length.

Figure 5-7 Yanco Delta AS PAD 02 artefacts

Figure 5-8 Yanco Delta AS PAD 02 artefacts

5.2.5 Yanco Delta AS Hearth 01

Yanco Delta AS Hearth 01 was identified within P Robertson area 1 on a slight elevation with a low gradient, overlooking a paleo channel. The site contains a hearth feature and five stone artefacts:

- An artefact measuring 54mm x 33mm x 4.7mm
- A grindstone fragment of sandstone measuring 77mm x 66mm x 27mm
- A complete flake of quartz measuring 14mm x 17mm x 2.3mm
- A complete flake of silcrete measuring 22mm x 25mm x 3.1mm
- Single platform core of quartz measuring 22mm x 21mm x 30mm.

Figure 5-9 Yanco Delta AS Hearth 01 grindstone

Figure 5-10 Yanco Delta AS Hearth 01 ground surface

5.2.6 Yanco Delta AS Hearth 02

Yanco Delta AS Hearth 02 was identified within K Robertson area 2. The site consists of four hearth features and an artefact scatter.

Figure 5-11 Yanco Delta AS Hearth 02 quartzite flake

Figure 5-12 Yanco Delta AS Hearth 02 ground surface

5.2.7 Yanco Delta AS 01

Yanco Delta AS 01 was identified within C Bull area 3 and was comprised of six stone artefacts:

- Four small pieces of quartzite (debitage)
- One large piece of water worn silcrete
- One silcrete fragment measuring 70.79mm x 59.24mm x 14.68mm.

Figure 5-13 Yanco Delta AS PAD 01 quartzite flake

Figure 5-14 Yanco Delta AS PAD 01 ground surface

5.2.8 Yanco Delta Hearth 01

Yanco Delta Hearth 01 was identified within Delta area 2 and is comprised of out of context clayballs.

Figure 5-15 Yanco Delta Hearth 01

6. Analysis and discussion

6.1 Regional

The oldest confirmed dates for Aboriginal occupation along the Murray River are between 18,000 to17,000 years before present (Hope 2000; Lance 1993). The results of the archaeological survey have confirmed the presence of Paleochannels (the siliceous sand soil landscape). However, no information has been obtained to confirm the age of sites identified within this landscape.

Scarred trees are particularly frequent within the regions, especially along water courses. No scarred trees were identified during the completion of the archaeological survey. This is likely due to historical vegetation clearance that would have resulted in the removal of any scarred trees within the study area.

Within the region, burials have been found in sand hills with earth mounds located in floodplains association with ephemeral drainage lines, swamps and lagoons. No earth mounds or evidence of burials were identified within the study area despite the presence of former swamps and sand hills.

6.2 Local

It was predicted that the study area would contain, stone artefacts, burials, scarred trees, hearths and shell middens. The archaeology survey resulted in the identification of stone artefacts and hearths. Areas of PAD were identified that may contain additional site types. The lack of scarred trees with the study area is likely the result of historic vegetation clearance. The majority of the study area is comprised of a clay which might not be suitable for burials, which would more likely be present within the siliceous sands. Historic disturbance and flooding may have resulted in the removal or concealment of shell middens.

The survey generally validated the predictive model. No Aboriginal objects or areas of PAD were identified within the Grey, Brown, and Red Clays soil landscape. Aboriginal objects and areas of PAD were located within 200 metres of waterways and associated with the siliceous sands.

7. Assessment of scientific values

7.1 Assessment criteria

In accordance with the Code of Practice, an assessment of the scientific value of an Aboriginal object or place is required in order to form the basis of its management. The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (the Guide) (Office of Environment and Heritage [OEH] 2011) provides the following criteria for the assessment of scientific value:

- Research potential – does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness – how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity – is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential – does the subject area contain teaching sites or sites that might have teaching potential?

It is important to note that heritage significance is a dynamic value.

7.2 Scientific values

7.2.1 Yanco Delta PAD 01

The scientific value of Yanco Delta PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As no Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the identification of Aboriginal objects.

7.2.2 Yanco Delta AS PAD 01

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.2.3 Yanco Delta AS PAD Hearth 01

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.2.4 Yanco Delta AS PAD 02

The scientific value of Yanco Delta AS PAD 01 cannot be accurately assessed until the results of further archaeological investigations are known. As the full nature and extent of Aboriginal objects have been identified, the rarity or representative value of the site features cannot be determined. The site may be considered to hold some educational or research value, for the potential to increase archaeological knowledge of the area. However, research and education value would need to be fully determined following the further assessment.

7.2.5 Yanco Delta AS Hearth 01

Yanco Delta Hearth 01 is a hearth and is likely to contain datable material such as charcoal. The site also contains Aboriginal objects and dating of any recovered charcoal could yield further information on the chronologies of artefact assemblages. As a result, the site considered to be of moderate research value. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.2.6 Yanco Delta AS Hearth 02

Yanco Delta Hearth 02 is a hearth and is likely to contain datable material such as charcoal. The site also contains Aboriginal objects and dating of any recovered charcoal could yield further information on the chronologies of artefact assemblages. As a result, the site considered to be of moderate research value. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.2.7 Yanco Delta AS 01

Yanco Delta AS 01 is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.2.8 PEC-E-G2 (AHIMS ID 55-1-0052)

PEC-E-G2 (AHIMS ID 55-1-0052) is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.2.9 PEC-E-43 (AHIMS ID 55-1-0053)

PEC-E-43 (AHIMS ID 55-1-0053) is a surface artefact scatter and considered is common within the region and therefore of low representative value. The site does not feature an area of PAD or any datable components and is likely to have been disturbed by taphonomic processes and is considered to be of low research value. As artefact sites are relatively common within the area, the site is not considered to have any specific educational or representative value.

7.2.10 Yanco Delta Hearth 01

Yanco Delta 01 is a hearth and is likely to contain datable material such as charcoal. As a result, the site considered to be of moderate research value for the potential to further research site chronologies. No hearths are currently registered on the AHIMS database within the AHIMS search area, as a result, the site is considered to be rare within the local context. The site is consistent with regional examples of hearths and is therefore of moderate representative valve. The site is considered to be of moderate educational value for the potential to share knowledge of traditional Aboriginal practices.

7.2.11 Summary

A summary of scientific significance for the study area is provided in **Table 7-1**.

Table 7-1 Summary of scientific values

Site name (AHIMS ID)	Research potential	Representativeness	Rarity	Education potential	Overall significance assessment
Yanco Delta PAD 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD Hearth 01	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS PAD 02	Unknown	Unknown	Unknown	Unknown	Unknown
Yanco Delta AS Hearth 01	Moderate	Moderate	High	Moderate	Moderate
Yanco Delta AS Hearth 02	Moderate	Moderate	High	Moderate	Moderate
Yanco Delta AS 01	Low	Low	Low	Low	Low
PEC-E-G2 (AHIMS ID 55-1-0052)	Low	Low	Low	Low	Low
PEC-E-43 (AHIMS ID 55-1-0053)	Low	Low	Low	Low	Low
Yanco Delta Hearth 01	Moderate	Moderate	High	Moderate	Moderate

8. Impact assessment

8.1 Description of likely impacts

Construction of the Project would involve the following elements stated in **Section 1.2**, including the construction and operation of up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. Construction would involve a range of activities including vegetation clearing, earthworks, trenching, concrete works and the establishment of a construction compound.

Potential impacts to Aboriginal heritage associated with ground disturbance activities are provided in the sections below.

8.2 Potential impacts to Aboriginal heritage

Yanco Delta PAD 01 is not located within the study area and will not be harmed by the Project. Based on the current design plans, the following sites partially overlap with the current design plans and are likely to be partially impacted by the proposed works:

- Yanco Delta AS PAD 01
- Yanco Delta AS PAD Hearth 01
- Yanco Delta AS PAD 02
- Yanco Delta AS Hearth 01
- Yanco Delta AS Hearth 02
- Yanco Delta AS 01
- Yanco Delta Hearth 01
- PEC-E-G2 (AHIMS ID 55-1-0052)
- PEC-E-43 (AHIMS ID 55-1-0053).

A summary of the assessed impacts in accordance with the Code of Practice is included in **Table 8-1** below.

Table 8-1 Summary of potential impacts

Site name (AHIMS ID)	Type of harm	Degree of harm	Consequence of harm
Yanco Delta PAD 01	None	None	None
Yanco Delta AS PAD 01	Direct	Partial	Partial loss of value
Yanco Delta AS PAD Hearth 01	Direct	Partial	Partial loss of value
Yanco Delta AS PAD 02	Direct	Partial	Partial loss of value
Yanco Delta AS Hearth 01	Direct	Partial	Partial loss of value
Yanco Delta AS Hearth 02	Direct	Partial	Partial loss of value
Yanco Delta AS 01	Direct	Partial	Partial loss of value
Yanco Delta Hearth 01	Direct	Partial	Partial loss of value
PEC-E-G2 (AHIMS ID 55-1-0052)	Direct	Total	Total loss of value
PEC-E-43 (AHIMS ID 55-1-0053)	Direct	Total	Total loss of value

9. Management and mitigation measures

9.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites would be conserved. If conservation is not practical, measures would be taken to mitigate against impacts to Aboriginal sites.

Where unavoidable impacts occur then measures to mitigate and manage impacts are proposed. Mitigation measures primarily concern preserving the heritage values of sites beyond the physical existence of the site. The most common methods involve detailed recording of Aboriginal objects, archaeological salvage excavations, artefact analysis and, where appropriate, reburial of Aboriginal objects in a location determined by the RAPs.

Mitigation measures vary depending on the assessment of archaeological significance of a particular Aboriginal site and are based on its research potential, rarity, representatives and educational value. In general, the significance of a site would influence the choice of preferred conservation outcomes and appropriate mitigation measures, usually on the following basis:

- Unknown scientific value - Conservation where possible. Further investigation under the Code of Practice will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure
- Low scientific value - Conservation where possible, but usually no mitigation required if impacts are unavoidable
- Moderate scientific value - Conservation where possible. If conservation is not practicable, salvage excavations or similar mechanisms (surface collection) determined in consultation with the Aboriginal community may be necessary
- High scientific value - Conservation as a priority. Only if all practicable alternatives have been exhausted would impacts be considered justified. Comprehensive salvage excavations or similar mechanisms (surface collection) may be necessary

9.2 Test excavations

The purpose of archaeological test excavation is to assess the nature, extent and archaeological significance of areas of PAD. It is a critical step in the assessment process and is not a mitigation for potential impacts. An archaeological test excavation methodology would be prepared and sent to RAPs for review and comment prior to the commencement of test excavation. The methodology would comply with the requirements of the Code of Practice.

The final design for the Project should be informed by the results of test excavations.

Additional mitigation measures would be determined following the test excavation results. Where harm to sites can be avoided, it should be considered in the first instance. Any identified sites of moderate – high archaeological significance which will be harmed by the project may be recommended for salvage excavation. Where test excavation identifies sites of high archaeological significance, this information would inform future design preparation regarding future management of those areas, such as conservation where possible.

9.3 Cultural Heritage Assessment Reporting

An assessment of the cultural heritage significance of an object or place is required in order to inform its management. The Guide provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013) for significance assessment with assessments being required to consider the following criteria:

- Social values – does the area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- Historic values – is the area important to the cultural or natural history of the local area and/or region and/or state
- Scientific values - does the area have the potential to yield information that will contribute to an understanding of the cultural and natural history of the local area and/or region and/or state
- Aesthetic values – is the area important in demonstrating aesthetic characteristics in the local area and/or region and/or state.

The Aboriginal heritage significance of the study area would be assessed, based on comments received from the RAPs, the background research and the results of this report. This would be detailed in an ACHAR.

An ACHAR should be prepared for this project, in accordance with the requirements of the Guide and the Consultation Requirements. The ACHAR would also include a revised impact assessment based on detailed design plans and would include recommendations based on the updated significance and impact assessments.

9.4 Long term management of test excavation artefact assemblage

In the event that salvage works are proposed, Aboriginal objects should be reburied on site in an area that will not be subject to future impacts. Further information on the long-term care and management of the retrieved artefact assemblages is included in the ACHAR.

9.5 Ongoing consultation with Aboriginal stakeholder groups

Consultation with the registered Aboriginal stakeholders would continue throughout the life of the Project, as necessary. Ongoing consultation with registered Aboriginal stakeholders will take place throughout all facets of the project.

9.6 Management and mitigation measures for this project

Yanco Delta PAD 01 will not be impacted by the project, and no mitigation is required.

Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02 have been assessed as being of unknown scientific value. Where possible, impacts to these locations should be avoided. Where impact is unavoidable, test excavations will be required to confirm the presence of subsurface Aboriginal objects and gather enough information to assessment scientific value. This information will allow appropriate management and mitigation measures to be determined. Where test excavations are required, they must be completed prior to EIS submission so that the results can inform the Minister's Conditions of Approval.

Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, and Yanco Delta Hearth 01 have been assessed as having moderate scientific value. Impacts to these sites should be avoided, to allow them to be conserved *in situ*. Where conservation is not practical, a salvage excavation should be completed at each site prior to any impact through the proposed works. Salvage works (collection of surface artefacts) is considered harm under the NPW Act; therefore, the Minister's Conditions of Approval will be required as the approval mechanism to authorise harm through salvage and the proposed works.

Yanco Delta AS 01, PEC-E-G2 (AHIMS ID 55-1-0052), and PEC-E-43 (AHIMS ID 55-1-0053) have been assessed as demonstrating low scientific value. Conservation should be considered if practical. If conservation is not practical, salvage works (collection of surface artefacts) should be considered as a mitigation measure for harm. This should be conditioned through the Minister's Conditions of Approval.

These measures are summarised in **Table 9-1** below.

Table 9-1 Summary of management and mitigation measures for the Yanco Delta Windfarm

Measure No	Site name (AHIMS ID)	Scientific value	Type of harm	Measure
1	Yanco Delta PAD 01	Unknown	None	No mitigation required
2	Yanco Delta AS PAD 01	Unknown	Direct	Test excavation to inform assessment of scientific value and determination of management and mitigation measures Test excavations should occur prior to EIS submission
	Yanco Delta AS PAD Hearth 01	Unknown	Direct	
	Yanco Delta AS PAD 02	Unknown	Direct	
3	Yanco Delta AS Hearth 01	Moderate	Direct	Impacts avoided where possible If impacts cannot be avoided, salvage works should occur prior to impact occurring Salvage works should be conditioned through the Minister's Conditions of Approval
	Yanco Delta AS Hearth 02	Moderate	Direct	
	Yanco Delta Hearth 01	Moderate	Direct	
	Yanco Delta AS 01	Low	Direct	
	PEC-E-G2 (AHIMS ID 55-1-0052)	Low	Direct	
	PEC-E-43 (AHIMS ID 55-1-0053)	Low	Direct	

10. Conclusion and recommendations

10.1 Conclusion

The following conclusions are made:

- A search of the AHIMS database was undertaken on 1 October 2021 for an area of land at datum GDA, zone 55, eastings 343764.83 - 396348.52, northings 6089153.64 - 6144064.62 with a buffer of 0 meters. Two previously identified Aboriginal sites are located within the study area:
  - PEC-E-G2 (AHIMS ID 55-1-0052)
  - PEC-E-43 (AHIMS ID 55-1-0053).
- The archaeological survey was undertaken between 11 and 15 July 2022, which resulted in the identification of eight additional sites:
  - Yanco Delta PAD 01
  - Yanco Delta AS PAD 01
  - Yanco Delta AS PAD Hearth 01
  - Yanco Delta AS PAD 02
  - Yanco Delta AS Hearth 01
  - Yanco Delta AS Hearth 02
  - Yanco Delta AS 01
  - Yanco Delta Hearth 01.
- According to current design plans, Yanco Delta PAD 01 will not be harmed however the remaining nine sites would be partially harmed resulting in a partial loss of value.

10.2 Recommendations

- An ACHAR should be prepared in compliance with the Aboriginal heritage requirements of SEARS application (SSD-41743746)
- The ACHAR should demonstrate any actions or plans to avoid harm to identified Aboriginal sites
- Where harm to areas of PAD (Yanco Delta AS PAD 01, Yanco Delta AS PAD Hearth 01, and Yanco Delta AS PAD 02) is unavoidable further assessment should be completed in accordance with the Code of Practice. Harm to these sites cannot be authorised by the Minister's Conditions of Approval without the completion of test excavations, significance assessment and the development of mitigation measures in consultation with the RAPs
- Where harm to sites of known significance is unavoidable (Yanco Delta AS Hearth 01, Yanco Delta AS Hearth 02, Yanco Delta AS 01, Yanco Delta Hearth 01, PEC-E-G2, and PEC-E-43) salvage should be completed under the authorisation of the Minster's Conditions of Approval
- To keep consultation current, the RAPs should be sent an update on the Project every six months, until Project approval has been obtained.

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Appendix A. AHIMS records

Figure redacted due to sensitivity of Aboriginal sites

Appendix B. AHIMS site cards

Details redacted due to sensitivity of Aboriginal sites

Appendix B. Consultation records

From:	James Ingram
To:	Wallace, Nikki
Cc:	Scully, Fran; Taddeucci, Ryan; Yanco Delta Wind Farm
Subject:	[EXTERNAL] Re: Yanco-Delta Windfarm Project - Proposed Aboriginal Cultural Heritage Assessment Report
Date:	Thursday, 8 September 2022 8:35:49 PM

Hi Nikki

I write in reference to the proposed ACHAR for the Delta Windfarm project.

Bidya Marra Consultancy agrees in principle with the methodology of the ACHAR however we are under impression that no ground excavation have occurred but will rather be completed in the next round of field work which we assume will take place asap.

Bidya Marra Consultancy also makes the following observation. During my time employed with Riverina Local Land Services I was responsible for the rehabilitation of a area known as Dry Lake. Dry Lake is located on the Maude Road between the Sturt Hwy and the township of Moulmein. Dry Lake was traditionally fed by the Abercrombie Creek and was the traditional homeland of the Kerrie Kerrie , Jothi Jothi , Cre Cre clans of the Great Nation of Wiradyuri. The Dry Lake boundary is between the borders of the Murray LS & Riverina LS boundaries and it is upon this boundary that exist between 30 to 35 skeletons of Wiradyuri people.
The Hay Aboriginal Working Party carried out the rehabilitation on the Riverina LS side of what is a Travelling Stock Reserve (Dry Lake TSR Maude Road)
It is unknown what rehabilitation works were carried out by the Murray LS.

Given the location of the proposed Delta Windfarm to Dry Lake I cannot stress the importance of being vigilant as the Dry Lake burial site is not the only ancestral burial site in and around this area. It is a well know fact almost the Wiradyuri the the township of Coleambally is built on a burial site.
Highly significant Boundary & Ceremonial trees are located near and around Morundah designating Mens & Women areas.

Bidya Marra Consultancy also contents that our Sites Officer have grown up in and around the areas being survey and very qualified to assist you in any further surveys or archaeological digs. We also content that all footing areas for the windmill structures must be excavated with our sites officers present.

Bidya Marra Consultancy is able to respond to any request for sites officers to be engaged by your firm.

Regards

James Ingram

Bidya Marra Consultancy

Wiradyuri NSW Australia
On Mon, 22 Aug 2022 at 4:49 pm, Wallace, Nikki wrote: Dear James Ingram,

> Please find attached the draft ACHAR for the Yanco-Delta Windfarm Project. I would

like to invite you to review the report and provide any comments or response you may have by 19 September 2022.

Should you have any questions, please contact Fran Scully.

Yours sincerely,

Nikki

Nikki Wallace (she/her) | Jacobs | Senior Associate Environmental Scientist

Level 7, 177 Pacific Highway | North Sydney, NSW 2060 | Australia

I live and work on Budjalung country and pay my respects to the Aboriginal people, country, culture, heritage and the ongoing relationship the Budjalung People have with this land.

From: Taddeucci, Ryan
Sent: Wednesday, 12 January 2022 9:21 PM
To:
Subject: Yanco-Delta Windfarm Project - Proposed Aboriginal Cultural Heritage Assessment

Dear James Ingram,

Thank you for registering an interest in the Yanco Delta Wind Farm project, located 10 km to 40 km from Jerilderie, NSW. Your interest in the project has been formally registered in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010).

The next stage of Aboriginal cultural heritage work is due to commence, and we are contacting you regarding preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the project.

This letter provides information about the project and the proposed methodology for the ACHAR, which will include an archaeological field survey. I would like to invite you to review the methodology and provide any comments you may have by 9 February 2022.

If you have any questions, please do not hesitate to contact me on _____, or by email at _____.

Yours sincerely,

Ryan Taddeucci

Ryan Taddeucci, Master of Museum Studies, Grad Dip Maritime Archaeology, BA (Hons) Archaeology | Jacobs | Senior Archaeologist, Archaeology and Cultural Heritage (Asia Pacific), Environmental Solutions
|
177 Pacific Highway | North Sydney NSW 2060 | Australia